3.4.3 Number of research papers per teacher in the Journals notified on UGC website during the last five years

Enclosed first page of each journal paper as per the list

(A.Y. 2017-2018)

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Effect of Aluminum Shear Yielding Dampers on the Seismic Response of R C Structures

[1]Y.Rajesh Kumar
[1]Assistant professor, civil engineering department geethanjali college of engineering and technology.

Abstract: Earthquakes are one of the nature's greatest hazards to life on planet and have destroyed countless cities and villages on every continent. A large amount of energy is imparted to the structure during earthquake ground motions. Due to this imparted energy it will cause excessive deformations, forces and sometimes lead to collapse of the structure. Hence there is a need to dissipate the energy imparted to the structure which can be achieved through vibration control systems. The present study uses a passive control system - Aluminum metallic shear yielding damper in order to reduce the seismic response of the structure when subjected to seismic ground motion. The imparted energy is dissipated by the metallic damper through inelastic deformation of metals. The present work deals in reducing the seismic response using shear yielding dampers for varying floor levels of 10,15 and 20 floors when subjected to a seismic excitation of El-Centro 1940 earthquake ground motion. Parameters considered in the study are roof displacements, storey drifts, base shears and energies. ETABS V.9.7.2 is used as the software tool for performing non linear time history analysis of the structure.

Keywords: Non-linear time history analysis, ETABS, El Centro ground motion data, Alluminium shear yielding dampers.

I.Introduction

Earthquakes are one of the nature's greatest hazards to life on planet and have destroyed countless cities and villages on every continent.. A large amount of energy is imparted to the structure during earthquake ground motions. Due to this imparted energy it will cause excessive deformations, forces and sometimes lead to collapse of the structure. There are two ways of designing a structure when subjected to earthquake ground motions. One way is to design the structure to the excessive imparted energy which leads to an unconservative and an uneconomical design. There is an urgent need to dissipate the energy imparted to the structure so that the force demand on the basic structural elements are less which can be achieved through vibration control systems. The present study uses a passive control system - Aluminum metallic shear yielding damper in order to reduce the seismic response of the structure when subjected to seismic ground motion. The imparted energy is dissipated by the metallic damper through inelastic deformation of metals. Non linear time history analysis has been performed for structures with and without dampers in ETABS and observed the reduction in response. The present work deals in reducing the seismic response using shear yielding dampers for varying floor levels of 10,15 and 20 floors when subjected to a seismic excitation of El-Centro 1940 earthquake ground motion. Parameters considered in the study are roof displacements, storey drifts, base shears and energies. ETABS V.9.7.2 is used as the software tool for the seismic analysis of the structure. Also the effect of stiffness of the damper on seismic response has also observed in the work.

Literature Review

Wallace and Rai [1998] conducted experimental work to study the hysteretic behavior and energy dissipation potential of shear-links made of Aluminum alloys (3003-O and 6061-O). The links were also tested at cycling frequencies of 5, 10 and 17 Hz in order to determine the effect of strain rate. Ductile shear yielding and excellent energy dissipation were shown by the shear links. At a shear strain of 10 percent, full hysteresis loops were observed. Simple design equations are developed to proportion these shear-links, using data from the cyclic load tests. In chevron-type braced systems, the shear-link is sandwiched between the tops of diagonal braces and a girder from the floor above, resulting in yielding at a lateral force less than that required to buckle the compression brace. A Shear-Link Braced Frame (SLBF) system was designed and its seismic performance was compared to that of an Ordinary Concentric Braced Frame (OCBF) with chevron braces. The SLBF system demonstrated more uniform distribution of storey drifts, reduced base shear, and a larger energy dissipation capacity per unit drift.

Sahoo and Rai[2009] describes the ability of two strengthening techniques namely external steel caging and aluminum shear-yielding damper (*Al*-SYD) The work was performed on a single storey single bay R.C. Frame. The strengthened frame was simultaneously subjected to gravity loads and reversed cyclic lateral displacements A connection system was designed in such a way that a fraction of lateral load of the frame was transferred to dissipating device. During the test, no damages were noticed but it has been observed that there is an increase in the stiffness and lateral strength of the frame. It has been also observed that due to enhanced energy dissipation through alluminium panels, there is a significant reduction in the force demand on the structural members of the frame.

*Corresponding Author: Md. Kafeeq , Email : rajimist@gmail.com
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"Ground Granulated Blast Slag (GGBS) In Concrete – A Review"

Purumani Supriya & Ramachander Damera
*Assistant Professor, Geethanjali College of Engineering & Technology
**Assistant Professor, Geethanjali College of Engineering & Technology

Abstract:

Concrete is a blend of concrete, fine total, coarse total and water. Concrete assumes a key part in the advancement of foundation Viz., structures, modern structures, spans and interstates and so forth prompting use of expansive amount of cement. On the opposite side, cost of cement is credited to the cost of its fixings which is rare and costly, this prompting use of monetarily elective materials in its generation. This prerequisite is drawn the consideration of agents to investigate new substitutions of elements of cement. The present specialized report concentrates on researching qualities of cement with incomplete supplanting of concrete with Ground Granulated Blast heater Slag (GGBS). The point manages the use of GGBS and focal points and additionally detriments in utilizing it in concrete. This use of GGBS fills in as substitution to as of now draining traditional building materials and the current years and furthermore just like a side-effect it fills in as an Eco Friendly method for using the item without dumping it on ground.

Keywords: GGBS, GGBS in concrete, other materials with GGBS.

I. Introduction

General:

Ground Granulated Blast heater Slag

(GGBS) [1] is a result from the impact heaters used to make press. These work at a temperature of around 1500 degrees centigrade and are bolstered with a precisely controlled blend of iron metal, coke and limestone. The iron mineral is lessened to press and the rest of the materials from a slag that buoys over the iron. This slag is intermittently tapped off as a liquid fluid and on the off chance that it is to be utilized for the produce of GGBS it must be quickly extinguished in huge volumes of water. The extinguishing upgrades the cementitious properties and produces granules like coarse sand. This „granulated" slag is then dried and ground to a fine powder. Albeit ordinarily assigned as "GGBS" in the UK, it can likewise be alluded to as "GGBS" or "Slag bond" Concrete is essentially a blend of fine total, coarse total and concrete. The principle issue is the first ordinary materials are exhausting and we are in chase for exchange building materials which lands us here on the reason for GGBS. Being a side-effect and waste utilizing it viably up to some degree fills in as a stage for a greener domain and in the meantime remembering that the quality of the solid doesn"t debase by the utilization GGBS.

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Application of GIS And Remote Sensing In Transportation Engineering

2017-19
(3)

Vanam Goutham
Assistant Professor,Dept of Civil Engineering
Geethanjali College Of Engineering And Technology

Abstract- *At the point when such a significant number of parameters are to be associated with Transportation arrange like travel time, speed, street protection, turning developments, and so on. For such a major system GIS (Geographic Information System) substantiates itself as a productive instrument for taking care of such a system issues rapidly and with an extraordinary accuracy. The GIS Software is deciding the ideal courses or Best courses from one root to numerous goals sort of issue, with a target of limiting travel separation and travel time of clients. Compels contemplated were impedance for crossing points, sort of street and speed. GIS developed as better instrument for getting arrangement of such complex issues precisely and quickly.*

Keywords- IS, Optimal routes, Transportation

I. INTRODUCTION

A nation's transportation framework speaks to improvement phase of nation. Yet, in the meantime exceptionally created nations are confronting higher issues of transportation administration and spending parcels cash and exertion for tackling those issues. Developing activity clog, the need to save nature, and the issues of street security are the fundamental explanations behind numerous urban areas worldwide to consider new activities in broad daylight travel frameworks. The complexities of building and working the vehicle framework proficiency and securely have out stripped the capacity of past experience and expert judgment alone to give arrangements. On the off chance that a nation is to fulfil the vehicle framework necessity in consonance to its formative pace, choices must be founded on a more dependable, refreshed, significant, effortlessly available and reasonable data. Better data improves basic leadership capacity however its nonattendance definitely blocks it. The utilization of GIS to a differing scope of issues in Transportation designing is presently entrenched. It is an effective apparatus for the examination of both spatial and non-spatial information and for taking care of essential issues of systems administration. Most limited way examination is a fundamental antecedent to many GIS operations. (Zhan (1996) has chipped away at this and Investigated the utilization of quick most limited way.

II. MATERIAL AND TECHNIQUES

A geographic data framework that incorporates the road maps for the three-nation benefit locale, the course framework, and the transport stop areas. Data to perform correspondence, examination, Arranging and administration confirmation. Past examinations have featured the requirement for apparatuses to survey the effect of intercessions on the transport organize and the openness of the framework. (Belinda 2003) infers that utilizing GIS, the investigation of transport impediment and availability is conceivable. Evaluates the spatial effect of theoretical system changes on populaces dwelling inside the city transport organize zone. Inside the GIS condition, informational collections are shown in a scope of inventive ways (3-D, lattice and other topical maps) to encourage information elucidation. (Zhong-Ren Peng and Ruihong Huang 2000) display electronic travel data framework outline that utilizations Web Geographic Data Frameworks (GIS) advancements to incorporate Web serving, GIS preparing, organize investigation and database administration. A way discovering calculation for travels organize is proposed to deal with the uncommon attributes of travel systems, e.g., time-subordinate administrations, normal transport lines on a similar road, and non symmetric directing as for a root/goal combine. The calculation considers the general level of administrations and administration plan on a course to decide the most limited way and exchange focuses. A structure is made to sort the improvement of travel data frameworks on the premise of substance and usefulness, from straightforward static calendar show to more advanced ongoing travel data frameworks. An exceptional component of the announced Online transit, information framework is the Web GIS based framework with an intuitive guide interface.

This empowers the client to cooperate with data on travel courses, timetables, and outing schedule arranging. Some guide rendering, questioning, and system investigation capacities are additionally given. The spatial effect of speculative system changes on populaces dwelling inside the city transport arrange range. Inside the GIS condition, informational collections are shown in a scope of inventive ways (3-D, framework and other topical maps) to encourage

Strengthing of Concrete Using Different Fibers

2017-18

[1]Joshi Harish Kumar ,[2]Kacha Bharath Kumar, [3]S.Bhanu Kishore, [4]Joshi Srinivas Prasad
[1,2]UG Scholar, Geethanjali College Of Engineering And Technology
[3,4]Assistant Professor, Geethanjali College Of Engineering And Technology

Abstract: The capability of durable structure to resist weathering action, chemical attack, abrasion and other degradation processes during its service life with the minimal maintenance is equally important as the capacity of a structure to resist the loads applied on it. Although concrete offers many advantages regarding mechanical characteristics and economic aspects of the construction, the brittle behavior of the material remains a larger handicap for the seismic and other applications where flexible behaviour is essentially required.

Keywords—polypropylene fibres, glass fibres, Normal concrete

INTRODUCTION TO POLYPROPYLENE FIBRES

Ceramics were the first engineering materials known to mankind and they still constitute the most used materials in terms of weight . Hydraulic cements and cement-based composites including concretes are the main ceramic-based materials. Concrete offers many advantages in the application due to its improved mechanical characteristics, low permeability and higher resistance against chemical and mechanical attacks. Although concrete behavior is governed significantly by its compressive strength, the tensile strength is important with respect to the appearance and durability of concrete. The tensile strength of concrete is relatively much lower. Therefore, fibers are generally introduced to enhance its flexural tensile strength, crack arresting system and post cracking ductile behaviour of basic matrix.

Concrete modification by using polymeric materials has been studied for the past four decades . In general, the reinforcement of brittle building materials with fibers has been known from ancient period such as putting straw into the mud for housing walls or reinforcing mortar using animal hair etc. Many materials like jute, bamboo, coconut, rice husk, cane bagasse, and sawdust as well as synthetic materials such as polyvinyl alcohol, polypropylene (PP), polyethylene, polyamides etc. have also been used for reinforcing the concrete. Research and development into new fiber reinforced concrete is going on today.

Properties of Polypropylene Fibers

The raw material of polypropylene is derived from monomeric C3H6 which is purely hydrocarbon. Its mode of polymerization, its high molecular weight and the way it is processed into fibers combine to give polypropylene fibers very useful properties as explained below :

There is a sterically regular atomic arrangement in the polymer molecule and high crystallinity. Due to regular structure, it is known as isotactic polypropylene.

Chemical inertness makes the fibers resistant to most chemicals. Any chemical that will not attack the concrete constituents will have no effect on the fiber either. On contact with more aggressive chemicals, the concrete will always deteriorate first.

Lietarature review

Role of Fibers

Cracks play an important role as they change concrete structures into permeable elements and consequently with a high risk of corrosion. Cracks not only reduce the quality of concrete and make it aesthetically unacceptable but also make structures out of service. If these cracks do not exceed a certain width, they are neither harmful to a structure nor to its serviceability. Therefore, it is important to reduce the crack width and this can be achieved by adding polypropylene fibers to concrete. The bridging of cracks by the addition of PPfibers

Thus addition of fibers in cement concrete matrix bridges these cracks and restrains them from furtheropening. The major reasons for crack formation are Plastic shrinkage, Plastic settlement, Freeze thaw damage, Fire damage etc.

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Cheeryal (V), Keesara (M), Medchal Dist.(T.S.)-501 301.

Performance Of Concrete Using Coconut Shell

2017-18

[1]Y.V. Mohan Reddy, [2]P. Naveen Kumar, [3]P. Surender, [4]P. Srikanth Reddy
[1,2,3]UG Scholar, Geethanjali College of Engineering and Technology
[4]Assistant Professor, Geethanjali College of Engineering and Technology

Abstract : In this present experimental investigation an attempt is made to use low cost building material like a coconut shell. In the present thing the natural aggregate is replaced by 10%, 20%, 30% of coconut shell for different grades of concrete such as M_{20}, M_{25}. A comparative study is made on compressive strength between the conventional concrete and coconut shell concrete.

Keywords-- cement concrete (CC), Coconut Shell (CS), Cement Mortar (CM), Consistency (P).

GENERAL

In the recent years, the depletion and rising cost of natural aggregates and the change in the environment due to the production of concrete is raised up extensively. Many works are carried out on concrete to replace the materials with the wastes formed by industries and various sources.

Coconut Shell

Coconut shell can be used to produce lightweight aggregate by lowering the density of concrete. In light of this, we should study about the properties of coconut shell in concrete in terms of strength.

S.no	Properties	Coconut Shell
1.	Moisture content (%)	4.20
2.	Water absorption (24 h) (%)	20
3.	Specific gravity	1.05-1.20

Sequence of operation

The tests are conducted on cement to see the suitability of sample in concrete and the investigations were carried on the M_{20}, M_{25} grade concrete. Required quantity of materials is calculated for different grades of concrete and in different percentages of CS. The required uniform mix is obtained by mixing of materials. The tests are held on fresh concrete and hardened concrete.

TESTING PROGRAM

Fineness of cement

Fineness or particle size of cement affects the hydration rate of cement and thus the rate of strength gain. The smaller the particle size, the greater the surface area to volume ratio and thus the more area available for water-cement interaction per unit volume. The test is conducted by IS-90μ sieve conforming to IS:460-1965, standard balance.

Specific gravity of cement

Specific Gravity is just a comparison between the weight of a volume of a particular material to the weight of the same volume of water at a specified temperature. Every material has solid particles and pores which may contain water. When cement was exposed to

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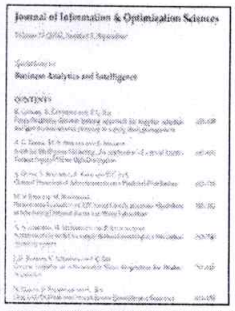

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Experimental analysis of image encryption using elgamal and block-substitution method for color images

G. Lokeshwari, S. Udaya Kumar & Sreevidya Susarla

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Research Article

Performance assessment of neuro fuzzy based image fusion of satellite images

Ch. Ramesh Babu[1*], D. Srinivasa Rao[2], T. Ravi[2] and G. Gopi[3]
Professor, Department of Computer Science, GCET, Hyderabad, India[1]
Associate Professor, Department of IT, VNRVJIET, Hyderabad, India[2]
Assistant Professor, Department of Computer Science, Akamai Tech, Hyderabad, India[3]

Abstract
Image fusion is a technique to converge multispectral (MS) and panchromatic (PAN) images in to a one fused image which is moderately supplementary helpful compared to input images taken for fusion. Image fusion is an important task to recover an image which delivers as much as evidence of the same body part at the similar time it also assistances to decrease the storing capability to a particular image. In this paper an assessment is completed among conventional image fusion methods; principal component analysis (PCA), discrete wavelet transform (DWT), IHS transform based fusion, Brovey transform based fusion, and the projected neuro fuzzy based iterative image fusion techniques. The proposed neuro fuzzy based iterative fusion method utilizes fuzzy inference system (FIS) prepared by determining fuzzy rules and membership functions precisely. Experimentations have been finished on different datasets of multimodal satellite images. The projected technique is perceivably and significant related with the other fusion approaches. For the assessment of the fused image obtained from various fusion techniques ten diverse measures is prepared and utilized of, namely image quality index (IQI) and mutual information measure (MIM) with probability density.

Keywords
Image fusion, PCA, DWT, IHS, Brovey transform.

1.Introduction
Functions (PDF) for inputs, root mean square error (RMSE), peak signal to noise ratio(PSNR), correlation coefficient (CC) and spatial frequency (SF). Assessment outcomes demonstrated that the projected neuro fuzzy based image fusion technique improved image quality than any of the conventional image fusion techniques. Image fusion to converge evidence from source images of a same section into a one combined image that is additional useful and is added appropriate for conception or computer handling domains. A structure is planned in which combines the welfares of a fuzzy validation and a neural structure. The framework seams collected Kalman unscrambling and subtle treating recommendation i.e. ANFIS to organization an operative evidence grouping approach for the objective subsequent outline. An original multipurpose intention motivated around ANFIS is projected to regulate rational developments and to deteriorate the uncertain exacerbation of approximation evidence from multisensory.

Fuzzy adaptable amalgamation scheming is a convincing device to make the genuine superiority of the excess covariance steady with its theoretical value. ANFIS designates excessive captivating in and projection abilities, which varieties it a creative device to achieve practiced susceptibilities in any outline. A neural organization is accessible, which can essence the assessable possessions of the models during the planning terms [1]. Image fusion method has been utilized in pronounced domains: medical image processing, satellite image processing, computer vision, involuntary change recognition, biometrics and armed solicitations. Multi-device image combination for investigation schemes deliberated where fuzzy method exploited for fusing images taken from various sensors, in order to improve conception for observation [2]. The source images decomposition by wavelet transform three consistency structures are mined and then a fuzzy instruction is utilized to combine wavelet factors from the two images conferring to the mined structures. Image fusion procedure built on fuzzy approach and wavelet transform, motivated on observable and electromagnetic image fusion and discourse a procedure centered on the DWT and fuzzy approach [3] and the method formed two fuzzy

*Author for correspondence

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A Two Step Copyright Protection Scheme for ColourImages

Dr .D. SrinivasaRao[1],Dr .Ch.Ramesh Babu[2], B.VenkateswaraRao[3]
Associate Professor, Dept. of IT, VNRVJIET, Hyderabad, India[1]
Professor, Dept. of CSE, GCET, Hyderabad, India [2]
Associate Professor, IT, IARE, Hyderabad[3]

Abstract: A two-step copyright protection technique proposed for color images by makes use of secret sharing and discrete wavelet transform (DWT) methods. The procedureincludes two steps: the share image generation step and the watermark retrieval step. Inthe generation step, the proposed method principally converts the host image into theYCbCrcolor interplanetary and yields a different specimen plane from the color space.Next, the procedure extracts the types from the sample plane by means of the discretewavelet transform. Previously, the procedure adventures the traits and the watermark to yield aprincipal share image. In the recovery stage, an extended watermark is initially reinstated bymeans of the sorts of the suspicious image and the principal share image. Succeeding, themethodology decreases the added noise to acquire the recuperated watermark, which is thenconfirmed in contradiction of the original watermark to observe the copyright. Retrievedwatermark image is assessed by image quality index(IQI), root mean square error(RMSE), peaksignal to noise ratio(PSNR), entropy, accuracy and proved that proposed methodology improvesaccuracy of the retrieved watermark image.

Keywords: *copyright, protection, watermark, discrete wavelet transform, secret sharing.*

I. INTRODUCTION

Visual cryptography based methodproposed for copyright protection in which watermark outline does not have to be entrenched into the source image unswervingly, which marks it tougher to notice or recuperates from the marked image in an illicit way. It can be recovered from the marked image without creating contrast with the source image. The legal representative also candown to pronounce the possession of the doubtful image by this technique. The watermark design can be any important black/white image that canbe castoff to characterise the possessor. Investigational outcomes demonstrated that the watermark design in the marked image has decentclearness and toughness [1].A vigorous copyright protection method for digital image is projectedin which thesecret image is registered to certified authority (CA) for addeddefence. In the stage of watermark drawing out, the watermark can be attained bythe stage exclusive-OR (XOR) process between the furtive image and the open image. The investigationaloutcomesillustrated that the projectedmethod not only can obviouslyconfirm the official document of the digital image, but also is strong to endurequite a lot of image processing attacks such asJPEGlossy compression, cropping, noise adding, sharpening and blurring attacks [2].

A copyright protection method ground on discrete cosine transforms (DCT) and secretsharing methods. The plannedmethod primarily makes use of the features of a host image, attained byapplying theDCT on the host image, to produce a master share. Then, the master share is exploited collectively with a binary watermarkto produce apossession share by utilizing the secret sharing method. To confirm the correct ownership ofthe host image, the concealed watermark can be exposedby means of the master and possession shares. Investigationaloutcomes exposed that the projectedmethod accomplishes acceptablesturdiness against numerousgeneral image processing attacks [3].

II. LITERATURE SURVEY

A new watermarking methodground on the shuffled singular value decomposition and the visual cryptography for copyright protection of images.It producesthe possession and recognition shares of the image ground on visual cryptography. It decomposes the host imageaddicted to low and high frequency sub-bands. The low frequency sub-band is additionallyseparated into blocks of same size after shuffling it and then the singular value decomposition is practiced to each arbitrarilycertain block. Shares are produced by correlating one of the essentials in the primary column of the left orthogonal matrix with its equivalentto constituents in the right orthogonal matrix of the singular value decomposition of the block of the low frequency sub-band. The investigationalproducts demonstrated that the plannedmethodevidently verifies the copyright of the host images, and is vigorous to survivenumerous image processing strikes. Assessment with the formerconnected visual cryptography-based methodsexhibits that the projectedtechniqueproduces improvedoutcome. The plannedscheme is particularlyplianttouching the regular attacks [4].A different strong invisible watermarking outline for embedding and extracting a digital watermark in a host image to defend its copyrights. The imperceptible enclosure of the watermark image into the original image is completed in wavelet domain using Haar wavelet transform. A mask matrix is produced by utilizing the original image with the aid of MD5 procedure and random matrix generation. The produced mask matrix is working in both inserting and miningpractices. The watermark is mined by calculating the associationdegrees amid the mask

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SECURED DISTRIBUTED ACCOUNTABILITY FOR DATA SHARING IN CLOUD

Dr Ch. Ramesh Babu[*1], Dr Md. Mastan[2] & Dr B.V Swathi[3]
[*1]Professor, Dept of CSE, GCET, Hyderabad, India
[2]Assistant Professor, Dept of CS & MIS, OCMT, Barka, Oman
[3]Professor, Dept of CSE, GCET, Hyderabad, India

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ABSTRACT

We urge a peculiar way, in particular Cloud Information Accountability (CIA) system, in view of the thought of data responsibility. Antithetical to security insurance advancements which are based on bury the chance or forget it, asset liability looks after how to minimize the usage of data which can be tracked. Our proposed CIA system gives end-to end control in an exceptionally disseminated manner. One of the primary inventive elements of the CIA structure lies in its scope of keeping up incompetent and capable responsibility that consolidates parts of get to force, use restriction and verification. By methods for the CIA, information proprietors can track not just regardless of whether the administration matched compliance are to be valued, moreover uphold get to and discharge dominance leads as needed. Related with the responsibility highlight, we additionally create two particular modes for examining: push mode and force mode. The push mode alludes to logs being intermittently sent to the information proprietor or partner while the draw mode alludes to an option access whereby the end user (or another approved gathering) can recover the logs as required.

KEYWORDS: Cloud computing, cloud service, cloud security, computer network, distributed computing.

I. INTRODUCTION

Cloud Computing gives brief view about the resource usage and communication display for the industrial experts, by considering progressive flexibility and regular constructive resources. Till now, there are various bizarre employment and respective distributed computing authority, including various cloud providing enterprise platforms. View of the administrations are dreamy from the clients doesn't need to be part should be specialists of innovation foundation. Adding to this the purchaser doesn't have an idea about hosting and transforming their propaganda. While studying about it the accommodation lead by the advanced innovation, purchasers added fear over falling authority of their own report. The report prepared on cloud are frequently deployed, precise numerous concerns analyzed with liability, counting the analysis of by and by attributable statistics. Similar feelings of trepidation are turning into a noteworthy obstruction to the ample appropriation of cloud control.

This cloud display advances accessibility and is made out of five basic attributes, three administration models, and four arrangement models. The qualities of shared computing consolidate on appeal ascetic asset, wide ranging scheme get to, aid merging, fast resilience and systematic governance. The distributed computing administration representations are Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). Sending models of cloud administrations are open cloud, private cloud, group cloud, mixture cloud.

To ease end user' worries, it is fundamental to give a dominant structure to end users to view the discharge of their particulars in the cloud. For instance, end users should have the scope to assure that their data are dealt with as indicated by the administration matched capability set a few minutes trace on for authorities in the cloud. Customary get to balanced access generated for seal areas, for example, storage bases and functional frameworks, or techniques using an incorporated server in dispersed conditions, are not reasonable, because of the accompanying components portraying cloud positions.

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Ample Data Exploration and Map Reduce Indoctrination Decisive Factor

[1] Nagaraj Peddarapu ,[2] Erukala Mahender , [3]Kakkerla Shivakumar
[1] Assistant Professor, Dept. of CSE, Geethanjali College of Engineering & Tech., Hyderabad, India, 501301
E-mail: [1] nagaraj.peddarapu@gmail.com, [2]mahee99@gmail.com , [3]shivakakkerla1@gmail.com

Abstract- *This immense volume of information of knowledge of information is thought as huge data. The info flow therefore quick that the overall accumulation of the past 2 years is currently a zettabyte. Huge information refers to technologies and initiatives that involve information that's too various, fast-changing or huge for typical technologies, skills and infrastructure to deal with efficiency. Information currently stream from way of life from phones and credit cards and televisions and computers; from the infrastructure of cities from sensor-equipped buildings, trains, buses, planes, bridges, and factories. Aforesaid otherwise, the volume, rate or kind of information is just too nice. The amount {of information of knowledge of information with the speed it's generated makes it tough for this computing infrastructure to handle huge data. to beat this downside, huge processing are often performed through a programming paradigm called MapReduce. Typical, implementation of the MapReduce paradigm needs networked connected storage and multiprocessing. Hadoop and HDFS by apache are wide used for storing and managing huge information. During this analysis paper the authors recommend numerous ways for line of work to the issues in hand through MapReduce framework over HDFS. MapReduce technique has been studied at during this paper that is required for implementing huge information analysis victimization HDFS. In this paper, we have a tendency to gift a outline of our activities related to the storage and query process of Google 1T 5-gram information set. Tendency to 1st provides a transient introduction to a number of the implementation techniques for the relative pure mathematics followed by a Map scale back implementation of equivalent operators. We have a tendency to then implement a info schema in Hive for the Google 1T 5-gram data set. This paper can more look at the question process with Hive and Pig within the Hadoop setting. More specifically, we have a tendency to report statistics for our queries during this setting.*

Keywords: MapReduce, HDFS, Big Data, Web 1T-5, Hadoop, Nutch, Lucene, NDFS, Map Phase, Map Reduce

I. INTRODUCTION

Big information may be a standard term wont to describe the exponential growth and availableness of knowledge, each structured and unstructured. Huge information could also be vital to business and society because the net has become. Huge information is thus large that it's tough to method exploitation traditional information and software package techniques. More data may result in a lot of correct analyses. Lot of correct analyses might result in a lot of assured deciding. Better selections will mean bigger operational efficiencies [9], cost reductions and reduced risk. Analyzing huge information is one in every of the challenges for researchers system and academicians that desires special analyzing techniques. Huge information analytics is that the method of examining huge information to uncover hidden patterns, unknown correlations and different helpful info that may be used to make higher selections. This thesis is an experiment within the storage and question process of the Google Web1T-5gram information set. From currently on, we'll use Web1T-5gram rather than Google Web1T-5gram. Web1T-5gram addresses the frequency of words in an exceedingly corpus: "A corpus may be a giant, principle assortment of naturally occurring samples of language hold on electronically [1]". In 2006, Google free the Web1T-5gram information supported one trillion words. This information keeps the frequency of Unigram, Bigram, trigram, four-grams and ve-grams. In applied math language processing, this technique is named AN N-gram model [9].

The N-grams square measure won't to train Language models supported the hidden Andrei Markov paradigm. N-gram model is intended to stay track of the frequency of word sequences in an exceedingly text. Google additionally created AN open supply software package answer called Web1T5-easy supported a computer database system to control the info. In this thesis, we tend to show AN efficient technique for assortment and storing the Web1T-5gram in Hive. The system Hive takes advantage of Hadoop's distributed agglomeration surroundings. The Hive and Hadoop will decrease the quantity of storage prices and scale back process whereas additionally increasing responsibility and speed on huge information searches.

II. CHALLENGES AND GOALS OF ANALYZING BIG DATA

2.1. GOALS:

Two main goals of high-dimensional knowledge analysis area unit to develop effective ways, that may accurately predict the longer term observations and at constant time to realize insight into the link between the options [5] and response for scientific functions [15]. Moreover, as a result of giant sample size, massive knowledge make to extra goals: to grasp heterogeneousness and commonality across completely different subpopulations. In alternative words, massive knowledge offer guarantees for:

- exploring the hidden structures of every population of the information, that is historically not possible and may even be treated as 'outliers' once the sample size is small
- Extracting vital common options across several subpopulations even once there are unit giant individual variations.

2.2. CHALLENGES:

2.2.1. Meeting the need for speed

INCREMENTAL SHORT TEXT CLUSTERING IN SOCIAL MEDIA: A COMPARATIVE STUDY

Bacharaju Vishnu Swathi

Department of CSE, Geetanjali College of Engineering and Technoloy,Hyderabad, India

ABSTRACT:

Due to the growing popularity of Social media, organizations and celebrities are using it as a platform to communicate with the public. They use to share their ideas and events through this media and naturally they will be curious to know the opinion of the public over these posts. Any end user may also want to know how people react on a certain post. But due to the heavy in-flow of comments on a post both the end-user and the authorized person cannot practically go through the whole comment list.

There are various methods of clustering that are used for summarization of the content in blogs and online shopping platforms where the text is structured and is of fixed length. Clustering methods used there restrict the incoming comments to the pre-defined number of categories which is not possible in Social Network Services (Social Media). An Incremental Clustering approach will be able

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Performance Analysis of a Gaussian Mixture based Feature Selection Algorithm

B. V. Swathi
Professor, Dept. of CSE
Geetanjali College of Engg.& Tech
Keesara,India
e-mail: swathiveldanda@yahoo.com

***Abstract*—**Feature selection for clustering is difficult because, unlike in supervised learning, there are no class labels for the data and, thus, no obvious criteria to guide the search. The work reported in this paper includes the implementation of unsupervised feature saliency algorithm (UFSA) for ranking different features. This algorithm used the concept of feature saliency and expectation-maximization (EM) algorithm to estimate it, in the context of mixture-based clustering. In addition to feature ranking, the algorithm returns an effective model for the given dataset. The results (ranks) obtained from UFSA have been compared with the ranks obtained by Relief-F and Representation Entropy, using four clustering techniques EM, Simple K-Means, Farthest-First and Cobweb.For the experimental study, benchmark datasets from the UCI Machine Learning Repository have been used.

Keywords*-*gaussian mixtures,clustering,unsupervised,feature selection,relief-F

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I. INTRODUCTION

In machine learning, feature selection, also known as variable selection, feature reduction, attribute selection or variable subset selection, is the technique of selection a subset of relevant features for building robust learning models.

Feature selection is a must for any data mining product. That is because, when you build a data mining model, the dataset frequently contains more information than is needed to build a model. For example, a dataset may contain 500 columns that describe characteristics of customers, but perhaps only 50 of those columns are used to build a particular model. If you keep the unneeded columns while building the model, the clusters will not be well defined and more storage space is required for the completed model.

Feature selection[5] works by calculating a score for each attribute, and then selecting only the attributes that have the best scores. You can adjust the threshold for the top scores. Feature selection is always performed before the model is trained, to automatically choose the attributes in a dataset that are most likely to be used in the model.

There are various methods for feature selection. The exact method for selecting the attributes with the highest value depends on the algorithm used in your model, and any parameters that you may have set on your model. Feature selection is applied to inputs, predictable attributes, or to states in a column. Only the attributes and states that the algorithm selects are included in the model-building process and can be used for prediction. Predictable columns that are ignored by feature selection are used for prediction, but the predictions are based only on the global statistics that exist in the model.

II. BACKGROUND

In statistics, a Mixture Model is a probabilistic model for representing the presence of sub-populations within an overall population. This model does not require that an observed data-set should identify the sub-population to which an individual observation belongs.

Formally a mixture model corresponds to the mixture distribution that represents probability distribution of observations in the overall population. However, while problems associated with "mixture distributions" relate to deriving the properties of the overall population from those of the sub-populations, "mixture models" are used to make statistical inferences about the properties of the sub-populations given only observations on the pooled population, without sub-population-identity information.

The methods which can be used to implement such mixture models[1] can be called as unsupervised learning or clustering methods.

A. General mixture model

A typical finite-dimensional mixture model is a hierarichal model consisting of the following components:

- N random variables corresponding to observations, each assumed to be distributed according to a mixture of K components, with each component belonging to the same parametric family of distributions (eg, all Normal) but with different parameters.
- N corresponding random latent variables specifying the identity of the mixture component of each observation, each distributed according to a D-dimensional categorical distribution.
- A set of L mixture weights, each of which is a probability (a real number between 0 and 1), all of which sum to 1.
- A set of L parameters, each specifying the parameter of the corresponding mixture component. In many cases, each "parameter" is actually a set of parameters. For example, observations distributed according to a mixture of one-dimensional Gaussian distribution will have a mean and variance for each component. Observations distributed according to a mixture of D-dimensional categorical distributions (e.g., when each observation is a word from a vocabulary of size D) will have a vector of D probabilities, collectively summing to 1).

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Web Page Enrichment using a Rough Set Based Method

Bacharaju Vishnu Swathi
Professor, Dept. of CSE
Geetanjali College of Engg. & Tech
Keesara, India
e-mail: swathiveldanda@yahoo.com

Abstract—When documents are matched to a given query, often the terms in the query are matched to the words in the documents for calculating similarity. But it is a good idea if the given document is represented in an enriched manner with not only the actual words occurring in the document but also with the synonyms of the important words. This would definitely improve the recall of the system. With its ability to deal with vagueness and fuzziness, tolerance rough set seems to be promising tool to model relations between terms and documents. In many information retrieval problems, especially in text classification, determining the relation between term-term and term-document is essential. In this work, the application of TRSM to web page classification was evaluated to determine its effectiveness as a way to enrich a web page.

Keywords-*web page, enrichment,classification, rough sets,text minig*

*****

I. INTRODUCTION

In the recent past, the world wide web has been witnessing an explosive growth. Information is kept on the web in various formats and the content is dynamic in nature. All the leading web search engines, namely, google, yahoo, askjeeves, etc. are vying with each other to provide the web user with the appropriate content in response to his/her query. In most cases, the user is flooded with millions of web pages in response to his query and it is common knowledge that not many users go past the first few web pages. In spite of the multitude of the pages returned, most of the time, the average user does not find what he/she is looking for in the first few pages he/she manages to examine. It is really debatable as to how useful or meaningful it is for any search engine to return lakhs of web pages in response to a user query. In spite of the sophisticated page ranking algorithms employed by the search engines, the pages the user actually needs may actually get lost in the huge amount of information returned. Since most users of the web are not experts, grouping of the web pages into categories helps them to navigate quickly to the category they are actually interested and subsequently to the specific web page. This will reduce the search space for the user to a great extent.

It is strongly believed and felt that the experience of a person using a web search engine is enhanced multifold if the results are nicely categorized as against the case where the results are displayed in a structure less, flat manner. All manuscripts must be in English. A third approach to text classification is based on machine learning. In machine learning, the set of rules or, more generally, the decision criterion of the text classifier is learned automatically from training data. This approach is also called statistical text classification if the learning method is statistical. In statistical text classification, a number of good example documents (or training documents) from each class are required for training the classifier. The need for manual classification is not eliminated since the training documents come from a person who has labeled them where labeling refers to the process of annotating each document with its class. But labeling is arguably an easier task than writing rules. Almost anybody can look at a document and decide whether it is about cricket or not but it takes an expert to form the rules to identify a document's class.

It is customary to represent a document in a reduced form, by removing stop words and by further reducing by feature selection. When documents are matched to a given query, often the terms in the query are matched to the words in the documents for calculating similarity. But it is a good idea if the given document is represented in an enriched manner with not only the actual words occurring in the document but also with the synonyms of the important words. This would definitely improve the recall of the system.

II. BACKGROUND WORK

Tolerance Rough Set Model (TRSM) was developed [1, 2] as basis to model documents and terms in information retrieval, text mining, etc. With its ability to deal with vagueness and fuzziness, tolerance rough set seems to be promising tool to model relations between terms and documents. In many information retrieval problems, especially in text classification, determining the relation between term-term and term-document is essential. The application of TRSM in web page classification was proposed as a way to enrich web page.

The starting point of rough set theory is that each set X in a universe U can be "viewed" approximately by its upper and lower approximations in an approximation space $\mathcal{R}$ = (U,R), where $R \subseteq U \times U$ is an equivalence relation. Two objects $x, y \in U$ are said to be indiscernible regarding R if $x\,R\,y$. The lower and upper approximations in R of any $X \subseteq U$, denoted respectively by L (R, X) and U (R, X), are defined by

$$L(R,X) = \{x \in U : [x]_R \subseteq X\}$$

$$U(R,X) = x \in U : [x]_R \cap X \neq \phi\}$$

where $[x]_R$ denotes the equivalence class of objects indiscernible with x regarding the equivalence relation R. All early work on information retrieval using rough set was based on traditional RST with a basic assumption that the set T of index terms can be divided into equivalence classes determined by equivalence relations [3]. The three properties of an equivalence relation R (reflexi, xRx ; symmetric, $xRy \rightarrow yRx$;

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Evaluation of a NeuroFuzzy Unsupervised Feature Selection Approach

Bacharaju Vishnu Swathi

Dept. of CSE, Geetanjali College of Enggineering and Tech., Hyderabad, India

*Corresponding Author: swathiveldanda@yahoo.com

Tel.: +91-9885096286

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***Abstract*—**Dimensionality reduction is a commonly used step in machine learning, especially when dealing with a high dimensional space of features. The original feature space is mapped onto a new, reduced dimensionality space and the examples to be used by machine learning algorithms are represented in that new space. The mapping is usually performed either by feature extraction or feature selection. Feature extraction involves constructing some new features from original feature set. Feature selection involves selecting a subset of the original features from original feature set without transformation. Feature selection can be implemented either by feature ranking or subset selection. Feature ranking is an approach in which all the features are ranked based on some criteria. In this project, Feature ranking algorithm has been implemented. Work presented here includes the implementation of UFSNF for ranking different features using the fuzzy evaluation index with neural networks. The results (ranks) obtained from UFSNF have been compared with the ranks obtained by Relief-F evaluator using four clustering techniques EM, k-Means, Farthest First and Hierarchical. For the experimental study, benchmark datasets from the UCI Machine Learning Repository have been used. From the study, it is found that the newly proposed algorithm, UFSNF in some cases exceeds the performance of Relief-F.

***Keywords*—**Dimensionality reduction,feature selection,unsupervised, Relief-F,clustering

I. INTRODUCTION

Across a wide variety of fields, data are being collected and accumulated at a dramatic pace. There is an urgent need for a new generation of computational theories and tools to assist humans in extracting useful information (knowledge) from the rapidly growing volumes of digital data. These theories and tools are the subject of the emerging field of knowledge discovery in databases (KDD). Data sets for analysis may contain hundreds of attribute, many of which may be irrelevant to the mining task, or redundant.

For example, if task is to classify customers as to whether or not they are likely to purchase a popular new CD when notified of a sale, attribute such as the customers telephone no are likely to be irrelevant, unlike attributes such as age or music taste. All though it may be possible for a domain expert to pick out some of the useful attributes, this can be a difficult and time-consuming task, especially when the behaviour of the data is not well known. Leaving out relevant attributes or keeping irrelevant attributes may be detrimental, causing confusion for the mining algorithm employed. This can result in discovered patterns of poor quality. In addition, the added volume of irrelevant or redundant attributes can slow down the mining process.

As a last paragraph of the introduction should provide In machine learning, feature selection, also known as variable selection, feature reduction, attribute selection or variable subset selection, is the technique of selecting a subset of relevant features for building robust learning models.

Feature selection is a must for any data mining product. That is because, when you build a data mining model, the dataset frequently contains more information than is needed to build the model. For example, a dataset may contain 500 columns that describe characteristics of customers, but perhaps only 50 of those columns are used to build a particular model. If you keep the unneeded columns while building the model, more CPU and memory are required during the training process, and more storage space is required for the completed model.

Even if resources are not an issue, you typically want to remove unneeded columns because they might degrade the quality of discovered patterns, for the following reasons:

1. Some columns are noisy or redundant. This noise makes it more difficult to discover meaningful patterns from the data.

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DETERMINATION OF RESOURCE USAGE CHARACTERISTICS FOR HADOOP MAP REDUCE TASKS

A.Sree Lakshmi
CSE, Associate Professor, Geethanjali college of Engineering and Technology, Hyderabad, Telangana, India

Dr.M.BalRaju
CSE, Professor & Principal, Swami Vivekananda Institute of Technology, Hyderabad, Telangana, India

Dr.N.Subhash Chandra
CSE, Professor, CVR college of Engineering, Hyderabad, Telangana, India

ABSTRACT:

Hadoop is a common frame work used to process large amounts of data. It uses map reduce framework to divide the data and process it parallel on multiple nodes. Different jobs have different resource usages of CPU and IO and similarly different nodes have different loads. If resource usage of jobs and resource availability of nodes are considered in the decision of scheduling of multiple map and reduce tasks of different jobs, an optimized execution time can be obtained. It is more useful in could environment as map/reduce tasks execute on virtual machines in spite of physical machines. As parts of research conducted to build a dynamic scheduler for map reduce applications considering job and VM characteristics, this paper proposes a technique to study the job characteristic in terms of CPU and IO of usage.

Keywords: Hadoop, Big data, map reduce scheduler, Resource Manager

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A Review Paper on the Most Trending Technology: " Big Data & it's Processing using Hadoop "

[1] Harshini Tanuku, [2] Keerthi Bangari
[1] Undergraduate, [2] Assistant Professor
[1][2] Computer Science and Engineering
[1][2] Geethanjali College of Engineering and Technology(Autonomous),Hyderabad

Abstract - **Big data is defined as a collection of big and complex data sets that have gigantic amount of data, that encompass social media data analytics, data management efficiency and real-time data. Big data analytics is termed as the process in which huge amounts of data are studied for further processing and industrial usage. Big data is processed using a technology known as "Hadoop" that uses the MapReduce paradigm for processing the huge datasets.**

Key Words— **Big data, Hadoop, HDFS, MapReduce Paradigm, Crowd sourcing, " The 4 Vs", Operational big data, Analytical big data.**

I. INTRODUCTION

Big data is a collection of large datasets encompassing of huge amounts of data that cannot be processed using traditional computational techniques. It is a term that is used to define large volumes of data that is both "structured" and "unstructured"."Big data analytics" is defined as the process of analyzing big data. Big data is analyzed so that better business decisions and strategic business moves are made. Despite there being many emerging technologies to handle big data Hadoop is the most preferred tool to process big data. Hadoop uses a paradigm known as the "MapReduce" technique to process the complex and unstructured datasets. Big data ain't a novice phenomenon, but one that is a part of an ancient method of capturing and storing data from archaic information. Just like the other developments and enhancements in data storage, data processing, the web and the internet, big data is a further step that marks a milestone by setting up new trends in the way we capture heterogeneous data, store it and process it for an efficient running of various business organizations.
It will also act as a bedrock to the many new technologies that are going to take birth and revolutionize in the coming generations.

II. The "4 Vs" of Big data

The tradition of storing large amounts of data for analysis is ages old though the term "big data" is a new one. The concept of big data gained acceleration during the "Y2K" or the early 2000's when industry analyst Doug Laney defined the so called "Big data" of this era as the "4 Vs". The "4 Vs" are namely:

- ***Volume:***
Organizations collect huge amounts of data from various sources like social media, business transactions and information from machine-to-machine data. Storing such huge amounts of data caused troubles in the past, but with the emergence of new technologies (like Hadoop) made it less cumbersome.

- ***Velocity:***
Data streams with an unforeseen speed must be dealt with in a periodic manner. Sensors, RFID tags and smart meetings are driving the need to handle torrents of data in real-time.

- ***Variety:***
Data comes in all types and formats. It can be structured or unstructured. It can also be numerical data for daily base transactions from traditional databases to unstructured text documents, pictures, emails, audio and video files, financial transactions etc.

- ***Veracity:***
Veracity in contrast to its actual meaning (which means germane/valid) is the biases, noises and the abnormalities stored in the data. Veracity questions a very legitimate

Implementation of Word Count- Hadoop Framework with Map Reduce Algorithm

Keerthi.Bangari[#1], Sujitha.Meduri[*2], Ch.CY.Rao[#3]

[#]*Assistant Professors, Department of Computer Science and Engineering, Geethanjali College of Engineering and Technology(Autonomous)*
Hyderabad, India

Abstract *— In the technological world there are number of technologies which are generating a large amount of data day by day that leads to formation of a technology called Big Data. Big Data deals with the large and unstructured data that can be computationally analysed to reveal the trends and patterns of a data. In this paper the basic program called Word Count Map Reduce program executed in apache hadoop with a single node setup. Altering in input files and reducing the number of tasks that makes the changes in execution of a program. The aim of this paper is running the Word Count program with different parameters.*

Keywords—*Word Count Program, Apache Hadoop, Map Reduce, Big Data, Parameters*

I. Introduction

Big Data term defines the collection of large data sets, where the data is in structured and unstructured formats. Structured data can present in the form of table format. So the data can be easy to analyze and processed by using data mining tools. Unstructured data refers the data does not have any table format i.e. it does not have any structure. So it is not resided in any traditional databases. Several challenges are encountered in big data while processing, storing and analyzing the data. To fast process the large volume of data within the short period of time, a tool is required which is called Hadoop. Hadoop is open source software which is developed by Apache for reliable, scalable and distributed computing. Apache Hadoop is a framework it uses simple programming models for distributed processing of large volume of data sets through the clusters of computers. It is designed to set up from single server to group of machines, each system offers the storage and local computation.

HDFS and Map Reduce are the two major concepts of Hadoop. Both the Map Reduce and Hadoop are related to distributed computation. Basically Hadoop architecture is same as distributed master slave architecture I.e. in master slave only one system acts as master and remaining systems acts like servers. The use of Hadoop Distributed File System is for distributed and storage for computational capabilities. The purpose of Hadoop is for partitioning the data and it perform parallel computing for large data sets. In Map Reduce master schedules the work on the slave nodes. And the HDFS master is responsible partitioning and computing the data from slaves and it keeps track of the data where it is located.

II. Related Work

In Map Reduce word count is one of the primary program. For easy understanding the simple map reduce performance model was done by using word count program. In this paper Map Reduce performance model was evaluated by changing the size of input file and modifying in map spilt granularity. By altering the size of input file the map reduces performance model can be identified. If there is increase in size of input file then the execution time of word count program can increase. If the size of input file is small then the execution time of word count program will be less. This paper explains the map reduce performance model can be evaluated by changing the size of the input file based on it the variations can be done in word count program executions.

III. Installation of Hadoop

Before executing the word count program in Hadoop. Hadoop is an open source software framework it was written in java. Hadoop is used to run the applications on large clusters. First install the Hadoop framework in single node. Before installing the Hadoop framework the java software need to be installed. In .bashrc file set the java and Hadoop path. And configure the files called core-site.xml,hdfs-site.xml,mapred-site.xml,yarn-site.xml which is present in Hadoop folder. To run the Hadoop first format the name node as

Hadoop name node –format

Hadoop namenode format it used to start the namenode in Hadoop

After starting namenode in Hadoop the dfs and yarn daemons are used to run

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Original Articles

Experimental analysis of image encryption using elgamal and block-substitution method for color images

G. Lokeshwari ✉, S. Udaya Kumar & Sreevidya Susarla

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Abstract

This paper presents an encryption technique for color images. In this method byte code is extracted from the color image which is converted into binary data. Cipher text is generated by applying Block substitution encryption method on the obtained binary data. The effectiveness of the proposed method has been estimated by computing chi-square value. Obtained results show that the encryption method is suitable for both symmetric and asymmetric images of larger size.

Keywords: Image encryption | Block cipher | Byte code | Block substitution

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Modern Research Provocation in Cloud Computing

K. Gnana Mayuri, S. Harini Krishna

Abstract

"Cloud" computing – a relatively recent term, builds on decades of research in virtualization, distributed computing, utility computing, and more recently networking, web and software services. It implies a service oriented architecture, reduced information technology overhead for the end-user, great flexibility, reduced total cost of ownership, on-demand services and many other things. This paper discusses the concept of "cloud" computing, some of the issues it tries to address, related research topics, and a "cloud" implementation available today Cloud computing is a set of IT services that are provided to a customer over a network on a leased basis and with the ability to scale up or down their service requirements. Usually Cloud Computing services are delivered by a third party provider who owns the infrastructure. In a cloud computing environment, the entire data resides over a set of networked resources, enabling the data to be accessed through virtual machines. Despite the potential gains achieved from the cloud computing, the organizations are slow in accepting it due to security issues and challenges associated with it. Security is one of the major issues which hamper the growth of cloud. There are various research challenges also there for adopting cloud computing such as well managed service level agreement (SLA), privacy, interoperability and reliability. This research paper presents what cloud computing is, the various cloud models and the overview of the cloud computing architecture. This research paper also analyzes the key research challenges present in cloud computing and offers best practices to service providers as well as enterprises hoping to leverage cloud service to improve their bottom line in this severe economic climate.

Full Text:

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Personalized Mobile Search Engine

G.Niveditha [1]
Assistant Professor, Department of Computer Science and Engineering,
Geethanjali College of Engineering and Technology, Hyderabad.
Corresponding Author: G.Niveditha

ABSTRACT: *We have already browser in mobile. Whenever we surf for data in mobile that related links will be displayed in list view. User can click on particular link then go to another page and displayed link related information on that page. So we propose a personalized mobile search engine (PMSE) that captures the users' preferences in the form of concepts by mining their click through data. Surf your favourite data quickly and easily. Every click the website link can be saved automatically. Whenever we launch this app and search for any data, you can avoid the step of each time selecting the web pages to open and then open them one by one. Instead we are personalizing the search data such a way that will be displayed in tabs view and every link have a particular web view below to it. So user can directly view the particular link related information in the below the web view and searched data automatically get stored in the database when we click on the results one by one.*

Keywords: *Google API, JSON Parsing, search engine*

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I. Introduction

In this paper, the search results count 16 at time horizontally. When we click on each result, the result output will be display below to the screen. In order to do this we are using Google API with the help of JSON Parsing. When we are searching for particular topic in web browser, the particular page contains several links. Instead of opening the links one by one, all links in that page will be displayed (opened) at a time side by side (fragment) using this app and the content in that link will be displayed down.

This paper will be more useful when we are browsing through mobiles and tabs. This makes ease of searching and decreases complexity. This will be useful for anybody as everyone is habit of surfing the net.

II. Objective

When we search for any materials we will get list of 8 to 10 in a single page as search results. If we want to see the first search result, when we click on it, its gets redirected to the particular and shows the output in another browser. It becomes a tedious task to user to see the results. To avoid the problem in existing system, we are proposing a new application saying named "Personalized mobile search engine". One of the fastest growing industries now a day is mobile industry. There are many competitors in this area who are doing research and development on new platforms & user experience. One such is Android from Google which is supported for Google phones. These phones are described as next Generation mobiles [As described by Google].

In this application the search results count 16 at time horizontally. When we click on each result, the result output will be display below to the screen. In order to do this we are using Google API with the help of JSON Parsing.

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language. The Android SDK includes a comprehensive set of development tools. Requirements include Java Development Kit, the officially supported integrated development environment (IDE) is Eclipse (3.2 or later) using the Android Development Tools (ADT) Plug in, though developers may use any text editor to edit Java and XML files then use command line tools to create, build and debug Android applications.

When we are searching for particular topic in web browser, the particular page contains several links. Instead of opening the links one by one, all links in that page will be displayed (opened) at a time side by side (fragment) using this app and the content in that link will be displayed down. This app will be more useful when we are browsing through mobiles and tabs. This app makes ease of searching and decreases complexity. This app will be useful for anybody as everyone is habit of surfing the net. When we click on it, its gets redirected to the particular and shows the output in another browser. It becomes a tedious task to user to see the results.

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An Analysis Dissertation on Big Data and Hadoop and its Applications

S.L.Anusha & G.Niveditha
Assistant professor in Department of CSE Geethanjali College of Engineering and Technology
sankatianusha@gmail.com , nive.gopigari@gmail.com

Abstract: *The term 'Big Data' describes innovative techniques and technologies to capture, store, distribute, manage and analyze petabyte- or larger-sized datasets with high-velocity and different structures. Big data can be structured, unstructured or semi-structured, resulting in incapability of conventional data management methods. Data is generated from various different sources and can arrive in the system at various rates. In order to process these large amounts of data in an inexpensive and efficient way, parallelism is used. Big Data is a data whose scale, diversity, and complexity require new architecture, techniques, algorithms, and analytics to manage it and extract value and hidden knowledge from it. Hadoop is the core platform for structuring Big Data, and solves the problem of making it useful for analytics purposes. Hadoop is an open source software project that enables the distributed processing of large data sets across clusters of commodity servers. It is designed to scale up from a single server to thousands of machines, with a very high degree of fault tolerance. The challenges that are hindering the growth of Big Data Analytics are accounted for in depth in the paper. This topic has been segregated into two arenas- one being the practical challenges faces whilst the other being the theoretical challenges. The hurdles of securing the data and democratizing it have been elaborated amongst several others such as inability in finding sound data professionals in required amounts and software that possess ability to process data at a high velocity. Through the article, the authors intend to decipher the notions in an intelligible manner embodying in text several use-cases and illustrations.*

Keywords -Big Data, Hadoop, Map Reduce, HDFS, Hadoop Components

1. INTRODUCTION

A. Big Data: Definition

Big data is a term that refers to data sets or combinations of data sets whose size (volume), complexity (variability), and rate of growth (velocity) make them difficult to be captured, managed, processed or analyzed by conventional technologies and tools, such as relational databases and desktop statistics or visualization packages, within the time necessary to make them useful. While the size used to determine whether a particular data set is considered big data is not firmly defined and continues to change over time, most analysts and practitioners currently refer to data sets from 30-50 terabytes(10 12 or 1000 gigabytes per terabyte) to multiple petabytes (1015 or 1000 terabytes per petabyte) as big data. Figure No. 1.1 gives Layered Architecture of Big Data System. It can be decomposed into three layers, including Infrastructure Layer, Computing Layer, and Application Layer from top to bottom.

B. 3 Vs of Big Data

Volume of data: Volume refers to amount of data. Volume of data stored in enterprise repositories have grown from megabytes and gigabytes to petabytes.

Variety of data: Different types of data and sources of data. Data variety exploded from structured and legacy data stored in enterprise repositories to unstructured, semi structured, audio, video, XML etc.

Velocity of data: Velocity refers to the speed of data processing. For time-sensitive processes such as catching fraud, big data must be used as it streams into your enterprise in order to maximize its value.

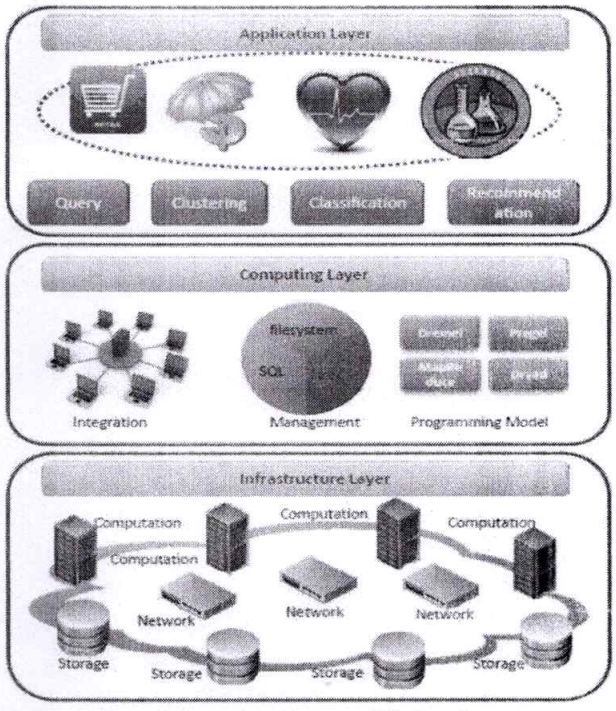

Figure 1: Layered Architecture of Big Data System

C. Problem with Big Data Processing

i. Heterogeneity and Incompleteness

When humans consume information, a great deal of heterogeneity is comfortably tolerated. In fact, the nuance and richness of natural language can provide valuable depth. However, machine analysis algorithms expect homogeneous data, and cannot understand nuance. In consequence, data must be carefully structured as a first step in (or prior to) data analysis. Computer systems work most efficiently if they can store multiple items that are all identical in size and structure. Efficient representation, access, and analysis of semi-structured data require further work.

ii. Scale

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Advanced Automatic Brain Segmentation Techniques for MRI using Hybrid Technique

[1]M. Bhavana Eswar
Assistant Professor, Dept. of CSE
Geethanjali College of Engineering and Technology
Hyderabad, Telangana, India

[2]Esther Varma
Associate Professor, Dept. of CSE
Geethanjali College of Engineering and Technology
Hyderabad, Telangana, India

Abstract —**This paper displays a study of cutting edge techniques for dividing the MRI (Magnetic Resonance Imaging) picture of the brain. Division of the brain is a testing errand since it requires more accentuated strategies to separate every one of the districts display in the brain picture. The power contrasts between the diverse districts in the brain MRI picture are less, making it hard to computerize the whole division process. Henceforth, a careful comprehension of the current division calculation is basic for exact division. The division calculations reviewed in this work are Neural Network Model, Self Organizing Maps, Radial Basis Function, Back Propagation, Fuzzy C-Means, Deformable Models, Level Set Models, Genetic Algorithm, Differential Evolutionary Algorithm, Hybrid Clustering and Artificial Intelligence. Such an overview would be useful for specialists working in the field of brain picture division. The paper talks about the complexities in the division calculation and furthermore the difficulties in dividing the brain MRI pictures. The division yields and examination of the current writing has additionally been talked about. The real criteria and their points of interest in the division of every calculation have been accounted for in like manner in the perceptions.**

Keywords —**Magnetic Resonance Imaging (MRI); brain picture; division; neural systems; deformable models; fluffy c-implies**

1. INTRODUCTION

A brain tumor is a gathering (or mass) of unusual cells in the brain. A tumor may prompt malignancy, which is a noteworthy driving reason for death and in charge of around 13% of all passing around the world. Disease rate is developing at a disturbing rate on the planet. So discovery of the tumor is imperative in prior stages. Incredible learning and experience on radiology are required for exact tumor identification in restorative imaging. X-ray is the most adaptable of our symptomatic imaging modalities, having the capacity to describe an extensive variety of parameters in the living subject and give choice spatial determination. Brain tumor distinguishing proof frame attractive reverberation imaging (MRI) comprises of a few phases. Division is known to be a fundamental however troublesome advance in medicinal imaging characterization and investigation. Consequently, it is profoundly important that division of the MRI pictures must be done precisely before requesting that the PC do the correct determination. This audit displays a diagram of attractive reverberation imaging (MRI) - based restorative picture investigation for brain tumor considers.

Brain

Together, the brain and spinal line (the focal sensory system (CNS)) control the physiological and mental elements of our body. For the most part our brain incorporates three noteworthy parts: 1. Brain. It controls considering, learning, critical thinking, feelings, discourse, perusing, composing, and intentional development. 2. Cerebellum. It controls development, adjust, and act. 3. Brain stem. It associates the brain to the spinal rope, and controls essential capacities in human body, for example, engine, tactile pathways, heart, vault and reflexes [1].

The brain is made out of two tissue writes, to be specific dark issue (GM) and white issue (WM). Dark issue is made of neuronal and glial cells, otherwise called neuroglia or glia that controls brain movement and the basal cores which are the dim issue cores found profound inside the white issue. The basal cores include: caudate core, putamen, pallidum and claustrum. White issue filaments comprise of numerous elinated axons which associate the cerebral cortex with other brain locales. The left and the correct sides of the equator of the brain are associated by corpus callosum which is a thick band of white issue filaments. Both, cerebellum and brain have a thin external cortex of dim issue, inside white issue and little however profoundly arranged masses of the dark issue. The spinal rope is situated toward the base of the brain. It has three structures: the midbrain, pons and medulla oblongata [2]. The brain additionally contains cerebrospinal liquid (CSF) which comprises of glucose, salts, compounds, and white platelets. This liquid circles through channels (ventricles) around the brain and the spinal rope to shield them from damage. There is likewise another tissue called meninges which are the layer covering the brain and spinal rope [2].

Beneath Figure demonstrates the life systems of the brain It is made out of the brain and the brain stem. The brain

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Agent Based Adapted Semantic Enhanced Web Information Retrieval Process Analysis

Esther Varma & M. Bhavana Eswar

[1]Associate Professor, Dept. of CSE Geethanjali College of Engineering and Technology Hyderabad, Telangana, India

[2]Assistant Professor, Dept. of CSE Geethanjali College of Engineering and Technology Hyderabad, Telangana, India

***Abstract*—*Every user has an individual background and a precise goal in search of information. Although modern methods of information retrieval have enormously improved our ability to find relevant information for distributed environment, it remains the case for the foreseeable future that the best performance can only be obtained by some pre-processing of the documents to be searched. Web Information retrieval system assumes a noteworthy part in retrieving the information from a larger collection of data. The goal of personalized search is to search results to a particular user based on the user's interests and preferences. Effective personalization of information access involves two important challenges: accurately identifying the user context and organizing the information to match with the particular context. In this paper, the system uses ontology as a knowledge base for the information retrieval process. It is one layer above any one of search engines retrieve by analyzing just the keywords. Here, the query is analyzed both syntactically and semantically. The developed system retrieves the web results more relevant to the users query. The level of accuracy will be enhanced since the query is analyzed semantically. The results are re-ranked and optimized for providing the relevant links. Based on the user's information access behavior, an ontological profile is created, which is also used for personalization. If the system is deployed for web information gathering, search performance can be improved and accurate results can be retrieved.*

Keywords—Agent; Personalization; Semantic web; information retrieval; ranking algorithm

INTRODUCTION

The main purpose of this section is to justify the need for an integrating approach that combines both intelligent agents and personalized semantic web service technologies. The study concentrates on personalized semantic web services and then intelligent agents and multiagent systems which are enumerated and the most pressing problems of agent technology pointed out. A. Personalization using Semantic web: Semantic technologies promise a next generation of semantic search engines. General search engines don't take into consideration the semantic relationships between query terms and other concepts that might be significant to the user. Thus, semantic web vision and its core ontology's are used to overcome this defect. The order in which these results are ranked is also substantial. Moreover, user preferences and interests must be taken into consideration so as to provide the user a set of personalized results. B. Query Expansion using ontology: Ontology is to create a shareable and agreeable semantic resource over a wide range of agents. The important goal of building ontology is it may serve as an index into a repository of information to facilitate information search and retrieval and also used to identify the user context accurately, so that the search results can be personalized by reorganizing the results returned from a search engine for a given query. In this research, context is extracted from Domain Ontology in terms of concepts and used to extract the semantic patterns in queries which can represent actual users' requirement. Through personalization, one can improve the navigation on a web site by, for example, highlighting content and links of interest, hiding those that are irrelevant, and even providing new links in the site to the users likely web destinations. While personalization can help to identify relevant new information, new information can create problems in re-finding when presented in a way that does not account for previous information and interactions. This study presents a model of what people remember about search results, and shows that it is possible to merge new information invisible into previously viewed search result lists where information has been forgotten. Personalizing repeat search results in this way enables people to effectively find both new and old information effectively using the same search result list. C. Agent based personalization: The main characteristic of agent-based technology is that the structure of the software is represented by a group of agents who collaborate in achieving the goal of the task in hand. The combination of information retrieval and Multi-agent technology has the following features: .Adaptability, initiative and collaborative. Among different types of agents, the personal assistant agents are particularly interesting to this research. This type of agents operates at the user interface level and actively assists users by offering information and advice to the users (Wasson et al., 2001). These agents usually apply a kind of intelligent learning algorithm so that they can intercept the users input, examine it and take actions that are more specific to those particular users' needs at that moment. These agents are also called learning or adaptive agents. Agent can initiatively retrieve the corresponding information based on users' demand, and even can monitor the changes of information sources and agents also share the information with other Agents. This paper introduces a personalized information retrieval system based on multi-agent, which can accomplish information retrieval according to user interest knowledge via multi-agent collaboration for providing personal service to the user. In the process of personal information retrieval, the precision and quality depend on the veracious degree that the system master user interest. Therefore, the paper solves problems how to construct user interest model based on vector space, and how to update user interest model in time when user's interest changes.

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Assessment on Progression, Techniques of Data Mining and Its Applications

Morigadi vishwashanthi & Botla Mamatha
Assistant professor, Dept .of CSE Geethanjali College of Engineering and Technology
vishwashanthi5b9@gmail.com
Assistant professor, Dept .of CSE Geethanjali College of Engineering and Technology
botlamamatha.74@gmail.com

Abstract: *Data mining is the process of analyzing data from different views and summarizing it into useful data. "Data mining, also popularly referred to as knowledge discovery from data (KDD), is the automated or convenient extraction of patterns representing knowledge implicitly stored or captured in large databases, data warehouses, the Web, other massive information repositories or data streams.". This paper provides a survey on various data mining techniques such as classification, clustering, regression, summarization and so on. This paper also discusses some of the data mining applications, additionally gift data processing primitives, from that data processing question languages will be designed. Problems concerning a way to integrate an information mining system with a database or data warehouse are mentioned. Additionally to finding out a classification of information mining systems, and its difficult analysis problems for building data processing tools of the long run.*

Keywords: **knowledge discovery in data, data mining application, descriptive model, predictive model.**

I. INTRODUCTION

Data mining, discovering of hidden predictive information from large data sets and it is a powerful new technology with great potential to help companies focus on the most important information in their data warehouses. Data mining (sometimes called data or knowledge discovery) is the process of analyzing data from different perspectives and summarizing it into useful information - information that can be used to increase revenue, cuts costs, or both. Data mining software is one of a number of analytical tools for analyzing data. It allows users to analyze data from many different dimensions or angles, categorize it, and summarize the relationships identified. Technically, data mining is the process of finding correlations or patterns among dozens of fields in large relational databases. Web could be a large repository of data that grows at a quick pace. The extreme growth of data evolves several new challenges for web researchers that embody among alternative things, high knowledge spatial property and extremely volatile and constantly evolving content. Be grateful to this, it's become more and more necessary to form new and improved approaches to ancient data processing techniques may be applied for the net mining. Automatically extracting helpful data could be key difficult problems in web data processing. The billions of sites created are generated dynamically by underlying web information service engines mistreatment HTML or XML. However, searching, comprehending, and mistreatment the semi structured data keep on the online poses a major challenge as a result of this knowledge is additional refined and dynamic than the data that business info systems store. The mining knowledge varies from structured to unstructured. Data processing chiefly deals with structured knowledge organized in an exceedingly info whereas text mining chiefly handles unstructured knowledge. Web mining lies in between and copes with semi structured knowledge and/or unstructured knowledge. Web mining entails artistic use of knowledge mining and/or text mining techniques and its distinctive approaches. Mining the net knowledge is one among the foremost difficult tasks for the information mining and data management students as a result of there are vast heterogeneous, less structured knowledge accessible on the online and that we will simply weak with knowledge. Because the web reaches its full potential, however, we have a tendency to should improve its services, build it additional approachable, and increase its usability. As researchers still develop data processing techniques, we have a tendency to believe this technology can play a progressively important role in meeting the challenges of developing the intelligent web.

II. DATA MINING PROCESS

Data mining is also known as Knowledge Discovery in Database, refers to finding or "mining" knowledge from large amounts of data. Data mining techniques are used to operate on large volumes of data to discover hidden patterns and relationships helpful in decision making. So, many people use the term "knowledge discovery in data" or KDD for data mining [1].

In Data mining, Knowledge extraction or discovery is done in seven sequential steps as in Fig 1.

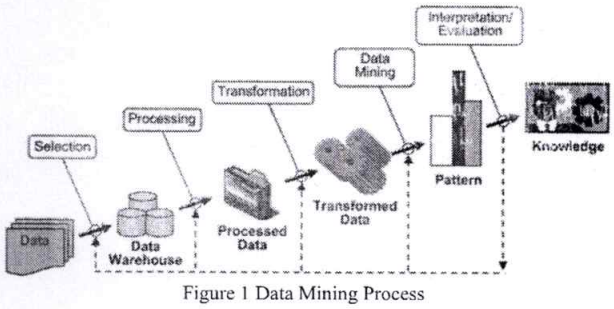

Figure 1 Data Mining Process

i) Data cleaning: This is the first step to eliminate noise data and irrelevant data from collected raw data.

ii) Data integration: At this step, various data sources are combined into meaningful and useful data.

iii) Data Selection: Here, data relevant to the analysis are retrieved from various resources.

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A Cloud Computing Emerging Security Threat Its Novel Trends in Knowledge Manageme Perception

[1]Nagaraj P
Research Scholar, Dept .of CSE
Osmania University
Hyderabad, Telangana, India
nagarajcsedept@gmail.com

[2]Dr A.V. Krishna Prasad
Professor in CSE Department
MVSR Engineering College
Hyderabad, Telangana, India
kpvambati@gmail.com

Abstract: Cloud computing is one in all the newest raising innovations of the trendy net and technological landscape. With everybody from the White house to major on-line technological leaders like Amazon associate degreed Google mistreatment or giving cloud computing services it's actually presents itself as an exciting and innovative methodology to store and use Knowledge on the web. Knowledge Management (KM) started over 20 years a gone and its importance were completed by the leading organizations. It's currently thought of as associate degree integral part of any concern. Economic process has competed a major role in however business is conducted and therefore the necessity of innovative metric linear unit grew. The emergence of data and pc Technologies (ICT) created it doable to place innovative ideas into apply in several areas as well as metric linear unit. This paper discusses the trends in Knowledge management manner} new rising technologies have compacted the way Knowledge is managed. One in all the foremost outstanding technologies inside the ICT has been the emergence of Cloud computing that has considerably compact the means IT services are provisioned. With its key characteristics, like on-demand self-service, IT resource pooling, speedy physical property, pay-as-you-go subscription model and reduced IT prices, it's inspired numerous organizations to amend their business methods. the tiny and medium scale organizations will currently avail hosted services for major IT activities as well as metric linear unit through Cloud Computing, that was on the far side their budget before the arrival of Cloud Computing. The cloud setting applications are mentioned intimately with regard to the Knowledge management methods and their combined ability to cater to future desires during this space.

Key words: Knowledge Management, Cloud Computing, Innovation.

1. INTERODUCTION

Cloud computing is one in all the newest raising innovations of the trendy net and technological landscape. with everybody from the White house to major on-line technological leaders like Amazon associate degreed Google mistreatment or giving cloud comp it's actually presents itself as an exciting methodology to store and use Knowledge c giving software package, storage and differe a web account, Cloud suppliers will greatly for little and huge businesses or startups b access to options that will be terribly expensi

Fig 1 Cloud computing diagram

By giving software package, applications different services on-line account, Cloud greatly cut back prices for small/large b startups by giving them access to advance will be terribly expensive otherwise and m side their means that to get or maintain. They company's it infrastructure by providing law to non technical workers like CRM relationship management systems), leac accounting apps, contacts and databases. (like Amazon Cloud and Sales disembodied s do offer on-line CRM, sales leads, Ki payment services dead one reasonable accou the customers' desires.

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Enabling Public Verification for Secure Distributed Data in the Cloud

Kakkerla Shivakumar
Assistant Professor, Department of CSE Geethanjali College of Engineering & Technology, Hyderabad, Telangana, INDIA

***Abstract*-Cloud computing provides an economical and efficient solution for sharing data among the cloud users with low maintenance. There is still a challenging issue, due to the frequent change of the membership for sharing data in a multi-owner manner while preserving data and identity privacy from an un-trusted cloud. Here, a secure multi-owner data sharing scheme, named Mona, for dynamic groups in the cloud has been proposed. Any cloud user can anonymously share data with others by providing group signature and dynamic broadcast encryption techniques. Meanwhile, the storage overhead and encryption computation cost of the scheme are independent with the number of revoked users.**

***Index Terms*- Cloud Server, Privacy Preserving Access Control, Attribute-Based Encryption.**

I. INTRODUCTION

Cloud concept is nothing but the storage service, but it can also share across multiple users. we firstly prioritizes privacy preserving mechanism because while auditing data from cloud services it's not a secured while that private information is publicly protected by cloud service. Specifically, the group signature scheme enables users to anonymously use the cloud resources, and the dynamic broadcast encryption technique allows data owners to securely share their data files with others including new joining users which protects the confidentiality from the revoked users in the dynamic broadcast encryption scheme. We propose that while any user is accessing the data from cloud it must be secured by unauthorized person or hacker. Cloud is un-trusted file storage, so we utilize encryption based access control for sharing document in the cloud storage service. User's data is encrypted by using cryptographic technique because unauthorized person can hack the user's private data. In this cryptographic technique we uses different algorithms like signature algorithm, key generation algorithm, ring verify algorithm, etc. these algorithms are used in the cryptographic technique. Users can enjoy high-quality services by migrating local data management systems into cloud servers.

II. LITERATURE SURVEY

A. Privacy-Preserving In the Cloud

In the Existing system, cloud environment provides large space for storing and managing information for the internet application. The TPA is also important mechanism for authentication is done by this system. The TPA verifies the valid and invalid user by evaluating user identity attributes but if the TPA get hacked by some another then the user not get any notification from cloud due to this users may losses the irrivate information or leakage, so this is big drawback of the existing system. In the previous system, for security purpose OTP (one time password) is not generated while the user's verification is done.

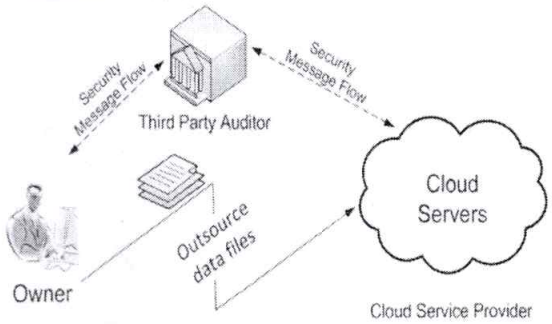

Figure1 - System Model Includes The Cloud Server, The Third Party Auditor And Users

Due to the lack of knowledge of decryption keys, the unauthorized users as well as storage servers cannot learn the content od data files. A secure provenance scheme based on the cipher text policy attribute based encryption technique proposed by Lu et al.[3] by setting group with a single attribute. The Deffie-Hellman-key Exchange algorithm is used in previous system. But this is very risky because in this algorithm the man-in-middle-attack was generated so

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Efficient Realization of Vinculum Vedic BCD Multipliers for High Speed Applications

G. Sreelakshmi[1], Kaleem Fatima[2], B. K. Madhavi[3]

[1]Geethanjali College of Engineering and Technology, Hyderabad, India
[2]Muffakamjah College of Engineering and Technology, Hyderabad, India
[3]Sridevi Women's Engineering College, Hyderabad, India
Email: gantisiriphd@gmail.com, kaleemfatima@mjcet.ac.in, bkmadhavi2009@gmail.com

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Abstract

Decimal multipliers play an important role in our day to day life for commercial, financial and tax applications. Every processor multiplier acts as the basic building block which decides the performance of processor. Time and again research is going on to design high-performance, low-latency BCD multiplier architectures. This paper proposes a new approach to BCD multiplication using vinculum number system. The key feature of the proposed architecture uses entirely a new one digit ROM based BCD multiplier that uses vinculum numbers as operands. Using this one digit BCD multiplier, an N digit BCD multiplier is built by using the vedic vertical cross wire method (Urdhav Triyagbhyam). We have also used our proposed multi operand VBCD Adder (Vinculum BCD Adder) [my paper 26] to add the partial products. In this paper, we show that this approach is a promising alternative to conventional BCD multiplication or other decimal multiplication methods that use alternative decimal representations like 5211, 4221, Xs3 etc.

Keywords

Signed Digit, Vedic Multiplier, Urdhav Triyagbhyam, Multi Operand Adder, VBCD Number System

1. Introduction

Designing of hardware units for decimal arithmetic is a growing interest among researchers to achieve better latency and throughput for highly complex, accurate fast computation required in business and commercial applications. The basic binary number system can be used for decimal arithmetic operations but it requires conversions at both ends. These conversions will take significant

Implementation of Touch Detection With Virtual Keyboard Using Raspberry Pi

[1]V. Venkat Lakshmi, [2]B.Ramu, [3]G.Keerthi
[12]*Assistant Professor, Geethanjali College of Engineering and Technology, Hyderabad, India.*
[3]*Assistant Professor, St.Martin's Engineering College, Secunderabad, India.*

Abstract— In this paper, we propose a novel interactive projection system (IPS), which enables bare-finger touch interaction on regular planar surfaces (e.g., walls, tables), with only one standard camera and one projector. The challenge of bare-finger touch detection is recovering the touching information just from the 2-D image captured by the camera. In our method, the graphical user interface (GUI) button is projected on the surface and is distorted by the finger when clicking it, and there is a significant positive correlation between the button's distortion and the finger's height to the surface.

Therefore, we propose a novel, fast, and robust algorithm, which takes advantage of the button's distortion to detect the touch action. The proposed touch detection algorithm is performed in three stages: 1) region of interest extraction through a homography mapping, by which the computational complexity of the following processing is reduced; 2) the button's distortion detection using a special edge detection algorithm, which greatly reduces the errors due to the influence of the finger's shadows and edges; and 3) touch action judgment by the button's distortion. Several applications (e.g., virtual keyboard, power point viewing), which use the proposed touch detection method based on the buttons, are shown in this paper. An evaluation is performed on the virtual keyboard and the results demonstrate that the proposed approach can detect bare- finger touch in real time with the missed detection rate of 1.00%, false detection rate of 2.08%, and touch detection rate of 96.92% at the typical projected distance.

Index Terms- Edge detection, human–computer interaction, projector–camera system, touch detection, triangulation.

I. INTRODUCTION

Mobile Devices (e.g., mobile phones, pads) with significant computational power and capabilities have been a part of our daily life. Benefiting from the small size of these devices, they are easy to carry. However, the screen real estate of today's mobile devices is limited by their small sizes. This greatly diminishes their usability, functionality, and comfort. A Pico-projector can be used to significantly increase the limited screen size of the mobile devices. With the development of the projection technology, we believe that embedded projectors in the mobile phones will be very common in the future, and people will enjoy a way of displaying digital contents on everyday surfaces. Meanwhile, the interactions (e.g., touch, gesture) on the projected display are thought to be appealing. To achieve the touch interaction, the biggest challenge lies in how to determine whether the fingers touch the projected surface or not. Most of the researchers in this area use multi cameras or a depth camera to obtain the relative position between the fingertip and the projected surface.

The existing keyboards used keys based keyboard for typing on the computer. These keyboards are working on the mechanical push principle. But for the small devices like mobile phones and tablets it is impossible to carry big keyboard with them. The touch screen based keyboards available in such devices are very inconvenient to write because the size of people finger is big and the size of the keys on the touch screen is small. So typing work on the small devices is not convenient and on computer our fingers get pain after doing long time typing work because of mechanical vibration of the keys.

II. PROPOSED METHOD

In the proposed method, we propose an interactive projection system (IPS), which enables bare-finger touch interaction on regular planar surfaces (e.g., walls, tables), with only one standard camera and one projector.

The challenge of bare-finger touch detection is recovering the touching information just from the 2-D image captured by the camera.

In our method, the graphical user interface (GUI) button is projected on the surface and is distorted by the finger when clicking it, and there is a significant positive correlation between the button's distortion and the finger's height to the surface.

Therefore, we propose a novel, fast, and robust algorithm, which takes advantage of the button's distortion to detect the touch action.

We design a hardware system on interactive projection system. Our system is designed by using ARM 32-bit micro controller which supports different features and algorithms for the development of automotive systems. Here the camera and projector are connected to ARM controller.

We are projecting a GUI on surface by projector and camera for capturing GUI, The camera will capture the places where user put his finger and the movement of the finger.

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DETECTION OF HAZARADOUS GASES IN MINES USING ARM7

M.Sravanthi[1], K.L.Anusha[2], N.Durga Raj[3], M.Chattar Singh[4]
[1] M.Sravanthi, Dept of ECE Geethanjali College of Engineering &Technology, Cheeryala, T.S., India.
[2] K.L.Anusha, Dept of ECE Geethanjali College of Engineering & Technology, Cheeryala, T.S., India.
[3] N.Durga Raj, Dept of ECE Geethanjali College of Engineering & Technology, Cheeryala, T.S., India.
[4]M.Chattar Singh, Asst .Professor, Dept of ECE Geethanjali College of Engineering & Technology, T.S., India

ABSTRACT

A remotely controlled robotic vehicle is designed specifically to lead search or rescue efforts in the mine or in the event of a mining disaster. The robotic vehicle is controlled through Zigbee based remote controlled technology. When mines collapse, the biggest hindrance to a speedy search and rescue operation is the lack of information. Mining accidents generally bring about a buffet of dangerous conditions: structural weaknesses within the shafts themselves, poisonous vapors, explosive gases, flooded tunnels, etc. Rescue crews can't charge into such conditions without proper reconnaissance, lest they risk compounding the situation by creating a second disaster on top of the first.

So here is the project work designed to cope with all of these things so it can get down into a mine quickly, searching and assessing threats so human searchers can get into place as quickly as possible. The system designed here can also be used for many applications like for almost all rescue operations during earth quakes, disasters mostly in mines, etc. The same system can be used as warfare vehicle in war fields as well with some modifications. The system designed as unmanned vehicle and is equipped with sensors for reading different parameter values and transmits the information to the monitoring station through the same zigbee network.

The vehicle can be controlled in all directions through a remote present with the operator. In addition the vehicle is equipped with several sensors for knowing the conditions over there. For identifying if there are any harmful or poisonous gases or vapors, the vehicle is equipped with a gas sensor. For knowing the temperatures of the tunnel or the mine, the vehicle carries a temperature sensor over it that measures the temperature as well. The temperature data will be transmitted continuously by the vehicle and the gas information will be transmitted only if hazardous gases are detected. The remote is designed using AT89C51 controller and the robotic vehicle is designed using ARM7 controller.

INTRODUCTION

The concept presented here requires two ways communication system, the data transmitting unit from where the robot is controlled is also receiving the parameters information from the robot. Similarly the Zigbee module installed over the moving robot in the field also functions as transceiver, it receives the command code signals from the base station, i.e., from where the robot is controlled to travel in the field or mines in all directions, and this place also can be called as monitoring station.

This Zigbee module also transmits the information about the data of hazardous gases and temperature values to the base station and hence both Zigbee modules are performing the function of transceivers, i.e. sending and receiving the data. As a single unit any other communication system cannot perform the function of transceiver, therefore here Zigbee modules are used because in this project work two ways wireless control is one of the most important contributions of the project work.

There are three main levels of challenges. First is the information processing of the robot. Second the Mobility of the robot. Third is the manipulation of the robot. Bringing these robots into real use and being able to use them in all situations is so close to becoming a reality. Some changes will need to be made if they ever expect these robots to function properly. But once they figure out what they need they will hopefully serve a great purpose and be a greater asset to rescuers.

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Design of a Low Power and High Speed Comparator using Mux based Full Adder Cell for Mobile Communications

S. Pooja[1], D. Manoj[2], S. Namratha[3], S. Vasu Krishna[4]
[1]*S. Pooja, Dept of ECE, Geethanjali College of Engineering & Technology, Cheeryal, T.S.*
[2]*D. Manoj Dept of ECE, Geethanjali College of Engineering & Technology, Cheeryal, T.S.*
[3]*S. Namratha, Dept of ECE, Geethanjali College of Engineering & Technology, Cheeryal, T.S.*
[4]*S.Vasu Krishna, Associate Professor, Geethanjali College of Engineering & Technology, Cheeryal, T.S, India.*

Abstract: ***The implementation of a comparator (1-bit) circuit using a MUX-6T based full adder cell is designed with a combination of multiplexing control input and Boolean identities. The proposed comparator design features a higher computing speed and lower energy consumption due to the efficient MUX-6T adder cell. The design adopts multiplexing technique with control input to alleviate the threshold voltage loss problem which is commonly encountered in Pass Transistor Logic (PTL) design. The design proposed successfully embeds the buffering circuit in the full adder design which helps the cell to operate at lower supply voltage compared with the other related existing designs. It also enhances the speed of the cascaded operation significantly while maintaining the performance edge in energy consumption. In this design the transistor count is minimized. For performance comparison, the proposed MUX-6T comparator is compared with existing full adder based comparator using cadence tool. The simulations are performed for 45nm and 90nm technologies; indicate that the proposed design has the lowest energy consumption along with the performance edge on both speed and energy.***

Keywords: MUX, comparator, full adder, pass transiator logic, cadence.

I. INTRODUCTION

Comparators are widely used in electronic circuits after operational amplifiers. They are also mostly popular as 1-bit analog-to digital converters. Analog to digital conversion efficiency mainly depends on the input sampling process. Comparator determines the digital equivalence of the analog signal with the help of its sampled input. In today's world, portable battery operating devices are growing rapidly due to the low power methodologies predominance in high speed applications. Power minimization can be attained by inching towards feature size reduction techniques (Etienne and Sonia, 2007a). The Short Circuit Channel (SCE) effect due to feature size reduction introduces various non-idealities and other process variations that affect the entire performance of the device. In analog-to-digital converters low noise margin, low power dissipation, low hysteresis, less offset voltage and high speed is essential for portable and mobile communication devices. The design of comparators with low power consumption, low offset along with the high speed forms the major interest in research today to achieve overall higher performance of ADCs. In the past, pipeline and flash based ADC architectures implement comparator based pre-amplifier designs. Offset voltage becomes a major constraint in pre-amplifier based comparators. Dynamic comparators are an alternative to overcome this problem to make a comparison during every clock cycle and need much low offset voltage. However, the power consumption is very high in dynamic comparators in comparison with the pre-amplifier based comparators. The major drawback of these dynamic comparators is the fluctuating output signal from the latch stage during clock transitions. This is due to the noise occurrence at the input terminals. The proposed converter design using multiplexer based full adder cell topology eliminates the noise at the input and reduces the power consumption and delay. Comparator is the fundamental and performs a predominant role in the arithmetic unit of digital systems and there are numerous topologies available in the design of CMOS comparators with different operating speed, noise margin, complexity and its power dissipation. In this study comparator design implementation is done by full adder which is the basic functional blocks of the digital VLSI circuits. Several enhancements in approaches have been rendered related to its structure since its invention even one can implement the comparator by flattening the logic function directly too. The main concern of such refinements is to reduce the transistors count which intern increase the speed of operation and minimize the power consumption. One of the major advantages in reducing the transistor count is to increase the fabrication density of a single chip thereby reducing the total chip area. In digital system arithmetic, magnitude comparators are used for comparison. Magnitude comparator is a

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DESIGN OF 4:2 COMPRESSORS FOR UTILIZING IN MULTIPLIER ARCHITECTURE FOR LOW POWER

[1]S. Vasu Krishna, [2]Beeram Tejasri Reddy, [3]Bharat Saketh
[1]Associate Professor [2,3] B.Tech Student
[1]Electronics and Communication Engineering,
[1]Geethanjali College of Engineering & Technology, Hyderabad, India.

Abstract : Multiplication is one of the important operations in many signal processing and image processing applications. The performance of the multiplier has a direct effect on the final output of these applications. Due to this, there is always a need to design a multiplier with high speed and low power consumption. Accuracy is a term relative to the application. In our work, we have designed 6 different types of compressors, which were implemented in an 8 bit Dadda Multiplier evaluated in 45nm technology. The compressors are 4:2 Compressor, Exact Compressor and four approximate compressors, namely DQ4:2C1, DQ4:2C2, DQ4:2C3 and DQ4:2C4, with different levels of accuracy. The results have shown that the DQ4:2C3 compressor has the lowest power consumption among all.

Index Terms **- Compressors, Dadda Multiplier, Accuracy, Power.**

I. INTRODUCTION

Among different arithmetic blocks, the multiplier is one of the main blocks, which is widely used in different applications especially signal processing applications. There are two general architectures for the multipliers, which are sequential and parallel. While sequential architectures are low power. On the other hand, parallel architectures (such as Wallace tree and Dadda are fast while having high-power consumptions. The parallel multipliers are used in high-performance applications where their large power consumptions may create hot-spot locations on the die. Since the power consumption is a critical parameter in the design of digital circuits, the optimizations of these parameters for multipliers become critically important. Very often, the optimization of one parameter is performed considering a constraint for the other parameter. Specifically, achieving the limited power budget of portable systems is challenging task.

II. PROPOSED 4:2 COMPRESSORS

In this section, first, the details of an exact compressor are discussed. Next, the overall structures and the details of the suggested dual-quality approximate compressors are described.

A. Exact 4:2 Compressor

To reduce the delay of the partial product summation stage of parallel multipliers, 4:2 and 5:2 compressors are widely employed . Some compressor structures, which have been optimized for one or more design parameters (e.g., delay, area, or power consumption), have been proposed . The focus of this paper is on approximate 4:2 compressors. First, some background on the exact 4:2 compressor is presented. This type of compressor, shown schematically in Fig. 1, has four inputs ($x1$–$x4$) along with an input carry (Cin), and two outputs (*sum* and *carry*) along with an output $Cout$. The internal structure of an exact 4:2 compressor is composed of two serially connected full adders, as shown in Fig. 2. In this structure, the weights of all the inputs and the *sum* output are the same whereas the weights of the *carry* and $Cout$ outputs are one binary bit position higher. The outputs *sum*, *carry*, and $Cout$ are obtained from

$$sum = x1 \oplus x2 \oplus x3 \oplus x4 \oplus Cin \quad (1)$$

$$carry = (x1 \oplus x2 \oplus x3 \oplus x4)Cin + (x1 \oplus x2 \oplus x3 \oplus x4)x4 \quad (2)$$

$$Cout = (x1 \oplus x2)x3 + (x1 \oplus x2)x1. \quad (3)$$

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A Novel Energy Efficient Multiplier Using OTFC

Mr. S Vasu Krishna[1], Mr. E Mahesh Kumar[2], Dr. K Lal Kishore[3]
[1] *Associate Professor, ECE Department, Geethanjali College Of Engineering And Technology, Keesara, INDIA*
[2] *M.Tech (VLSI Design), ECE Department, Geethanjali College Of Engineering And Technology, Keesara, INDIA*
[3] *Dean, R & D, CVR College Of Engineering, Ibrahimpatnam, INDIA*
Corresponding auther: Mr. S Vasu Krishna

Abstract : *An Energy Efficient Multiplier Is Proposed And Implemented With Less Area, Minimum Delay, And Less Amount Of Power Dissipation. The Left To Right Truncated Multiplier Was Proposed Earlier. In That Design, N-Bit Multiplier Produces 2N Bit Partial Products, But These 2N Bit Partial Products Will Be Divided Into 2N-(N/2) Bits And N/2 Bits. Thus Finally 2N Bits Are Produced By Addition Of Above Bits Using Ripple Carry Adder. The Proposed Multiplier Was Implemented Without Any Truncation And Addition Method, And Designed As A General Array Multiplier Structure. A Smaller On-The-Fly Conversion (OTFC) Circuit Is Added At The End Of The Circuit. The Proposed Converter Produces The Most Significant Part Of Final Partial Product. The OTFC Logic Is Used To Speed Up The Carry-Propagate At The Last Stage Of Multiplication. The Delay Is Independent Of The No. Of Input Bits. Several Left To Right And Right To Left Multipliers Designed Earlier For 8bit, 16bit, And 32 Bits Were Compared With The Proposed Multiplier With Respect To Power, Delay, Area And Energy In 45nm Technology. It Results In Low Power, Minimum Delay, Smaller Area And Less Energy.*

Keywords - *Addition, On-The-Fly Conversion, Left-To-Right Multiplier, Right-To-Left Multiplier, Truncation*

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I. Introduction

Multipliers Play An Important Role In High Performance Systems Such As Microprocessors, DSP And Other Applications. Addition And Multiplication Of Two Binary Numbers Are Fundamental And Most Often Used Arithmetic Operations. Statistics Shows That More Than 70% Instructions In Microprocessors And Most Of DSP Algorithms Perform Addition And Multiplication. So These Operations Dominate The Execution Time. Due To This, There Is Need Of A High Speed Multiplier. The Demand Of High Speed Processing Has Been Increasing As A Result Of Expanding Computer And Signal Processing Applications.

Low Power Consumption Is Also An Important Issue In Multiplier Design. To Reduce Significant Power Consumption It Is Good To Reduce The Number Of Operations, Thereby Reducing Dynamic Power Which Is A Major Part Of Total Power Consumption. To Meet These Issues, Need Of High Speed And Low Power Multiplier Is A Necessity. The Efficiency And Accuracy Of Any System Depends On The Robustness Of The Critical Component, Which Is A Multiplier In Most Of These Kinds Of Applications.

Full Or Direct Multiplier Implementations Of N*N Bit Multiplication Yields A 2N Bit Product. In Order To Keep The Full Accuracy Of The System, DSP Architecture Would Need An Ever Growing Bit Width That Would Be Impossible Or Impractical To Implement. Usually Truncated Multiplier Was Implemented To Keep Results Within The Limits Of The Architecture Bit Width [2]. Some Columns And Rows In The Multiplier Array Can Be Turned Off Whenever Their Outputs Are Known. In Most Of The Applications 'N' Most Significant Bits Are Used For The Product. The Truncated Multiplier Implements 'N+K' Most Significant Columns Instead Of 2n. Truncated Multiplier Uses Error Correction Which Can Be Analyzed And Reduced By Various Correction Methods. In Many DSP Applications, A Truncation Error Less Than Ulp/2 Is Acceptable, Where $Ulp=2^{-N}$ Is The Weight Of The Least Significant Bit [2]. The Truncation Block Was Added To The Main Block Of The Multiplier Using Ripple Carry Adder To Overcome The Truncation Error While Performing The Addition Operation. The Main Block And Truncation Block Together Produces The Final Adder Results. The Drawbacks Of The Energy-Efficient Multiplier With Fully Overlapped Partial Products Reduction And Final Addition Is Used In Some Limited Applications. These Designs With Acceptable Error Can Be Used In MAC Unit, ALU And Image Processing Applications. In All These Applications, The Truncated Part Should Be Added To The Fully Overlapped Partial Products With A Ripple Carry Adder [3]. But Here Delay Plays A Lead Role In The Processing Of Final Addition. To Overcome This Problem, Fully Precision Multiplier With OTFC Has Been Implemented And This Approach Is Advantageously Used For Multiplication.

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Face Recognition Authentication System for Door Automation Using Raspberrypi

Mrs. A. Sowjanya[1], E. Naga Sirisha[2], M. Sai Nishma[3], M. Soma Shekar Reddy[4]
[1, 2, 3, 4] Department of Electronics and Communication Engineering, Geethanjali College of Engineering and Technology, Cheeryal, Hyderabad, Telangana.

Abstract: ***This project aims to monitor and control the home lock using the internet of things. Here we follow the Video Surveillance process. Whenever a person comes and stands in front of the door the person's face get scanned and the comparison takes place with the database stored in the Raspberrypi. We use features like Haar cascade technique and Local Binary Pattern Histogram (LBPH) for Face Detection and Face Recognition which is carried out in three stages like extraction, matching and classification.***

If the person's face get matched with the database then he is authorized, so that the door gets opened automatically. If not, the person's image will be sent to the email of authorized person through Wi-Fi. The door lock can also be controlled by using the webpage.

The photos are sent directly to the cloud server, when the cloud is not available then the data is stored locally on the Raspberrypi and sent when the connection resumes.

Keywords: IoT, Raspberry pi 0, IP Webcam application, Fing application

I. INTRODUCTION

The surveillance became a big challenging problem in the present world, sake of security purpose in phone or banks or other public places we are using many different security systems such as password, finger prints and pattern recognitions. The pattern or passwords used can be trapped easily once if the user is known well or if the pattern is seen once or well known. The finger print system doesn't achieve full-fledged result the through put is low because of the miss matches or a layer of distraction due to external sources and many other reasons. To provide a proper surveillance we are going for face recognition, the unique features of each individual are taken into consideration. There are different kinds of methods for face detection and recognition, in this paper face detection is done based on haar features and face recognition is done based on local binary pattern histogram. In this paper the Face recognition and detection is done using Open CV on to the Raspberry Pi 0.

A. Face Detection

Many kinds of face detections are used in plenty appliance occurrence management, surveillance eventualities, gaming, human-computer interaction, etc. Viola associated Jones devised an formula, known as Haar features classifiers, to chop-chop find any object, as well as human faces, victimization Haar classifier cascades that area unit supported Haar-Like options. Different types of ways area unit out there for detecting the face for identification and recognition. Face detection is using Haar like features, so we'll work with face detection.

Initially, the formula lots of positive pictures (images of faces) and negative pictures (images while not faces) to coach the classifier. Then we'd like to extract options from it. For these, haar features shown in image area unit used. Which are similar to our convolutional kernel. There are line features, edge features and rectangle features.

B. Face Recognition

Face recognition applications is categorized into the three categories: verification, identification and watch. Face confirmation part is considered to be a one. The system can compare face image to the face image(s) of a similar registered identity within the information to form call on whether declining or not acceptive the identity claim. In distinction, the face identification task may be a one: N matching drawback. The face image is conferred to the system while not associate degree mark claim and also the system can search through the existing identities within the information of face to compare the conferred face image. Usually, it's considered that the conferred face image belongs to at least one of the themes within the information. Lastly, the watch list task is typically very just like the identification task but in watch list task, the question subjects square measure usually larger than the themes within the information and thus the question subject might not exist within the information.

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Preeminent Voting System

Mrs. B. Sreelatha[1], P. Niharika[2], P. J. Bharathwaj[3], A. Shiva Sai[4], B. Adithya[5], V. Pavan Kumar[6]
[1, 2, 3, 4, 5, 6] *B. Tech, Department of Electronics and Communication Engineering, Geethanjali College of Engineering and Technology, Hyderabad, Telangana, India*

Abstract: ***Electronic voting is aswell alleged as e-voting. The aim is to accommodate convenient, simple and safe way to abduction and calculation the votes in elections. E-voting can be a amount able way for administering a voting procedure. The purpose of the activity is to denote a voting process, which enables voters to casting a defended and abstruse acclamation over a arrangement as the chiral voting action is time arresting and decumbent to aegis breaches. The capital cold of the capitalism is "vote" by which the humans can accept the candidates for basal an able government to amuse their needs and requests such that their accepted active can be improved. In developing countries like "INDIA" the acclamation agency follows chiral voting apparatus which is done by cyber banking voting machine. This apparatus is placed in the poll berth centre and is monitored by college officials. First the abstracts of the bodies who are aloft 18years are extracted from aadhar calendar database aback it had become binding in present scenario. Automatically a new aborigine id with all-important abstracts will be created and an allusion will be accustomed to the bodies through their sms alerts. To ensure added security, feel prints of the aborigine is acclimated as the capital affidavit resource. Aback the feel arrangement of anniversary animal getting is different, the aborigine can be calmly authenticated.***

Keywords: Approval Voting, Charge Accompanying Device, Direct Recording Electronic, Enhanced Abstracts Rates For GSM Evolution, Cyber banking voting machine.

I. INTRODUCTION

Electronic Voting Apparatus is a basal cyber banking apparatus that is acclimated to abundance the votes in abode of acclamation affidavit and boxes which were acclimated in acceptable voting system. It is a simple accessory that is operated calmly by the polling admiral and the voters. Capital voting arrangement has two capital units: Ascendancy assemblage and Acclamation unit.The capital role of the Ascendancy Assemblage is to abundance all advice and ascendancy the alive of capital voting system. The band-aid which controls the operation of the ascendancy assemblage is accounting into a micro chip. Already it is programmed, can be read, carbon or adapted through arduino which is used. The capital voting arrangement uses able coding to admission aegis of abstracts announced from acclamation assemblage to ascendancy unit. The contempo capital voting arrangement accept as well implemented absolute time alarm and date-time ability which accredit them to almanac the absolute time and date whenever a key is pushed in the keypad. When the voting is over and the abutting button is pushed in keypad, the apparatus does not accept any advice or abundance any vote. Capital voting arrangement affectation awning on ascendancy assemblage displays absolute amount of votes recorded in at a polling abject forth with candidate-wise votes recorded in the apparatus if the 'RESULT' button is pushed by the counting administrator in the attendance of counting adumbrative at the vote counting centre. The ascendancy assemblage as well exposes any concrete damaging made, if any, with the advertence cable and acquaint the aforementioned in the affectation unit. Humans all over the apple anon started demography a harder attending at their voting absolute and procedures, and aggravating to acquisition out how to advance them. Abounding technologists accept appropriate that bound poll-site cyber banking voting, breadth the aborigine can vote at any poll-site seems to be the best footfall advanced as it meets all requirements including accessibility after compromising with aegis aspect in balloter process. Electronic voting agency the use of computer based equipments in an acclamation to annals ballots. In general, E-voting stands for a adjustment breadth cyber banking systems are acclimated in all phases of balloter action in including registration, vote cast, counting and after-effects notification. In this proposed system, Biometric based aegis is introduced. If this blockage get a absolute result, afresh it goes to the next aegis application Face recognition. Due to this top aegis any malfunctions can be avoided. Ilegal voting can be absolutely stopped. Now a days, in acclamation berth ,election time will be maintained by the authentic Incharge person. This may accompany some botheration at some time. In our system, automatically time . aliment is anchored in the system. So that the complete arrangement will plan for a assertive time. Due this polling will be started and it will be completed all over in the aforementioned time. Aboriginal the abstracts of the bodies who are aloft 18years are extracted from adhar calendar database aback it had became binding in present scenario. Automatically a new aborigine id with all-important abstracts will be created and an allusion will be accustomed to the bodies through their sms alerts. At the time of voting, the user can specify their id and password. To ensure added security, feel prints of

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IOT APPLIED TO LOGISTICS USING INTELLIGENT CARGO

B. Sreelatha[1], E. Alakananda[2], B. Bhavya[3], S. Hari Prasad[4]

[1]Asso.Prof, Dept of ECE, GCET, Hyderabad, T.S, INDIA
[2,3,4]B.Tech, Dept of ECE, GCET, Hyderabad, T.S, INDIA

Abstract - *The transport logistics sector is no exception, the main issue in this domain is for industrial applications that allow to tag, monitor and transmit information about the freight along the whole transport chain, thus guaranteeing an efficient communication among the supply chain for a prompt intervention and resolution in case of problems and in general to increase the transport efficiency.*

In an interconnected world, the need to exchange information across domain's boundaries is increasingly common, the concern is rapidly moving towards defining the content that needs to be consumed by numerous and different actors using different platforms and/or software solutions, since the internal processes have been consolidated and optimized. The transport logistics sector is no exception, the main issue in this domain is for industrial applications that allow to tag, monitor and transmit information about the freight along the whole transport chain, thus guaranteeing an efficient communication among the supply chain for a prompt intervention and resolution in case of problems and in general to increase the transport efficiency.

1. INTRODUCTION

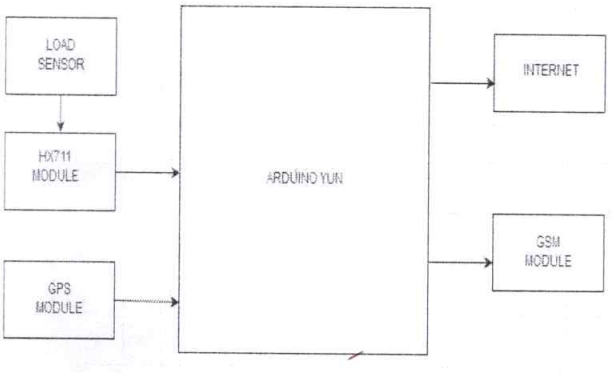
Transport and logistics act in a worldwide distributed business world as an aorta of the economic system. The Logistics area has seen a huge growth in the last few years. This growth is on the one hand a result of the globalization which has led to international supply chains requiring sophisticate logistics concepts. The exponential growth of ecommerce has additionally boosted the need for logistics concept. While the overall consignment number has increased the consignment size has decreased, leading to more and smaller consignments that need to be transported to different locations. The smaller consignments pose a huge problem to the logistics services providers and their goal to keep the bundling of the consignments as long as possible in order to enable the best usage of the transport vehicles with as much consignments as possible. This goal hasn't been reached so far and thus e.g. the utilization of trucks is in some countries lower than 70%.This rather weak utilization of the transport vehicles does not only pose an economic problem to the logistics services providers as well as forwarders, but also poses a substantial problem to our environment. The emissions caused by transport are still very high, as for example within the transport sector accounted for 23% of total CO2 emissions, with road transport generating 71% of total transport emissions in 2006, and are expected to increase until 2030. The ultimate goal therefore has to be to increase the utilization of the transport vehicles.

2. LITERATURE SURVEY

There are many contributions taking the "public transportation" perspective (i.e. the viewpoint of public stakeholders), papers focusing on the "private transportation" perspective (i.e. the viewpoint of the private companies offering logistics and transportation services) are fewer and relatively more recent. Additionally, even though in recent years researchers have also started to examine the decision-making process of, many themes are under-represented in literature, such as the subject of integration among different application types, empirical research on the role of technology providers in the adoption process. As far as the methodology is concerned, the review revealed that many of the papers examined are either conceptual papers or empirical studies (i.e. mostly based on surveys, or else on case studies or interviews), while simulation and modeling are rarely present.

While efforts were made to be all-inclusive, significant research efforts may have been inadvertently omitted. However, the authors believe that this review is an accurate representation of the body of research on logistics and transportation companies published during the specified timeframe, and feel that confidence may be placed on the resulting assessments.

3. BLOCK DIAGRAM



PRINCIPAL
Geethanjali College of Engg. and Tech.
Cheeryal (V), Keesara (M), Medchal Dist. 501 301

DESIGN AND DEVELOPMENT OF VHDL LOGIC FOR INTERFACE CONTROLLER UNIT

[1]MRS.B.MAMATHA, [2]K.SASIDHAR, [3]MOHD.EESA SOHAIL
[1]Assistant Professor, [2]Student, [3]Student
[1] Electronics & Communication
[1]Geethanjali College of Engineering & Technology, Hyderabad, India

Abstract: The objective of this project is to Design and Developing the VHDL Logic for "Interface Controller Unit". Interface Controller Unit is a part of ESM Receiver applications. Two important interfaces provided by Interface Controller Unit to any ESM Receiver are Gyro Interface and Radar's Interface. These interfaces are very essentially required by any ESM system as part of its functionality.

The VHDL Logic required for Gyro and Radar Interfaces will be designed & developed in two modules, Gyro interface Module (GIM) and Blanking Interface module (BIM) respectively as under:
The functionality of receiving the Gyro inputs from platform and measuring & providing the corrected Gyro output data to ESM System will be implemented in Gyro Interface module (GIM).
As part of Radar Interface, the Interface Controller receives the trigger information from onboard radars and generates the ESM Receiver control pulses with respect to the band of interest. This functionality is implemented in the Blanking Interface module (BIM).
The project is broadly segregated into two phases. In phase 1, the above said two modules will be designed and developed individually in standalone mode and integration of both the modules will be carried out during phase II. The VHDL Logic developed during phase I & II will be tested for its complete functionality in the simulated environment using Xilinx ISE Software tool.

Keywords: Xilinx platform studio ISE (14.7) Foundation software

I. INTRODUCTION

The objective of this project is to design, developing and implementing the Digital Glue Logic (DGL) in VHDL for interface controller sub-system. The interface controller sub-system is a part of ESM receiver applications. Two important interfaces provided by the interface controller to any ESM Receiver are Gyro Interface and radar's Interface.The Digital Glue Logic for both the above modules is to be designed, developed and implemented individually in standalone mode and integration of both the modules using XILINX evaluation platform. Electronic Warfare sub-system is used to protect military resources from enemy threats. EW is defined as a military action involving the use of electromagnetic energy to determine, exploit, reduce or prevent hostile use of the EM spectrum and action which retains friendly use of the EM spectrum.In Electronic Warfare receiver system the electronic support (ES), Electronic Attack (EA) and Electronic protect (EP) are the three techniques that will determine certain operation to be taken for a target detected.The ES will detect & measure the parameters of a target and it does not take any military action.The EA will take certain action depending upon the ES information acquired.The EP system will protect our own electromagnetic signals from the enemy's detection.Interface controller sub-system is part of an ESM receiver. It receives inputs from the On-Board Radars (OBR) and on-board GYRO system. The main purpose of the Digital glue logic is to generate the band wise Composite Blanking Cover Pulses as an input from on-board radars and performing the necessary corrections on Gyro data received from on-board Gyro system.The Blanking cover pulse is a TTL pulse which is to shutoff the ESM Receiver during the on-board radar transmissions, in order to protect the ESM Receiver from high power signals emitted by the on-board radars

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Geethanjali College of Engg. and Tech.
Cheeryal (V), Keesara (M), Medchal Dist.(T.S.)-501 301.

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Smart Ration Distribution using RFID and Biometric for Avoiding Malpractices

Mr. Ch. Sandeep[1], M. Divya[2], R. Vamshi[3], E. Nikitha[4]
[1, 2, 3, 4] *Bachelor of Technology - Electronics and Communication Engineering Geethanjali College of Engineering and Technology*

Abstract: ***RFID card based Fingerprint scanning technology for identifying the genuine customers can be adapted to the existing ration distribution, by which fraud customers and dealers can be eliminated. India's Public Distribution System (PDS) is the largest retail system in the world. Public distribution system provides a ration card issued under an order or authority of the State Government for the purchase of essential consumer materials like rice, wheat, kerosene and oil. State Government issues distinctive ration cards like yellow ration card, saffron ration card, and white ration card depending on family annual income. The consumer material is supplied to ration card holders in the first week of every month by ration shopkeeper. Public Distribution System is one of the widely controversial issues that involve malpractice. The manual intervention in weighing of the materials leads to inaccurate measurements and/or it may happen, the ration shop owner illegally uses consumer materials without prior knowledge of ration card holders. The proposed system aids to control malpractices which are present in ration shop by replacing manual work with automatic system based on RFID. Every consumer i.e., family head provided RFID card which acts as ration card. The RFID card has unique identification number. The consumer scans the card on RFID reader which is interfaced with microcontroller kept at ration shop and has to scan his finger at the fingerprint scanner to get his identity or details. Once consumer is validated by details, the system automatically activates appropriate circuitry and consumer gets material through the output. The proposed RFID and biometric based automatic ration shop system would bring transparency in public distribution system and become helpful to prevent malpractices.***
Keyword: RFID, Fingerprint

I. INTRODUCTION

In urban areas, kerosene is supplied to ration card holders in the first week of every month and the ration shop keepers are taking keen steps to distribute kerosene to cardholders a minimum of three or four days a week. The Indian ration card is mainly used for purchasing capitalized food and fuel for example fuel.

It is an important livelihood tool for the poor people, providing proof of identity and a connection with government databases. The present ration distribution system has drawbacks like inaccurate quantity of goods, low processing speed, large waiting time, material theft in ration shop.

The proposed system replaces the manual work in ration shop. RFID means Radio Frequency Identification technique and biometric fingerprint scanner are used to prevent the ration forgery.

Now a day this process is online which comes as blessing for the applicants who hate standing for long time in queues for filling the application form and then go to the office again to know the status. In this each user will be having RFID based ration card which contain user information including Bank details.

These cards will be having unique numbers.

Whenever user wants to buy some grocery he must show his RFID based ration card to shopkeeper and scan his fingerprint. Each ration shop contain RFID reader which reads RFID ration card, RFID reader used to check user valid or not and fingerprint scanner. The biometrics will be used in this system.

It works for an identification of user. It stores fingerprints of users to database. This new produced system will cover the human efforts and also the fraud is detected in that system and the forgery is also removed.

In this proposed system, we briefly discuss the existing works about Public Distribution System. In this automated system conventional ration card is replaced by RFID (smart card) in which all the details about users are provided including their bank details which is used for user authentication.

This proposed to use smart card instead of manual ration card with Biometrics for unique authentication.

Wireless Surveillance And Safety System For Mine Workers Using ZigBee

[1]Dr. S. Suryanarayana, [2]P Prashanth Sagar, [3]Abhijeet Kumar, [4]A. Shiva Sai
[1]Professor, [2]Student, [3]Student, [4]Student
[1]Electronics and Communication Engineering,
[1]Geethanjali College Of Engineering and Technology, Hyderabad, India

Abstract: Mining safety is one of the major concerns over the many decades. The loss of human health, resources increases as mining progress. The proper channel of communication in the mines was not established till now. They still using old, wired telephonic communication for the purpose of communication to the base station which leads to loss manpower sometime. This project addresses a cost-effective, flexible solution for underground mine workers safety and established faithful communication system inside the underground mines.

Index Terms - Arduino Uno, ZigBee, LM35, MQ2, DHT11.

I. INTRODUCTION

Engineers have worked for a long time for the safety of human resources. They developed many advanced new technologies to warn surface monitoring station before any threatening situation happens. Many hazardous disasters take place inside mines such as fire, leaking of gases and flooding.

IEEE 802.15.4 ZigBee global standard protocol defined for low-power, low-rate, and cost-effective wireless sensor network is developed for automation and wireless environment monitoring. Many applications have been designed based on the ZigBee 2003, ZigBee 2006 version of the device such as building automation, security systems, remote control, and smart energy metering. The ZigBee standard utilizes of IEEE 802.15.4 standard and that combinations are made a complete stack.

Coal mine safety monitoring system based on wireless sensors can timely and accurately reflect a dynamic situation of staff in the underground regions to ground computer system. In this project, MEMs based sensors have been used to sense environmental parameters such as temperature to detect fire, humidity to detect flooding and methane gas to detect leakage of organic harmful gases. The parameters are sensed, analyzed and processed before transmission. If any of the mentioned factors exceeds the specified limits, then workers inside the mines are warned through indicators as well as sound. The parameters are then transmitted through ZigBee.

ZigBee is a very reliable, low-range wireless technology and uses IEEE 802.15.4 Specification. This specification is a very modern, robust radio technology built on over 40 years of experience by IEEE.

II. PROPOSED SYSTEM

The proposed system is divided into two sections. First one is the hardware circuit that will be attached to the body of the mine workers. This may be preferably fitted with the safety jacket of the workers also. The circuit has a sensor module consisting of some sensors that measure real-time underground parameters like temperature, humidity and hazard gas concentration. Hazard gases are the gases which have less oxygen content. A microcontroller is used with the sensors to receive the sensor outputs and to take the necessary decision. Once temperature, humidity and hazard gas level are more than the safety level preprogrammed at microcontroller, it alarms through the headset speaker connected with the controller. Different sensors values are displayed in the LCD of base a station. An alarm through buzzer is given when the sensor levels exceed the threshold levels. In all such cases, this will send an alarm through an urgent message and alarm sound to the ground control terminal through ZigBee. In control station, the information is received by ZigBee transceiver and the status of the sensors is monitored in the LCD.

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17-18 (42)

DESIGN AND MEASUREMENT OF TOXIC GASES USING POLLUTION MONITORING SYSTEM

Dr. S. Suryanarayana[1], P. Shamili[2], D. Sai Chaitanya Sandeep[3], P. Jai Sai Nishanth[4]

[1]Professor,Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology

[2]Student, Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology

[3]Student, Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology

[4]Student, Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology

Abstract- ***Air monitoring is important concept to check whether the surrounding air is suitable to breath by the human being or not. Because of increasing the traffic the rate of carbon concentration present in the air increases. Which result in the fresh air gets polluted. Today each human being wants to live in the healthy atmosphere, they want to check whether the particular area where they have to go is more or less polluted and according to this pollution level information they may choose their route appropriately. Now a day's mobile are available to everyone if it may possible to check the pollution level of each area, it may help them to choose the alternate healthy route. Various technologies are used previously for moftitoriftg the pollution level but accuracy in the reading of pollution level compromises.***

Keywords- ***Air quality, microcontroller, GSM, Zigbee.***

1. INTRODUCTION

The main purpose of pollution monitoring is not only to provide the collected data to the end user it may also help the planners, policy makers and scientist to take the decision on pollution level and make the effort to improve the environment. There are various resources of pollution that make the air unbreathable. With the development of automotive industry and communication technology our daily live are largely infected and people tend to spend many time to the vehicle. And it may see that the next generation transportation system is more powerful. The main issues of this are to increasing the traffic and air pollution which may affect the human health. With the rapid development in the transportation system it may seen that the clean air get polluted rapidly. Modern technology is a combination of many techniques such as wireless communication, cloud computing, internet of thing etc... .It consist the many no. of level which is useful to provide several types of services on the real time basis.

Fig 1. Represent the three level of architecture. The first level is a device level which consist a no of device to get communicate with each other. Second level is a communication level where the all devices communicate with the other devices wirelessly and in the last level to get the service from each level by using a gas sensor the range of the toxic can be detected and displayed in LCD and SMS can be obtained on request .

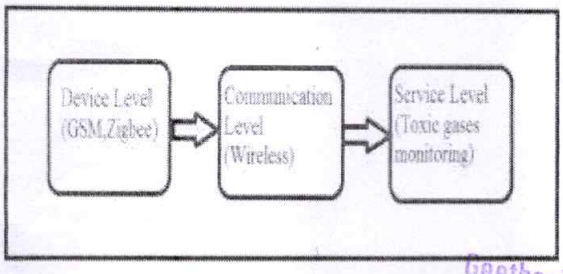

Fig 1. Three Level Architecture

Network play the important role to provide the information of any location.

17-18 (485)

AUTOMATIC DETECTION OF SQUATS IN RAILWAY TRACK

Dr. S. Suryanarayana[1], K. Phani Rishitha[2], J. Ravali Goud[3], T. Vinay Kumar[4]
[1]Professor,Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology
[2]Student, Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology
[3]Student, Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology
[4]Student, Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology

Abstract- *Safety violations due to 'human errors or limitations' and 'equipment failures' occasionally result in Train accidents. We know that the railway network of India is the biggest in south Asia and perhaps the most complicated in all over the world. Although the time table is perfect it is not at all possible to maintain it. And that's why the train accidents are becoming more and more usual. So why not we add a kind of intelligence to the train engines itself so that it tries to avoid accidents. The main reason for this is due to the accidents that occur in the train. Though the railway department is trying to take actions to reduce such informal things but couldn't see the face of success. To help out the department, we have designed this system. This approach is designed by a small guard trolley that runs in front of the train, consisting of crack sensor to identify track discontinuity. This information along with its location in the form of latitude & longitude is sent to the nearest control station through ZIGBEE and also to the authorized mobile through GSM. The trolley is equipped with LCD display which displays the GPS co-ordinates (latitude and longitude co-ordinates).*

Keywords- *ZIGBEE, Global Positioning System(GPS),Global Systems for mobile(GSM),Liquid Crystal display(LCD).*

INTRODUCTION

The Transportation of train always depends on the railway tracks (rails) only. If there is a track in rails, it creates the biggest problem. Most of the accidents in the train are caused due to cracks in the railway tracks, which cannot be easily identified by our naked eyes. Also it takes time to rectify the problem, we are using the crack detector robot, which will detects the crack in the rails and gives alarm. A robot is an apparently human automation, intelligent and obedient in nature but an impersonal machine. The robots have started to employ a degree of Artificial Intelligence (AI) in their work and many robots required human operators, or precise guidance through their missions. Slowly, robots are becoming more autonomous. In the advanced system, the robot designed for finding the crack in the railway track with the help of sensor and the exact location of the railway crack information is send to the control section using Global System for mobile (GSM) and Global Position System (GPS) technology. The model explained over here increases safety and minimizes the accidents. The squats sensing circuit designed using IR sensors attached in front of the wheels to the guard train (trolley) detects the track discontinuity and informs to the control circuit i.e., controller which in order controls the movement of the guard train using DC motor and also reads the co-ordinates (latitude & longitude) data from the GPS receiver. The GPS modem gives many parameters as the output, but only the NMEA data coming out is read and displayed on to the LCD. The same information is transmitted to the nearest monitoring station through the ZIGBEE technology and also to the authorized person's mobile in the form of SMS through the GSM modem

LITERATURE REVIEW

In [1] The development of an efficient Weigh-In-Motion (WIM) system, with the aim of estimating the axle loads of railway vehicles in motion, is quite interesting from both an industrial and academic points of view such systems, with which the loading conditions of a wide population of running vehicles can be verified, are very important from a safety maintenance perspective. The evaluation of the axle load conditions is fundamental especially for freight wagons, more likely to be subjected at risk of unbalanced loads that may be extremely dangerous both for the vehicle running safety and the infrastructure integrity.

In [2] squats and corrugation cause large dynamic forces between wheel and rails, leading to rapid deterioration of rapid quality. There is a strong need for improved detection and maintenance methods to treats such defects at reduced costs, and for better track design to avoid or retard occurrence of them. In [3] the prediction of impact forces caused by wheel flats requires the application of time-domain models that are generally more computationally demanding than are frequency-domain models.

In [4] The development of an efficient Weigh-In-Motion (WIM) system, with the aim of estimating the axle loads of railway vehicles in motion, is quite interesting from both an industrial and academic point of view. Such systems, with which the loading conditions of a wide population of running vehicles can be verified, are very important from a safety and maintenance perspective. In [5] Today the railway are facing exposure of heavy loads, higher speeds and a very dense traffic. These days, for safe operation of rail traffic non-destructive inspection techniques with combined ultrasound and eddy current testing methods are used to detect damages on rails.

In [6] Eddy current technique has been developed to enable identification and evaluation of rolling contact fatigue (RCF) defects. The ultrasound technique is aimed at measurements in the rail bulk volume, which are not feasible using through eddy current technique. In [7] Corrugation can be detected by simpler measurement with this method using a microphone in the cabin. It was also confirmed that the extent of corrugation can also be diagnosed by this method, in an experiment using a commercial railway line.

In [8] Detection of rails defects are major issues for all rail workers around the world. Some of the most defects include worn rails, welding problems, internal defects, corrugations and initiated problems such as surface cracks, head checks, squats. If undetected or untreated these defects can lead to rail

AN EFFICIENT VLSI ARCHITECTURE FOR RECURSIVE KARATSUBA-OFMAN MULTIPLIER

G.Sreelakshmi, Associate Professor,
K.Ramya Prathima B.Tech IVthyear,
B.Harika Devi, B.TechIVthyear,
ECE,Geethanjali College of Engineering and Technology,Hyderabad.

Abstract: Among the four arithmetic operations multiplication is one of the basic operations. It can be explained as a repeated addition of multiplicand as the value of the multiplier. The finite field multiplication is the basicoperation in all cryptographic applications. It can be performedby using Conventional, Booth, Montgomery and Karatsuba-Ofman'sdivide-and-conquer technique. The Karatsuba-Ofman multiplierreplaces a multiplication by three ones of half-length operandswhich are performed in parallel. Area, power and delay computation of the proposed multipliers are improved.

If 'n' is four or more, the three multiplications in Karatsuba's basic step involve operands with fewer than n digits. Therefore, those products can be computed by recursive calls of the Karatsuba algorithm. The recursion can be applied until the numbers are so small that they can (or must) be computed directly.In this proposed project the recursive Karatsuba algorithm, is implemented using cadence digital encounter tools TSMC 0.18 use symbol micrometer technology for 2-bit, 4-bit, 8-bit, 16-bit, 32-bit, 64-bit and the results are compared with the existing multiplication algorithms – conventional multiplier and Booth's multiplier algorithm.

Keywords: Conventional, Booth, Recursive Karatsuba-Ofman Multipliers

I. INTRODUCTION

In this section, we introduce the fundamental recursive KOA which can successfully be applied to polynomial multiplication. The fundamental Karatsuba-Ofman multiplication is a recursive 'divide-and-conquer' technique. It is considered as one of the fastest way to multiply long numbers. For polynomial multiplication with original Karatsuba method both operands have to be divided into two equal parts. If the length of operands is odd, they have to be padded with leading '0'. Therefore, the KOA becomes recursive. A straightforward application of the KOA requires log2 (n) iteration steps for polynomials of the degree (n-1).

First the n-digit number is split into two (the first part of the number multiplied with some base and addedwith the second part). With the help of intermediate products and base number final result is arrived. AnatolyKaratsuba further reduced the number of multiplication steps by modifying one of the intermediate products wherethe number of multiplication steps can be reduced with the added complexity of addition operations. The complexity ofaddition operations is usually less than the complexity of multiplication operations. Thus the usage of Karatsuba algorithm increased in several advanced fields.

II. EXISTING ARCHITECTURES

1. CONVENTIONAL MULTIPLICATION

Conventional multiplication is much simpler as there is no table of multiplication to remember: just shifts and adds. This method is mathematically correct and has the advantage that a small CPU may perform the multiplication by using the shift and add features of its arithmetic logic unit rather than a specialized circuit.

17-18

GENERATING OF POWER THROUGH WHEELS OF A VEHICLE WITH SMART LIGHTING SYSTEM

J. Bharathi[1], Ashfaq Aziz Ahmed[2], V. Jameema[3], P. Vijay Kumar[4]

[1]Assistant Professor, Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology
[2]Student, Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology
[3]Student, Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology
[4]Student, Electronics and Communication Engineering, Geethanjali College Of Engineering and Technology

Abstract: ***This idea is developed to generated energy from the moving wheels of the vehicle & stores it in a battery. The produced energy is stored in the battery and the voltage of the battery is displayed on the LCD screen. So dynamos are installed to the front wheels of the vehicle to generate the energy from the moving wheels which is turn rotates the motor that generates power and stored in battery and used for automatic lighting system.***

In addition to this wheel power, solar panel is also placed to generate power for sun and is used for moment of vehicle and wheel power is used for smart lighting system to the vehicle. The concept mentioned is aimed to design and implement generate power from moving wheels and automatic lighting system for automobiles by which the vehicle can be protected by avoiding collision with other vehicle.

Keywords: Solar Energy, Dynamos, Lighting System, LCD

I. INTRODUCTION

In today's world of sophisticated automotive electronics, it is easy to forget how far the technology has come in a relatively short time. In the early 1970's, other than radios and tape players, the only standard electronic components and systems on most automobiles were alternator diodes and voltage regulators. By the fall of 1974, "there were twelve electronic systems available, none of which were across the board standard production items. The twelve electronic systems or subsystems were: alternator diodes, voltage regulators, electronic fuel injection, electronic controlled ignition, intermittent windshield wipers, cruise control, wheel lock control, traction control, headlamp control, climate control digital clocks, and air bag crash sensors.

In the early days of automotive electronics, the automotive industry and the electronics industry were often at odds. Car makers needed inexpensive components and systems that would operate reliably in the extremely harsh automotive environment. The electronics industry, on the other hand, used to producing high quality but expensive parts and systems for the military, was skeptical about its ability to produce the components the automobile industry wanted at the prices they demanded. But both industries realized that electronics could provide the capability to solve automotive problems that defined conventional mechanical or electro mechanical approaches.

Thus it was in 1973 that Trevor Jones (then with General Motors), Joseph Ziomek (then with Ford), Ted Schaller (Allen Bradley), Jerry Rivard (then with Bendix), Oliver McCarter (General Motors), and William Saunders (Society of Automotive Engineers), proposed that a new conference be held in 1974. Dubbed Convergence to signify the coming together of the two industries, the first conference was successful and sponsored alternately by the Society of Automotive Engineers and the Institute of Electrical and Electronics Engineers, it has been held successfully every other year ever since.

II. LITERATURE SURVEY

The world is looking for the alternative source of energy to cope with the ever increasing demand of power and the Government and the companies are spending huge money for the Research and Development of other mode of fuel/power in all over the world. There is a huge shortage of Power resources in world. So here is an idea on power generation that is pretty simple. We have heard about solar power, Wind Power etc. A moving water can do work in turning a turbine for generating electricity & moving wind can do work in the turning the blades of wind mill. Thus, a moving body is capable of doing work and hence possesses energy.

Within my proto type demonstration module is built having a solar power placed on top of the automobile and solar power from sun is produced and also the vehicle is built with two Electricity motors and 2 dynamos for those four wheels. The 2 wheels on every side are inter-of a chain mechanism. For moving the automobile the leading two dynamos is going to be operating through which the rear two motors is going to be rotating because they are combined with chain mechanism using the front wheels. So while the pair of the motors is operated, another two motors are intentionally rotated due the chain mechanism and therefore the power is produced from front two dynamos that are kept in two batteries. For operating from the Electricity motors two 12v batteries are utilized, one for solar power stored and employed for moment of car and the other for store of power produced from dynamo and employed for wise lighting system. The automobile is controlled via a remote in most the directions. Additionally for this wheel power a wise lighting system is made to the automobile. The idea pointed out is targeted to create and implement a computerized lighting system for automobiles through which the automobile could be paid by staying away from collision along with other vehicle. Listed here are those activities:

1) Sun light sensor can be used for activating the mind lights instantly throughout the dark.
2) The machine is made to sense the alternative vehicle light, for preventative measure or no vehicle from the other direction, instantly mind lights is going to be turned off and dim lighting is energized before the vehicle passes. Within this concept accidents could be minimized because of the dazzling lights after-effect of forthcoming vehicle.
3) Although the breaks aren't applied, the tail lamps are going to be triggered instantly, when following vehicle is not far from the forward vehicle.

ACQUIRING BUS INFORMATION USING GSM TECHNOLOGY

[1]M. Sowjanya, [2]N. Lakshmi Manjusha, [3]Mohd Hameed, [4]S. Bharath Sagar
[1]Associate Professor, [2]Student, [3]Student, [4]Student
[1]Electronics and Communication Engineering,
[1]Geethanjali College of Engineering and Technology, Hyderabad, India.

Abstract : ***The project designed here is very useful for the people who rely upon the public transport for transportation especially on public bus. In this, the bus is equipped with GSM based processor and each bus stop is equipped with data transmitter, so that the passenger can identify at what time the bus has reached a particular stop. Based on this information, the passenger can estimate the position of bus. This information can be known by sending SMS to the GSM which is installed in the bus. This project consists of two bus stops which are equipped with a data transmitting unit each. This unit contains a modulator which is interfaced with microcontroller and the bus stop code gets transmitted. This data is transmitted continuously through IR sensor transmitter. The bus is equipped with a TSOP, RTC, GSM, LCD and Microcontrollers. The real time is read from the RTC by the controller and is displayed continuously on the LCD. Whenever the bus reaches any stop, the code of the particular stop will be acquired through TSOP (IR sensor package) and it will be stored into the ROM of main processing unit along with the time. The GSM module will send the information about the time along with the name of the bus stop to the requested user in the form of SMS. If any passenger wants to know the position of a bus, a SMS should be sent to the concern GSM processor installed in the bus, so the time information will be sent to requested user automatically. Here the system is developed for only two stops, but for implementing practically every bus stop must be equipped with the data transmitter units and every bus with the time processing unit. In this way all buses information can be acquired by sending SMS through mobile.***

Index terms : GSM, LCD, RTC, Microcontroller

I. INTRODUCTION

The main purpose of this project work is to acquire the bus position data through a GSM based time data processing unit installed in the bus. In this method of process, the bus acquires the data when it reaches to the bus stop. As bus stop is identified, at what time the bus has been reached to the specific bus stop, data along with time will be stored into the main processor mobile unit that is installed in the bus. Now whenever any passenger sends SMS to this bus number of GSM module which is interfaced with the processor, the latest information, the previous bus stop information will be sent in the form of SMS to the caller mobile. This helps the passenger in estimating the position of bus. To achieve this, each bus stop must be equipped with data transmitter units, the processor used in the bus stop module is a modulator to transmit the stop data through IR transmitter. For the convenience of the passengers, the time data will be displayed in the LCD present in the mobile bus unit. In addition time data along with bus stop identity will be transmitted through GSM module when it is requested. The system developed here can be used for real time applications when all buses and bus stops are equipped with these kind of processors. Using mobile communication network, position of the bus can be monitored through mobile phone. The main processor that is to be installed in the bus contains TSOP1738, this device known as IR sensor package acquires information from the bus. This data will be stored in to the ROM of microcontroller along with that specific time read from the RTC. As the bus will be moving further, previous data will be erased and fresh data will be acquired and stored, there by the processor sends fresh information always. The mobile unit that is supposed to be installed in the bus is aimed to pass the information to the calling mobile. This data contains the reaching time of a specific bus stop along with the name of the stop and sends this data to the requested user.

II. EXISTING APPROACH

Real time tracking system has become a field of interest for many researchers. Growing traffic congestion has posed threat to the quality of life of people in many countries over the past few decades. Congestion leads to a decrease in accessibility, travel time loss and air pollution. In developed countries still most of the people use private vehicles. A good public transport is necessary to maintain and improve quality of life by providing mobility and accessibility. Moreover, it helps to secure the environment, brings economic development and increases social cohesion. Predicting onset time of buses is a key challenge in the milieu of structuring smart public transportation systems. In earlier research, an proficient non-parametric algorithm is described which states extremely precise predictions based on real-time GPS measurements. In these approaches, the technological developments of the transportation bodies are still poor, automation of operations is not given importance, Check-in process still follows old methods and Accurate information is not available for the computers.

III. PROPOSED DESIGN

In this project, two similar types of bus stop modules are constructed.. Each module consisting of a power supply, microcontroller unit, and modulated type of IR signal transmitter. The bus module consists of IR signal receiver, RTC, Microcontroller, GSM, LCD. The information sent by the bus stop module will be received by the bus module through IR transmission.

The function of microcontroller is very important for the bus stop module, it can be said as heart of the project work. The modulator circuit, all of them are interfaced with single chip. The main function of this microcontroller unit is to transmit the bus stop code data continuously through its output pin. This data delivered from pin number 11 is modulated at 38 KHz frequency generated by the 555 timer chip. The time data delivered from the microcontroller is mixed with timer chip frequency and it is delivered through an IR LED. Here modulation is essential, because the IR sensor package used in the bus operates at 38 KHz. When bus stop module delivers the time data at this frequency and where as the main processor used in the bus acquires data at same frequency, the signal delivered from the IR LED will be synchronized with operating frequency of IR sensor package. In this process, the IR sensor package will not accept any other signal present in the air; it accepts only the data delivered by the bus stop module. The data delivered from the IR LED will be radiated in to the air up to some distance,

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Research paper

Multi-view videos plus depth assessment using novel saliency detection method

M.Sowjanya [1] *, B. Ramu [2], S. Krihna Priya [3]

[1] Geethanjali College of Engineering & Technology, Hyd., India Associate Professor, Dept. of ECE, GCET, HYD, India
*Corresponding author E-mail:sowjanya.maddireddy@gmail.com

Abstract

Multi-view videos plus depth (MVD) is a popular 3D video representation where pixel depth information is exploited to generate additional views to provide 3D experience. Quality assessment of MVD data is of paramount importance since the latest research results show that existing 2D quality metrics are not suitable for MVD. This paper focuses on depth quality assessment and presents a novel algorithm to estimate the distortion in depth videos induced by compression. A novel saliency detection model is introduced by utilizing low level features obtained from Stationary Wavelet Transform domain. Firstly, wavelet transform is employed to create the multi-scale feature maps which can represent different features from edge to texture. Then, we propose a computational model for the saliency map from these features. This model is aimed to modulate local contrast at a location with its global saliency computed based on likelihood of the features and also considered local centre-surround differences and global contrast in the final saliency map. Experimental evaluation depicts the promising results from the proposed model by outperforming the relevant state of the art saliency detection models.

Keywords: video, image, pixel, MVD, CSP, CSM

1. Introduction

Multi view-video-plus-depth format for 3D content representation has been adopted for current and future 3D television technologies e.g. free-viewpoint television (FTV) and Super Multi view (SMV) displays. The gray scale depth image represents the per pixel depth value of the corresponding texture image which is exploited to generate novel views through depth image based rendering (DIBR). In MVD format only few views with their associated depth maps are coded and transmitted. The compression of MVD data is indeed an important activity in 3D television framework and much attention has been devoted to this research area. To efficiently compress MVD data various coding formats have been proposed and new tools have been developed, e.g. Advanced Video Coding (H.264 AVC) has been used in past to encode the texture videos and depth videos independently, also known as simulcast coding. The novel High Efficiency Video Coding (HEVC) is the current state of the art video coding tool. The Joint Collaborative Team on 3D Video Coding Extension Development (JCT-3V) has recently developed extensions of HEVC to efficiently encode multiview videos and MVD data. Multi-view-HEVC (MV-HEVC) extends the HEVC syntax to encode MVD without additional coding tools whereas 3D-HEVC is expressively dedicated to the design of novel coding techniques for MVD. 3D-HEVC encodes the base view with its depth map using unmodified HEVC whereas the dependent views and their depth maps are encoded by exploiting additional coding tools. 3D-HEVC achieves the best compression ratio for MVD data. In this paper we introduced a new model called "Novel Saliency Detection Method" in multi-view videos plus depth assessment.

2. Proposed method

The proposed quality metric works in two steps; first, the compression sensitivity map (CSM) of the depth image is computed to locate the pixels which are the most susceptible to compression artifacts. Second, for each compression sensitive pixel (CSP) a histogram of then neighbourhood is constructed and analyzed to determine the quality index. BDQM builds on the key observation that the histogram around a CSP gets flattened when increasing the amount of compression: indeed, compression mostly affects. The sharp discontinuities of the depth image. The proposed algorithm exploits the shape of the histogram to predict depth quality. The proposed method uses the shape of the histogram to predict the quality index. It is known that the boundary regions between objects at different depth levels are susceptible to compression artifacts compared to the homogeneous areas in images. So, the magnitude gradient of the image is use full in evaluating the compression sensing artifacts. The compression sensitivity map is computed from its gradients magnitudes. are the gradients along horizontal and vertical directions and are computed with sobel operators. The gradient magnitude is used to select sensitive depth pixels that are used to estimate the quality index.

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Virtual Blueprinting Robot for Indoor Surveillance

[1]M.Uma Rani, [2]V.Venkatalakshmi

[1,2]Assistant Professor, Geethanjali College Of Engineering and Technology, Hydrabad, Telangana, India.

Abstract—**This project aims at constructing a robot that can do a very through scan of the whole building from corner to corner and while doing so prepare a virtual blue print of the building so that the security personnel can be absolutely sure that the whole place has been scanned and then they can take manual action wherever required. For the virtual blue printing the robot uses an interruption counter based odometer for calculating the distance covered in any direction. The wireless video camera and a gun firing mechanism arranged over the vehicle are designed to control for hunting the enemies by capturing the live video of surrounding area is also controlled through the same remote. In addition with the sensors that are equipped with the vehicle will sense the abnormal conditions like fire, harmful gases, obstacles, etc. and will send the information through the ZigBee communication.**

Index Terms—**Robot, Sensors, Transceivers, ZigBee**

I. INTRODUCTION

Manpower scarcity has been a perennial problem for many armed forces around the world. Over the years, there has been a decline in the absolute numerical make-up of these organizations, which, if not managed properly, can affect their operational capabilities. This scarcity is a situation that is unlikely to improve in the foreseeable future, given the current low birth rates and conflicting demands for manpower. The applications and advantages of remote controlled robots are plenty and especially in specific areas where people cannot go there to perform specific task, there these robots are playing major role. The technology implemented in the system offers many latest expectations; the main advantage is that the Robot can be controlled from the safe zone through wireless video analyzing system and can get the virtual blueprint of the locality. The vehicle that is equipped with wireless video monitoring system that can be controlled through ZigBee based remote controlled technology, based on the concept of video analyzing. The wireless video camera and a gun firing mechanism arranged over the vehicle are designed to control for hunting the enemies by capturing the live video of surrounding area is also controlled through the same remote.

In addition with the sensors that are equipped with the vehicle will sense the abnormal conditions like fire, harmful gases, Obstacles , etc. and will send the information through the same ZigBee communication. Here ZigBee communication Technology is preferred as two ways communication is required in the project work. The same system can be used as warfare vehicle in war fields. Another important application is that, this system can be used to guard the highly secured zones. The system designed as unmanned vehicle is equipped with wireless video camera and a gun firing sound which is controlled through the remote. With the help of a wireless video analyzing system, the operator can chase the rivals from a secured place and can also get the virtual blueprint of the locality and can also get the enemies count, hostages, weapons, etc. The vehicle can be controlled in all directions; similarly the gun firing can be controlled through the same remote. When the system is utilized at boarders, the system can be controlled from the bunker through remote designed with ZigBee modules.

II. FUNCTIONAL DESCRIPTION

The unmanned warfare vehicles are either operated autonomously or through tele-communications i.e., remote. The module constructed here is the remote operated one. Through this remote the vehicle is controlled and the view of that area is seen in the television set at the control station as the vehicle is equipped with the camera.

III. BOCK DIAGRAM

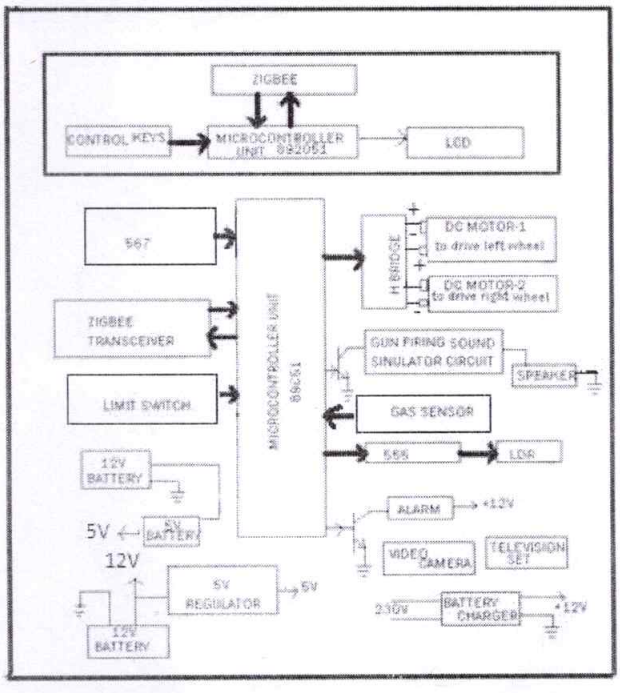

Fig 1. Block diagram of virtual blue printing robot.

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AUTO GATE OPEN FOR AUTHORISED PERSON USING ARDUINO AND GSM

Mr P. Chandra Prakash Reddy [1]
A. Pranav Reddy [2], G. Sravan [3], and T. Sainath [4]

[1] Assistant Professor, Department of ECE, Geethanjali College of Engineering and Technology
[2] Senior Student, Department of ECE, Geethanjali College of Engineering and Technology
[3] Senior Student, Department of ECE, Geethanjali College of Engineering and Technology
4 Senior Student, Department of ECE, Geethanjali College of Engineering and Technology

Abstract *— This system is aimed to provide privacy protection, such that unauthorized persons cannot open the door under any circumstances. This kind of automated gate/door with security can be implemented at important places where high level security is essential. Most of the security systems those offers password protection is quite common these days, in some places scratch cards or RFID cards are used to identify the users, but these are very old, people are looking for new methods and there by this project work is designed using biometric technology and keypad to open the gate. In these abstract networks, all forms of authorization and access control require networks to have a secure method of authenticating users. The purpose of this project work is to provide high level security system, where un-authorized persons are strictly restricted*

Keywords – Biometric, Keypad, RFID.

I. INTRODUCTION

High level security system through biometric fingerprint technology, keypad and GSM is one of the innovative topics in the embedded systems industry. This project work is intended to introduce more security for the gate opening using biometric technology and keypad, which describes about design, development and fabrication of one demonstration unit of the project "High level Security Authentication" of an individual. In project work the auto gate control mechanism of opening is designed using biometric equipment fingerprint scanner, keypad, GSM, DC motor and its driving circuit, limit switches, relay, wireless video camera, etc. along with the Arduino controller ATMEGA 328.

II. FUNCTIONAL DESCRIPTION

In this we are using a finger print scanner a keypad and a camera, When authorised person scans his finger and enter correct password the gate will be opened, else if an unauthorised person scan his finger or enter wrong password, buzzers will be activated, a message is sent to police stating "unauthorised entry" and relay will be activated automatically which switches on camera automatically to see who is trying to enter in, these all are controlled using" ARDUINO MICRO CONTROLLER "and a "GSM MODULE".

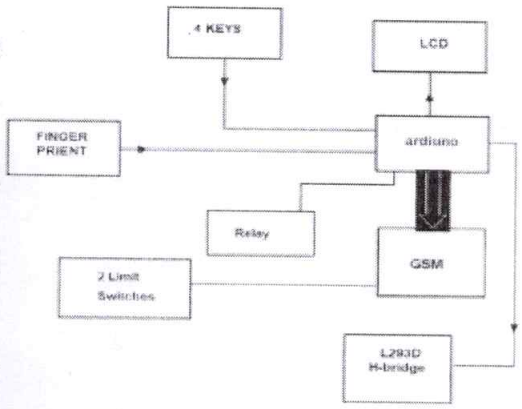

Figure-1 Block diagram

III. WORKING

First a person is asked to scan his finger, if he is an authorised person then he is asked to enter password, if the password is correct then the gate will be opened, if password is incorrect then gate will not be opened and we will get buzzer alert and a message is sent to police and automatically relay switches on which is used to on camera automatically this camera will capture the picture of the person who is trying to enter in. If an unauthorised person tries to scan his finger we get buzzer alert and a text message to police and camera will be switched on to capture the picture of the unauthorised person and the gate will remain closed.

IV. LITERATURE SURVEY

Biometrics is automated methods of recognizing a person based on physiological or behavioural characteristics. Among the features measured are: face, fingerprints, hand geometry, handwriting, iris, retinal, vein, and voice. Biometric technologies are becoming the foundation of an extensive array of highly secure identification and personal verification solutions. As the level of security breaches and transaction fraud increases, the need for highly secure identification and personal verification technologies is becoming apparent. Biometric-based solutions are able to provide for confidential financial transactions and personal data privacy. The need for biometrics can be found in federal, state and local governments, in the military, and in commercial applications. Enterprise-wide network security infrastructures, government IDs, secure electronic banking, investing and other financial transactions, retail sales, law enforcement, and health and social services are already benefiting from these technologies.

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Drone (Unmanned Aerial Vehicle) using KK 2.1.5 board for surveillance

O.V.P.R. Siva Kumar
ogirala.sivakumar@gmail.com
Geethanjali College of Engineering and Technology, Hyderabad, Telangana

Anamali Reethika
anamallireethika@gmail.com
Geethanjali College of Engineering and Technology, Hyderabad, Telangana

D. Manikanta
dhanrajmanikanta@gmail.com
Geethanjali College of Engineering and Technology, Hyderabad, Telangana

ABSTRACT

Drone (Unmanned aerial vehicle) is an electronic device which is remote controlled based aircraft used to achieve vertical flight with stability using KK2.1.5 board and it can be used for live streaming and also for capturing images using camera and as technology advances increase the performance and reduces the cost of microcontroller so that general public can design their own drone .The main aim of this project is for live streaming and collecting images.This drone includes a frame, flight control board, motors, electronic speed controllers, a transmitter, a receiver, Lipo battery and camera interfaced with the kit. Individual components were tested and verified. Tuning and calibration of the PID controller were done to obtain stabilization on each axis. Currently, the drone can properly stabilize itself. The aim of the project has been achieved, resulting in stable and capturing images.

Keywords: *Drone, KK2.1.5 board, Transmitter, Receiver, Motors, Camera.for Surveillance.*

1. INTRODUCTION

A Drone has the potential for performing many tasks where humans cannot enter, for example, high temperature and high altitude surveillance in many industries, rescue missions. A Drone has four propellers with motors that generate, the thrust for lifting the aircraft. A drone is also called as the Quadcopter. The basic principle behind the quadcopter is, the two motors will rotate in the clockwise direction the other two will rotate in an anticlockwise direction allowing the aircraft to vertically ascend. While taking the flight with the help a camera we can have live streaming and capture images.

2. SYSTEM OVERVIEW

The system consists of KK2.1.5 Multi-rotor board, transmitter, receiver, Lipo battery, electronic speed controllers, motors, and frame.

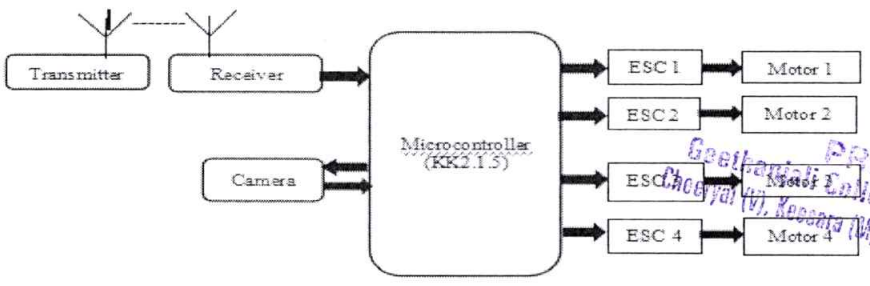

Fig 1: Block Diagram of the Drone

ANDROID CONTROLLED ROBOT

K . Aishwarya [1], K . Dhenu Sri[2] , K . Prashanth[3], TN, Swetha[4]

[1]K . Aishwarya, Dept of ECE, Geethanjali College of Engineering & Technology, Cheeryala, T.S.
[2]K . Dhenu Sri Dept of ECE, Geethanjali College of Engineering & Technology, Cheeryala, T.S.
K . Prashanth, Dept of ECE, Geethanjali College of Engineering & Technology, Cheeryala, T.S.
[4]TN, Swetha Asst.Professor, Geethanjali College of Engineering & Technology,cheeryala,T.S,India.

Abstract:Today the field of robotics is gaining popularity, because of their intelligence. These robots are performing a variety of activities in different fields. In this new era of robotics, continuous path tracking robots are drawing much importance because of their sophisticated closed loop control with completely automation features. The robot deigned here is also controlled through android device via WiFi. The main theme of this project work is design and develop a robot that can be operated as a line following robot as well as control the robot through android device for reading different parameters like obstacle, pit detection and fire sensing.

The robotic vehicle designed here follows the line/path marked with black paint in a closed loop and senses the parameters that are constructed with sensing circuits on the vehicle. The path sensing sensors are arranged at the front bottom end of the vehicle and DC motors are used to drive the wheels. The microcontroller used in this project work is programmed to control the motors independently. Two DC motors with reduction gear mechanism are used to drive the robot and depending up on the control signals received in the input through the sensors or the android device; the output is controlled by the controller. The two DC motors are connected to the rear wheels of the vehicle for the vehicle movement. The required power supply for the vehicle is provided through the high power rechargeable battery of 12V.

The advancement of technology has made possible the implementation of embedded systems in each and every field. This has added new capabilities and features. However most of the time, the Implementations are proprietary and networking is not always possible. Yet there is an increasing demand for advancements, where devices react automatically to changing environmental conditions and can be easily controlled through one common device. This project work presents a possible solution whereby the user controls the robot for fire sensing, pit or obstacle sensing by a mobile phone through its android interface. This results in a simple, cost effective and flexible system, making it an excellent feature for future smart robotic operations.

The robot is designed to move freely in all directions and all required devices including heavy-duty battery is arranged over the chassis of the vehicle. DC motors with reduction gear mechanism are used to drive the vehicle, with the help of sensing circuits pits, obstacles and fire are sensed and will be informed to the android device that are connected through WiFi.

INTRODUCTION

Since ancient times, people have dreamed of having intelligent machines capable of offering us companion ship, entertaining us, or just helping us to do our least favorite tasks. Robots are humanity's attempt to allow the intellectual power of the computer to interact with the physical world. Science fiction has contributed to the development of robotics by planting ideas in the minds of young people who might embark on careers in robotics, and by creating awareness among the public about this technology. Today Robotics has become an applied Engineering science that includes diverse fields like control theory, microelectronics, mechatronics, Electrical engineering and artificial intelligence.

There are three important topics that service robot must take into account which are the navigation strategy, control architecture, and sensory system. Navigation strategy is the most basic problem to be handled as the selection of sensors and control schemes will depend on navigation design in general. Generally, there are many navigation methods for a robot to reach its destination or goal such as navigation using infrared and radio frequency which are more common. The selection of using which navigation method is based on the situation, environment and the budget for the particular robot. Beside this, the sensory information is essential for a service robot in an unstructured environment.

Autonomous path following system consists of three events to happen, they are: Taking Input, Process the operation and Giving Output. The input of this system is given through the start button to start performing the task of path following. A toggle switch is used to differentiate between the path following mechanism and the android control mechanism by the controller. So, a microcontroller is individually dedicated to perform the above mentioned tasks. The output of this system goes to the Actuators i.e., the movement designed through the DC motors.

To prove the theme practically, a prototype module is constructed, which can be called as "Mobile Robot" that functions based on Software, Hardware and mechanical systems working together. The robot/vehicle is intended to move on the path specified, so a closed loop is to be designed.

Introduction to Wi-Fi (802.11)

The IEEE 802.11 specification (ISO/IEC 8802-11) is an international standard describing the characteristics of a wirelesslocal area network (WLAN). The name Wi-Fi (short for "Wireless Fidelity", sometimes incorrectly shortened to WiFi) corresponds to the name of the certification given by the Wi-Fi Alliance, formerly WECA (Wireless Ethernet Compatibility Alliance), the group which ensures compatibility

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PRE-DFT COMBINING CODED SIMO OFDM SYSTEM IN MULTI-OBJECTIVE OPTIMIZATION

[1] B.Ramu, [2]K.Victor

Abstract: For coded SIMO-OFDM systems, pre- DFT combining was shown to provide a good trade-off between error-rate performance and processing complexity. Max-sum SNR and max-min SNR are two reasonable ways for obtaining these combining weights. In this paper multi attribute augmentation is employed to further reveal the suitability and limitation of these two criteria. The results show that neither max-sum SNR nor max-min SNR is universally good. For better error-rate performance, the means for weight calculation should be adapted according to the capability of the error-correcting code used, and multi attribute augmentation can help in the determination.

I.INTRODUCTION

ORTHOGONAL FREQUENCY DIVISION MULTIPLEXING (OFDM) combined with multiple receive antennas, namely, single-input multiple-output (SIMO) OFDM, has recently been investigated for use in wireless communication systems. It can provide high spectrum efficiency and high data rate for information transmission. On one hand, OFDM divides the entire channel into many parallel sub channels which increases the symbol duration and therefore reduces the inter-symbol interference (ISI) caused by multipath propagation. Besides, since the subcarriers are orthogonal to each other, OFDM can utilize the spectrum very efficiently. It is known that subcarrier-based maximum ratio combining (MRC) performs the best for coded SIMO-OFDM systems; however, it requires high processing complexity. Pre-discrete Fourier transform (DFT) combining was then developed, in which only one DFT block is necessary at the receiver. It was previously shown to provide a good trade-off between error-rate performance and processing complexity. In this letter, we employ multi-objective optimization to reveal the suitability and limitation of two previously-proposed criteria for obtaining the pre-DFT combining weights, i.e., maximization of the sum of subcarrier signal-to-noise ratio (SNR) values (called max-sum SNR hereafter) and maximization of the minimum subcarrier SNR value (called max-min SNR hereafter) . Our results show that neither max-sum SNR nor max-min SNR is universally good. Furthermore, for better error rate performance, the means for weight calculation should be adapted according to the capability of the error-correcting code used, and multi-objective optimization can help in the determination. Monte Carlo simulations are finally provided to verify the correctness of these sayings. Throughout the letter, we use boldface letters, boldface letters with over bar, lower-case letters, and upper-case letters to denote vectors, matrices, time-domain signals, and frequency domain signals, respectively. Besides $(\cdot)^T$, $(\cdot)^H$ trace(·), rank(·), and diag{·} are used to represent the matrix transpose, matrix Hermitical, matrix trace, matrix rank calculation, and diagonal matrix with its main diagonal being the included vector, respectively

Pre-DFT Combining SIMO-OFDM System:

We consider an SIMO-OFDM system with M receive antennas. Define an $N\times1$ signal vector.

$$\mathbf{S}(k) = [S(kN)\ S(kN+1)\ \cdots\ S(kN+N-1)]^T$$

as the k^{th} OFDM data block to be transmitted, where N is the number of subcarriers. This data block is first modulated by the inverse DFT (IDFT). With matrix representation, we can write the output of the IDFT as $\mathbf{s}(k) = [s(kN)\ s(kN+1)\ \cdots\ s(kN+N-1)]^T = \bar{\mathbf{F}}^H \mathbf{S}(k)$ $\bar{\mathbf{F}}$

Where is an $N\times$ DFT matrix with elements

$[\bar{\mathbf{F}}]_{p,q} = (1/\sqrt{N})\exp(-j2\pi pq/N)$ For $p,q = 0,1,\cdots,N-1$ and $j=\sqrt{-1}$. A cyclic prefix (CP) is inserted afterwards and its length (Lcp) is chosen to be longer than the maximum length of the multipath fading channel (L). Also define an $N\times$ 1vector $\mathbf{h}_m = [h_m(0)\ h_m(1)\ \cdots\ h_m(L-1)\ 0\ \cdots\ 0]^T$

Where $h_m(l)$ represents the l^{th} channel coefficient for the m^{th} receive antenna, with $l = 0, 1, \cdots, L-1$ and $m = 0, 1, \cdots, M-1$. Collecting all channel vectors from the M different receive antennas, we construct an $N\times M$ channel matrix

$\bar{\mathbf{h}} = [\mathbf{h}_0\ \mathbf{h}_1\ \cdots\ \mathbf{h}_{M-1}]$ And its frequency response as

$$\bar{\mathbf{H}} = [\mathbf{H}_0\ \mathbf{H}_1\ \cdots\ \mathbf{H}_{M-1}] = \bar{\mathbf{F}}\bar{\mathbf{h}} \qquad (1)$$

with $\mathbf{H}_m = \mathbf{F}\mathbf{h}_m$. In an ordinary OFDM signal reception process, after CP removal and DFT demodulation, the resultant $N\times1$ signal vector from the mth receive antenna, denoted by $\mathbf{R}_m(k)$ can be shown to be

$$\mathbf{R}_m(k) = \mathrm{diag}\{\mathbf{S}(k)\}\mathbf{H}_m + \mathbf{N}_m(k) \qquad (2)$$

Where $\mathbf{N}_m(k)$ is an $N\times1$ complex Gaussian noise vector with zero mean and equal variance for each element

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AN ADAPTIVE IMAGE RESOLUTION ENHANCEMENT BY USING MULTI RESOLUTION TRANSFOM

D.SONY, B.RAMU
Asstant Professor
Geethanjali College Of Engineering & Technology

ABSTRACT

In this paper an image resolution enhancement technique which generates sharper high resolution image is proposed. The proposed technique uses DWT to decompose a low resolution image into different sub-bands. Then the three high frequency sub-band images have been interpolated using bi-cubic interpolation. The high frequency sub-bands obtained by SWT of the input image are being incremented into the interpolated high frequency sub-bands in order to correct the estimated coefficients. In parallel, the input image is also interpolated separately.

Finally, corrected interpolated high frequency sub-bands and interpolated input image are combined by using inverse DWT (IDWT) to achieve a high resolution output image. The proposed technique has been compared with conventional and standard interpolation techniques, wavelet zero padding (WZP), where the unknown coefficients in high-frequency sub bands are replaced with zeros, state-of-art techniques. The performance of the proposed technique over performs all available state-of-art methods for image resolution enhancement. In all steps of the proposed satellite image resolution enhancement technique, Daubechies wavelet transform as mother wavelet function and bi-cubic interpolation as interpolation technique have been used.

INTRODUCTION:

RESOLUTION of an image has been always an important issue in many image and video-processing applications, such as video resolution enhancement, feature extraction, and satellite image resolution enhancement. Interpolation in image processing is a method to increase the number of pixels in a digital image. Interpolation has been widely used in many image processing applications, such as facial reconstruction, multiple description coding, and image resolution enhancement. The interpolation-based image resolution enhancement has been used for a long time and many interpolation techniques have been developed to increase the quality of this task. There are three well-known interpolation techniques, namely, nearest neighbor, bilinear, and bi-cubic. Bi-cubic interpolation is more sophisticated than the other two techniques and produces smoother edges. Wavelets

STUDIES ON NOISE AND SIGNAL TO NOISE RATIO IMPROVEMENTS FOR MIE LIDAR

P Sudhakar[1], K Anitha Sheela[2] and M Satyanarayana[3,4]

[1]Department of ECE, Geethanjali College of Engineering & Technology. Cheeryal (V), Keesara (M), Hyderabad-501301
Email: pillodisudhakar@gmail.com
[2]Department of ECE, JNTUH College of Engineering Hyderabad (Autonomous), Hyderabad-500085, INDIA
Email: kanithasheela@gmail.com
[3]Ananth Technologies Ltd (ATL) Hyderabad - 500081, INDIA
[4] Department of ECE, VNR Vignan Jyothi Institute of Engineering & Technology, Hyderabad – 500090
Email: drsatyanarayana.malladi@gmail.com

Abstract— A Multi-wavelength laser radar has been designed and developed in-house and made operational at the location Cheeryal Village (17.51° N, 78.62° E), which is at about 20 Km in the suburbs of Hyderabad, India. The Nd:YAG laser (make M/S Bright Solutions, Italy) based multi-wavelength lidar operates at 532 nm and 1064 nm with a pulse energy of 50uJ at both the wavelengths. The two wavelengths are generated coaxially with a pulse width of 10ns and the laser operates from single shot to 4 KHz of PRF. The receiver system consists of a 360 mm Newtonian optical telescope, 10 nm of interference filters and 250 MHz Photon Counting recorder (make M/S Licel Gmbh, Germany). Radars and Lidars probe different layers of atmosphere mostly using pulsed mode of operation. In this paper, some of the critical intricacies of data acquisition and processing systems are discussed. The atmospheric Radars and Lidars require a significant amount of data to be collected to find periodicities of atmospheric phenomena which have large time constants. The atmospheric signals have got a broad dynamic range of the order 10-12 decades. Many times, signals are buried in noise and cross-correlation, and averaging techniques have to be used for extraction of signals from noise. The atmospheric Radars and Lidars have to use processing techniques.

Keywords— Lidar, Remote sensing, noise, signal to noise ratio, averaging

I. INTRODUCTION

Study of the Earth's atmosphere is done by various methods such as Balloons, Rocket, and satellite-borne experiments and by Ground-based Radars. Each method has its advantages and disadvantages. The Satellite-borne measurements have the tremendous advantage of global coverage whereas Rocket-borne and Balloon-borne instruments provide an accurate snapshot of vertical profiles of atmospheric parameters at selected locations. The Ground-based Radar systems have the advantage of using large powers to probe the atmosphere not necessarily restricted to a single direction and can collect returns from the atmosphere in a reliable and consistent way

Lidar is analogous to Radar with a major difference in the wavelength of electromagnetic radiation used for probing. In Lidar, a laser light pulse is sent into the atmosphere and is backscattered signal is measured using the optical detectors. The emitted laser beam interacts with the atmospheric constituents, causing alterations in the intensity, state of polarization and wavelength of the backscattered light. From the measurements of these parameters of the received backscattered light, one can deduce the properties of the atmosphere and its constituents. The distance to the scattering medium can be deduced with high accuracy from the time delay of the return signal. As the laser is pulsed, Lidar methods allow range-resolved measurement to obtain a vertical profile of the atmospheric parameters. Lidar systems can be operated in the wavelength range extending from the ultraviolet to the infrared (UV to IR) by using different types of lasers.

Elastic lidars, in which the transmitted and scattered back signals are at same wavelengths, aims to detect Rayleigh and Mie scattering from atmospheric gas molecules and aerosols respectively. These types of scattering are characterized from the detection of a photon by a gas molecule or dust particle in an elastic collision, meaning that the energy of the photon is conserved. It can map aerosol concentration in the atmosphere and to determine aerosol particle size (Hess *et al.*, 1998). This makes lidar an enormously useful tool for investigating air-quality, both generally and in the context of agricultural operations in particular. In fact, the use of lidar to map particulate matter (PM) concentration and estimate aerosol emission rates from an agricultural facility has been demonstrated previously, and lidar has been proven to be a versatile tool for investigating atmospheric aerosols and a useful means of characterizing and monitoring the air-quality impact of

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An Efficient Adaptive Image Enhancement Method in Wavelet Domain

V. Venkata Lakshmi [1], B. Ramu[2], M.Uma rani[3]
[1]Asst .Professor, Geethanjali College of Engineering & Technology, Cheeryala, T.S., India.
[2]Asst.Professor, Geethanjali College of Engineering & Technology, Cheeryala,T.S,India.
[3]Asst.Professor, Geethanjali College of Engineering & Technology, Cheeryala,T.S,India.

Abstract— **In this paper we propose an image resolution enhancement technique which generates sharper high resolution images. The proposed technique uses Discrete Wave Transform(DWT) to decompose a low resolution image into three high frequency sub-bands. Then these sub-band images have been interpolated with the help of bi-cubic interpolation. The high frequency sub-bands obtained by SWT of the input image are converted into the interpolated high frequency sub-bands. This helps in correcting the estimated coefficients. In addition the input image is also interpolated separately. Finally, corrected interpolated high frequency sub-bands and interpolated input image are combined by using a method called inverse DWT (IDWT) to achieve a high resolution output image. To achieve sharper images, we propose to use an intermediate stage to estimate the high frequency sub bands by utilizing the difference image obtained by subtracting the input image and its interpolated LL sub band.**

Keywords— **DWT, Image, Interpolation, Multi resolution transform.**

I. Introduction

Image interpolation[1][2] occurs in all digital photos at some stage — whether this be in bayer demosaicing or in photo enlargement. It happens anytime you resize or remap (distort) your image from one pixel grid to another. Image resizing is necessary when you need to increase or decrease the total number of pixels, whereas remapping can occur under a wider variety of scenarios: correcting for lens distortion, changing perspective, and rotating an image. Even if the same image resize or remap is performed, the results can vary significantly depending on the interpolation algorithm. It is only an approximation, therefore an image will always lose some quality each time interpolation is performed.

Common interpolation algorithms can be grouped into two categories: adaptive and non-adaptive. Adaptive methods change depending on what they are interpolating (sharp edges vs. smooth texture), whereas non-adaptive methods treat all pixels equally. Non-adaptive algorithms include: nearest neighbor, bilinear, bicubic, spline, sinc, lanczos and others. Depending on their complexity, these use anywhere from 0 to 256 (or more) adjacent pixels when interpolating. The more adjacent pixels they include, the more accurate they can become, but this comes at the expense of much longer processing time. These algorithms can be used to both distort and resize a photo. Adaptive algorithms include many proprietary algorithms in licensed software such as: Qimage, PhotoZoom Pro, Genuine Fractals and others. Many of these apply a different version of their algorithm (on a pixel-by-pixel basis) when they detect the presence of an edge — aiming to minimize unsightly interpolation artifacts in regions where they are most apparent. These algorithms are primarily designed to maximize artifact-free detail in enlarged photos, so some cannot be used to distort or rotate an image.

NEAREST NEIGHBOR INTERPOLATION: Nearest neighbor is the most basic and requires the least processing time of all the interpolation algorithms because it only considers one pixel — the closest one to the interpolated point. This has the effect of simply making each pixel bigger.

BILINEAR INTERPOLATION: Bilinear interpolation considers the closest 2x2 neighborhood of known pixel values surrounding the unknown pixel. It then takes a weighted average of these 4 pixels to arrive at its final interpolated value. This results in much smoother looking images than nearest neighbor.

BICUBIC INTERPOLATION: Bicubic goes one step beyond bilinear by considering the closest 4x4 neighborhood of known pixels — for a total of 16 pixels. Since these are at various distances from the unknown pixel, closer pixels are given a higher weighting in the calculation. Bicubic produces noticeably sharper images than the previous two methods, and is perhaps the ideal combination of processing time and output quality.

Wavelets are also playing a significant role in many image processing applications. The 2-D wavelet decomposition of an image is performed by applying the 1-D discrete wavelet transform (DWT)[3][4] along the rows of the image first, and then finally, corrected interpolated high frequency sub bands and interpolated input image are combined with the help of inverse DWT (IDWT) to achieve a high resolution output image. The results are decomposed into columns. This operation results in four decomposed sub band images called low low(LL), low-high (LH), high-low (HL), and high-high (HH).The frequency components of these sub bands cover the full frequency spectrum of the original image. Image resolution enhancement[5] using wavelets is a relatively a new subject and recently many new algorithms have been proposed. Their task was carried out by investigating the evolution of wavelet transform extreme among the same type of sub bands. Edges identified by an edge detection algorithm[6] in lower frequency sub bands were used to prepare a model used for estimating edges in higher frequency sub bands and only the coefficients with significant values were estimated as the evolution of the wavelet coefficients. In many researches, hidden Markov model has been also implemented in order to estimate the coefficients.

In this paper we propose an image resolution enhancement technique which generates sharper high resolution images. The proposed technique uses Discrete Wave Transform(DWT) to decompose a low resolution image into three high frequency sub-bands. Then these sub-band images have been interpolated with the help of bi-cubic interpolation. The high frequency sub-bands obtained by SWT of the input image are converted into the interpolated high frequency sub-bands. This helps in correcting the estimated coefficients. In addition the input image is also interpolated separately. Finally, corrected interpolated high frequency sub-bands and interpolated input image are combined by using a method called inverse DWT (IDWT) to achieve a high resolution output image. To achieve sharper images, we propose to use an intermediate stage to estimate the high frequency sub bands by utilizing the difference image obtained by subtracting the input image and its interpolated LL sub band. In all steps of the proposed satellite image resolution enhancement technique, Daubechies wavelet transform as mother wavelet function and bi-cubic interpolation as interpolation technique have been used.

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Design and Implementation of Block Based Transpose Form FIR Filter

O. Venkata Krishna[1], Dr. C. Venkata Narasimhulu[2], Dr. K. Satya Prasad[3]
[1](ECE, CVR College of Engineering, Hyderabad, India)
[2] (ECE, Geethanjali College of Engineering and Technology, Hyderabad, India)
[3] (ECE, KL Deemed to be University, Vaddeshwaram, Guntur, India)

ABSTRACT

The transpose form configuration of Finite impulse response filter (FIR) does not support for block based processing se form FIR filter architecture is optimized and implemented. The basic Data Flow Graph (DFG) of transpose form FIR filter is converted into block based DFG and retiming is inserted in the DFG for low power consumption, reduced area and minimal delay. The generalized mathematical formulation is done for the retimed block based transpose form FIR filter and it is implemented with the block size of 4 for the filter length of 16 using Verilog Hardware Description Language (HDL). Later, it is synthesized using CADENCE-RTL compiler in TSMC 45nm CMOS library and power, area and delay reports are generated. The obtained results are compared with the few existing structures.

Keywords: Digital filters, Data Flow Graph, Retiming, low power, FIR, and HDL.

1. INTRODUCTION

The Digital Signal Processing (DSP) systems are being implemented on Field Programmable Gate Array (FPGA) and Application Specific Integrated Circuit (ASIC), due to the reconfiguration and flexibility of FPGAs. The FPGA platform is more suitable for the optimizing the DSP systems in terms of area, power and delay. Digital filters are mostly used in DSP applications [1], such as biomedical applications, communication systems and mobile applications. For these applications, the digital filter must consume less power, reduced area and high speed. The FIR filters can be implemented in different architectures, such as, direct form structure, transpose form structure and hybrid structures.

Several FIR architectures are implemented in different styles to meet the specifications. For example, a FIR filter implemented by Mahesh et al [2] using programmable shift method (PSM) and Constant shift method (CSM) [8][11]. Park [3] also implemented a FIR filter based on distributed arithmetic structure in direct form and transpose form structures. But there is no any block based concept in transpose form structure. Mohanty et al [4] proposed block based structures and filter banks, which are not suitable for higher order filter lengths and applicable for 2-Dimensional (2D) filters. Mohanty also proposed [5], the reconfigurable block based transpose form filter and fixed length transpose form FIR filter for DSP applications [6].

The most preferred architectures of FIR filters in signal processing are transpose form structures. The transpose form FIR filter consists of inherent pipelining process. The pipelining in the digital filters design leads to reduction of critical path or delay, reduction of power consumption and increases the clock speed.

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IMAGE DENOISING USING DUALTREE COMPLEX WAVELET TRANSFORM BASED THRESHOLDING METHODS

[1]P.Venkata Lavanya, [2]C.Venkata Narasimhulu, [3]K.Satya Prasad

[1]Associate Professor, [2]Professor, [3]Professor & Vice chancellor
[1]Department of Electronics and Communication Engineering,
[1]TKR College of Engineering & Technology, Hyderabad, India

Abstract: Image denoising is one important objective in image processing and its applications. Image denoising methods are used to eliminate the noise from images without changing its characteristics and content. In all image processing applications, images are contaminated with the processing noise or channel noise. This contamination results in image quality degradation in both objective and subjective manner. To overcome this, image denoising approaches were suggested. In the advancement of image denoising in transform domain, dual tree complex wavelet transformation is observed to be an optimal upcoming solution. The advantage of processing the image in real and imaginary domain simultaneously gives the advantage of noise minimization in two domains. This complex wavelet transform process on two domains and perform the operation of denoising based on a thresholding process. This paper represents an comparative analysis of applying different threshold methods for image denoising on different images under variant noise condition using 2D dual tree complex wavelet transform and 2D discrete wavelet transform in terms of PSNR, MSE.

Index Terms - Dual Tree Complex wavelet Transform, Discrete wavelet Transform, Image Denoising, Threshold, Sure Shrink, Neigh Shrink, Block Shrink.

I. INTRODUCTION

Images are generally contaminated with noise during acquisition, transmission, or retrieval from storage media. Current application in image processing has lead to two principal needs: enhancement of picture information for human interpretation; and processing of image data effectively for storage, transmission, and representation. In various applications the transformation process is applied for its finer resolution details to improve the efficiency. During Transformation one object from a given domain is translated to another to represent some important implicit information which can be used for its recognition. The Transformations do not modify content of image/signal [1].

The discrete wavelet transform (DWT) is mostly used Transform Technique for a large scope of signal and image processing problems. Wavelet denoising techniques remove the noise present in the image without changing its characteristics, regardless of its frequency content. De-noising of natural images corrupted by noise using wavelet techniques is very effective because of its ability to capture the energy of a signal in few energy transform coefficients known as energy compaction. But it has disadvantages of shift-sensitivity and no phase information[2]. To eliminate these problems[3] analytic filters are used by complex wavelet transform(CWT). These filters form Hilbert Transform (HT) pair which provide real and imaginary parts for magnitude-phase representation [4] also secure shift invariance and no aliasing. Kingsbury in 1998 introduced the dual - tree complex wavelet transform(DTCWT) in which perfect reconstruction also achieved along with shift invariance, good directional selectivity and limited redundancy of CWT[5]. In denoising process based on wavelet transform or based on complex wavelet transform techniques threshold of wavelet coefficients plays an important role. A Proper selection of threshold leads to higher denoising performance [6]. There are two of threshold approach have been observed in DTCWT denoising [7,8], the soft threshold and the hard threshold approach. Even though different literature illustrates the application of this thresholding approach for denoising, some other different shrinkage methods also available for more efficient denoising. This paper is structured as: first discussed about dual tree complex wavelet transform in section 2, next different wavelet thresholding methods for image denoising in third section and in section 4 results are presented.

II. DUAL TREE COMPLEX WAVELET TRANSFORM

The limitations of wavelet transform listed are overcome in complex wavelet domain.

- *Oscillations* of the pixel values at a singularity (at zero crossings).

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HYBRID SIGNED DIGIT PARALLEL AND MULTI OPERAND BCD ADDERS

G.Sreelakshmi[1],Dr. Kaleem Fatima[2],Dr.B.K.Madhavi[3],
Geethanjali College of Engineering and Technology[1],
Muffakamjah College of Engineering and Technology[2],
Sridevi Womens Engineering College,Hyderabad[3]

June 25, 2018

Abstract

Decimal Arithmetic is having its own significance in many fields like commercial, financial, industrial and scientific applications. It plays a vital role in Floating point and Fixed point Decimal Processors. Adders and Multipliers are basic building blocks of any arithmetic unit. This paper presents a new method for the decimal signed digit addition based on the vinculum digit set {-5, 5} where the delay associated with carry generation and propagation is significantly reduced. The proposed Hybrid signed digit adder, adds two N-digit operands using binary fast adders in parallel. The correction logic is parallel applied along with one previous stage hybrid carry. This reduced the critical path delay very significantly. Multi operand BCD addition up to 8 operands is successfully implemented using the above mentioned parallelism in binary tree method. The proposed multi-operand BCD adder is 3 times faster compared to the method proposed in Signed Digit Adder multi operand adder of [17]. All the designs are implemented in Verilog HDL and tested exhaustively on FPGA and cadence digital encounter tools 0.18m technology and the results show that the proposed

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MULTI-VIEW VIDEOS PLUS DEPTH ASSESSMENT USING NOVEL SALIENCY DETECTION METHOD

M.Sowjanya[1], B.Ramu[2]

Abstract- Multi-view videos plus depth (MVD) is a popular 3D video representation where pixel depth information is exploited to generate additional views to provide 3D experience. Quality assessment of MVD data is of paramount importance since the latest research results show that existing 2D quality metrics are not suitable for MVD. This paper focuses on depth quality assessment and presents a novel algorithm to estimate the distortion in depth videos induced by compression. A novel saliency detection model is introduced by utilizing low level features obtained from Stationary Wavelet Transform domain.Firstly, wavelet transform is employed to create the multi-scale feature maps which can represent different features from edge to texture. Then, we propose a computational model for the saliency map from these features. This model is aimed to modulate local contrast at a location with its global saliency computed based on likelihood of the features and also considered local centre-surround differences and global contrast in the final saliency map. Experimental evaluation depicts the promising results from the proposed model by outperforming the relevant state of the art saliency detection models.
Keywords: AVC,CSM, Saliency,MVD

1. INTRODUCTION

Multi view-video-plus-depth format for 3D content representation has been adopted for current and future 3D television technologies e.g. free-viewpoint television (FTV) and Super Multi view (SMV) displays. The gray scale depth image represents the per pixel depth value of the corresponding texture image which is exploited to generate novel views through depth image based rendering (DIBR). In MVD format only few views with their associated depth maps are coded and transmitted. The compression of MVD data is indeed an important activity in 3D television framework and much attention has been devoted to this research area. To efficiently compress MVD data various coding formats have been proposed and new tools have been developed, e.g. Advanced Video Coding (H.264/AVC) has been used in past to encode the texture videos and depth videos independently, also known as simulcast coding. The novel High Efficiency Video Coding (HEVC) is the current state of the art video coding tool. The Joint Collaborative Team on 3D Video Coding Extension Development (JCT-3V) has recently developed extensions of HEVC to efficiently encode multiview videos and MVD data. Multi-view-HEVC (MV-HEVC) extends the HEVC syntax to encode MVD without additional coding tools whereas 3D-HEVC is expressively dedicated to the design of novel coding techniques for MVD. 3D-HEVC encodes the base view with its depth map using unmodified HEVC whereas the dependent views and their depth maps are encoded by exploiting additional coding tools. 3D-HEVC achieves the best compression ratio for MVD data. In this paper we introduced a new model called "Novel Saliency Detection Method" in multi-view videos plus depth assessment.

2. PROPOSED METHOD

The proposed quality metric works in two steps; first, the compression sensitivity map (CSM) of the depth image is computed to locate the pixels which are the most susceptible to compression artifacts. Second, for each compression sensitive pixel (CSP) a histogram of then neighbourhood is constructed and analyzed to determine the quality index. BDQM builds on the key observation that the histogram around a CSP gets flattened when increasing the amount of compression; indeed, compression mostly affects. The sharp discontinuities of the depth image. The proposed algorithm exploits the shape of the histogram to predict depth quality. The proposed method uses the shape of the histogram to predict the quality index. It is known that the boundary regions between objects at different depth levels are susceptible to compression artifacts compared to the homogeneous areas in images. So, the magnitude gradient of the image is use full in evaluating the compression sensing artifacts. The compression sensitivity map is computed from its gradients magnitudes. are the gradients along horizontal and vertical directions and are computed with sobel operators. The gradient magnitude is used to select sensitive depth pixels that are used to estimate the quality index.

2.1 Novel Saliency Detection

[1] Associate Professor, Dept. of ECE, GCET, Hyd.,India. Geethanjali College of Engineering & Technology, Hyd., India.
[2] Associate Professor, Dept. of ECE, GCET, Hyd.,India. Geethanjali College of Engineering & Technology, Hyd., India.

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AN EFEECTIVE WAY TO MULTIRESOLUTION IMAGE ANALYSIS USING DFB

L.Kavya[1], Anil Gantala[2], M. Anand [3],

[1,2,3]Assistant Professor, [1,2,3]Department of Electronics and Communication Engineering,

[1,3] Geethanjali College of Engineering and Technology

[2]Institute of Aeronautical Engineering, Hyderabad-500043

Corresponding author mail id: kavya.lakkakula@gmail.com,anil.gantala@gmail.com

ABSTRACT:

We recommend another detailing for directional filter banks (DFBs). Eventually Tom's perusing utilizing An non-uniform Also non-separable channel bank, a critically sampled multiresolution directional picture representational might be acquired effectively. Those coming about DFB yields non-uniform recurrence division which may be made for you quit offering on that one low pasquinade channel for a pulverization figure of one-fourth and six secondary pasquinade directional channels for An pulverization component of one-eighth. It defeats the set directional selectivity of distinct wavelets and the set determination of the routine DFB. Those low pasquinade channel might make used to acquire multiresolution representational by essentially re-iterating the same DFB decay. On the different hand, those directional sub groups might make further refined by essentially applying An two-channel DFB at every secondary pasquinade channel. An basic plan system yielding close orthogonal uniform Also non-uniform multidimensional channel banks is discussed, and, finally, a numerical analyze may be introduced to show the possibility of the new picture foundation.

Keywords: DFB, QUINCUNX FILTERBANK, Q-TODFB,TVL.

INTRODUCTION:

The size of Image file expressed as the number of bytes—increases with the number of pixels composing an image, and the color depth of the pixels[1].The greater the number of rows and columns, the greater the image resolution, and the larger the file[2]. Also, each pixel of an image increases in size when its color depth increases—an 8-bit pixel (1 byte) stores 256 colors, a 24-bit pixel (3 bytes) stores 16 million colors, the latter known as color[3]. Image resolution describes the detail an image holds. The term applies to digital images, film images, and other types of images[4]. Higher resolution means more image detail. Image resolution can be measured in various ways. Basically, resolution quantifies how close lines can be to each other and still be visibly resolved. Resolution units can be tied to physical sizes (e.g. lines per mm, lines per inch), to the overall size of a picture (lines per picture

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RESEARCH ARTICLE

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Analysis of denoising filters on MRI brain images

Saritha Saladi | **N. Amutha Prabha**

School of Electrical Engineering, VIT University, Vellore, India

Correspondence
Saritha Saladi, School of Electrical Engineering, VIT University, Vellore, India.
Email: saladi.saritha2014@vit.ac.in

Abstract

The magnetic resonance imaging (MRI) modality is an effective tool in the diagnosis of the brain. These MR images are introduced with noise during acquisition which reduces the image quality and limits the accuracy in diagnosis. Elimination of noise in medical images is an important task in preprocessing and there exist different methods to eliminate noise in medical images. In this article, different denoising algorithms such as nonlocal means, principal component analysis, bilateral, and spatially adaptive nonlocal means (SANLM) filters are studied to eliminate noise in MR. Comparative analysis of these techniques have been with help of various metrics such as signal-to-noise ratio, peak signal-to-noise ratio (PSNR), mean squared error, root mean squared error, and structure similarity (SSIM). This comparative study shows that the SANLM denoising filter gives the best performance in terms of better PSNR and SSIM in visual interpretation. It also helps in clinical diagnosis of the brain.

KEYWORDS

bilateral filter, denoising, MRI brain, NLM, PCA, SANLM

1 | INTRODUCTION

The major problem occurring in biomedical images is noise, which affects the coherent nature of the images. This image denoising is applicable to other fields such as astronomy and forensic sciences to obtain the useful potential information. Many researchers concentrate on different fields of magnetic resonance imaging (MRI) brain images like preprocessing, enhancement, segmentation,[1] and feature extraction. In general, the noise interfered may be either Gaussian or speckle noise and the image capturing equipment itself incorporates salt and pepper noise. This noise degrades the images and leads to the incorrect diagnosis of the disease. Owing to this coherent noise, it is more difficult to distinguish the adequate details of the images during the diagnosis of the disease by a human expert. Various denoising filters are used to remove the noise and improve the image quality of computed tomography images.[2] Denoising methods are intended to eliminate the noise from an image without losing the original attributes of the image. Thus, denoising the noisy image has become the imperative step in processing the medical MR images. The number of denoising techniques has performed on MR images including linear filters and nonlinear filters. The mean, median, and adaptive filters are linear methods and nonlinear methods include anisotropic diffusion, bilateral, wavelets, principal component analysis (PCA), nonlocal means (NLM), and so forth.[3]

The linear filters cause the image to blur by suppressing the fine details. The performance of these filters is not acceptable because they blur the sharp edges, rescind lines, and other details. To avoid these difficulties nonlinear filters are used. The anisotropic diffusion filter is used to reduce noise without removing the important details from the image (edges, lines) which are significant for the elucidation.[4] Bilateral filtering is a nonlinear filter and noniterative method which combines domain and range filters simultaneously.[5] This technique is an alternative to wavelet thresholding achieved by combining two Gaussian filters; first filter works in spatial domain and the second in intensity domain.[6]

Wavelets challenges to remove noise by denoising the noisy images, noise present in the signal while holding all the signal characteristics irrespective of its frequency.[7] The wavelet filter for denoising the MR images is precisely designed to lever the Rician noise.[8] The main drawback of

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RESEARCH ARTICLE

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MRI brain segmentation in combination of clustering methods with Markov random field

Saritha Saladi | **Amutha Prabha N.**

School of Electrical Engineering, VIT University, Vellore, Tamil Nadu, India

Correspondence
Amutha Prabha, School of Electrical Engineering, VIT University, Vellore, India.
Email: amuthaprabha@vit.ac.in

Abstract

Medical image segmentation is a preliminary stage of inclusion in identification tools. The correct segmentation of brain Magnetic Resonance Imaging (MRI) images is crucial for an accurate detection of the disease diagnosis. Due to in-homogeneity, low distinction and noise the segmentation of the brain MRI images is treated as the most challenging task. In this article, we proposed hybrid segmentation, by combining the clustering methods with Hidden Markov Random Field (HMRF) technique. This aims to decrease the computational load and improves the runtime of segmentation method, as MRF methodology is used in post-processing the images. Its evaluation has performed on real imaging data, resulting in the classification of brain tissues with dice similarity metric. These results indicate the improvement in performance of the proposed method with various noise levels, compared with existing algorithms. In implementation, selection of clustering method provides better results in the segmentation of MRI brain images.

KEYWORDS

clustering methods, GMM, MRF, MRI, segmentation

1 | INTRODUCTION

The objective of segmentation is to isolate an image into an arrangement of semantically significant, homogeneous, and nonoverlapping areas of comparable qualities like depth, color, texture, or surface. Segmentation is the primary level in the analysis of the medical images. Segmentation of medical image is the classification procedure representing tissue type or anatomical structure of each pixel/voxel. These segmentations have operated in various formations and analysis of the diseases in the acquired images. It can be in different parts of the human body and its purpose is to extract richer information from the original medical reports. The major intention of segmentation is to divide an image into homogeneous and nonoverlapping regions of comparable properties such as intensity, depth, color, or texture. The brain segmentation results in either an image of labels that identify the region boundaries in terms of homogeneous regions or a set of contours. The noise, bias field, and partial volume effect (PVE) are the difficulties and a challenging task in the process of segmenting the brain images. Magnetic Resonance Imaging (MRI) modality is most popular in obtaining complete details of images of different parts of the brain. In addition, it is well-known for analysis and detecting abnormal changes in the tissues with high contrast. Its point-by-point determination permits the examination of typical anatomical fluctuation limits, and additionally the quantization of volumetric changes ongoing with neurological conditions. Acquisition parameters of MRI can be adjusted for different tissues to obtain different gray values. Most of the researchers use MRI images for segmentation in clinical applications. Segmentation of brain MRI images is made into three tissues [white matter (WM), gray matter (GM), and cerebrospinal fluid (CSF)] and it is one of the initial phases in various treatment strategies. The extraction of 3D brain volume and location of various brain injuries such as tumor identification, tissue classification, and heterotopias is done in segmentation stage. PVE, intensity nonuniformity (INU), and external disturbances are the most well-known antiques in MRI imaging. The pixels/voxels are represented by more than one form of

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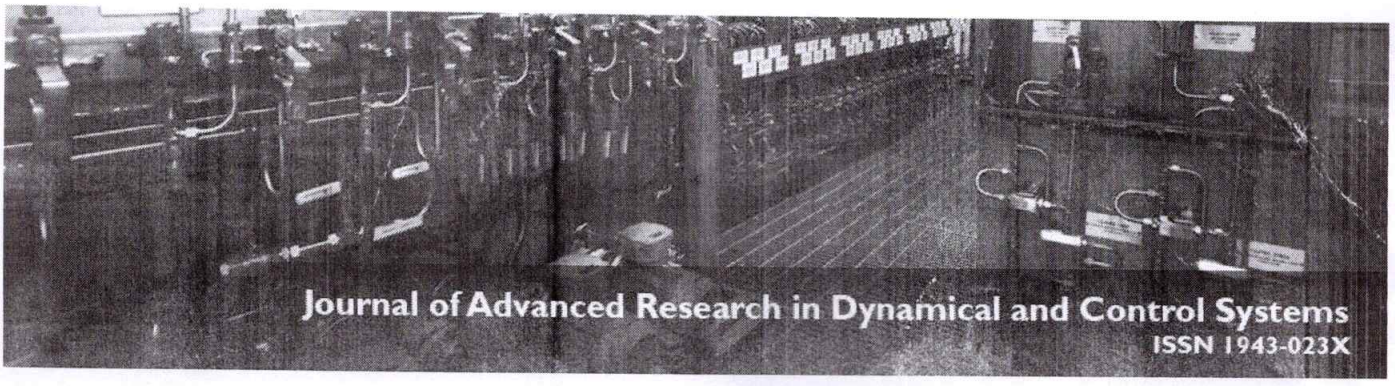

A Novel Fuzzy Factor for MRI Brain Image Segmentation using Intuitionistic Fuzzy Kernel Clustering Approach

Saladi Saritha , N. Amutha Prabha*

Abstract:

Segmentation of the brain is a one of the major challenging tasks due to presence of noise and ambiguities between boundaries and dissimilar tissues in the brain image. Various alternatives of standard fuzzy c-means (FCM) methods have been proposed to handle the noise in brain magnetic resonance (MR) images. The conventional FCM uses Euclidean distance that has various restrictions in clustering the regions precisely. To overcome these drawbacks , we presents a novel improved intuitionistic fuzzy kernel clustering(IIFKC) method using intuitionistic fuzzy set theory that encompasses a kernel based distance function. The proposed method preserves the image information. in-sensitive to noise, and free of prerequisites of fine-tuning parameters. The segmentation results attained on the real and simulated MRI brain image exhibits the efficiency of the IIFKC method and enhances the performance in comparison with the existing methods in terms of similarity index, jaccard coefficients and execution time. The effectiveness of the proposed IIFKC method is in contrast FCM, Intuitionistic FCM (IFCM), Kernel Intuitionistic FCM (KIFCM), and Intuitionistic fuzzy kernel clustering (IFKC) methods

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A Novel Approach for Recoding Canonical Signed Digit

Jugal Kishore Bhandari[1], B.Mamatha[2]
[1]Asst.Prof, [2]Asst.Prof
ECE Dept Gcet, Cheeryal

Abstract - In this study new approaches for conversion of regular unsigned or signed number into canonical signed digit are presented. We evaluate the proposed circuit and compare it with a circuit based on the conventional adder structure. We show that the proposed architectures perform faster by 8% or more than the circuit based on the conventional structure. In this work different adder logics to generate fast carry are used in canonical signed conversion method. As a result, the proposed circuits are efficient in terms of speed, area and power consumption in comparison with other conventional architectures. Simulations of different configurations are performed using Xilinx and synthesized using Cadence tools. These logics are applied to Wallace multiplier by applying CSD conversion to multiplier and /or multiplicand which gives far better results than counterpart previous architectures.

Keywords - canonical-signed-digit (CSD), Booth's Recoding, adders

I. INTRODUCTION

Asked for the total of thirty four and sixty two, some folks could even be ready to work this out while not pen and paper. However, most folks would struggle to search out the merchandise (unless we all know our thirty four times tables). Another, maybe additional vital reason for the distinction in issue is that the variety of operations that should be performed. To do the addition, I will break the matter down into 2 little additions, 4+2 = six and 3+6 = nine. In fact it is also potential that there's a carry I actually have to require care of, however we'll ignore these in our analysis. Currently contemplate the multiplication. I actually have to try and do 2×4 = eight, 30×2 = 60, 60×4 = 240 and 30×60 = 1800. Currently i would like to feature of these along. So, in total four easier multiplications we've got to try to and 3 additions. This method is typical for multiplication using school text algorithms.

Digital FIR filter is one in every of the essential elements in Digital Signal method (DSP) and communication system. With Associate in Nursing large growth in mobile computing and multimedia system applications, would like for low power and high speed DSP system has seen a tremendous growth [1]. Digital filters square measure accustomed modify the attributes of signal by removing noise from the initial signal and kind the spectral characteristics of the following signal [2]. Digital filters are superior in level of performance as they're extremely stable, correct and versatile as compared to analog filter [3]. Due to this reason, the necessity of a digital filter with optimized space, power and delay may be a difficult task. DSP applications need an oversized order FIR filter. And therefore the complexity will increase with increasing filter order owing to needs of larger mathematical computations [5]. Therefore, real time implementation of this filter with precise value is sitting as a heavy challenge. so as to attain efficient digital filter style, order of filter should be as little as doable. This paper focuses primarily on the FIR filter owing to its absolute stability and linear part response [6].

This paper focuses mainly on the FIR filter due to its absolute stability and linear phase response [6]. On the premise of hardware, digital filter may be classified into 2 major categories: multipliers based mostly and memory based [7]. The most components of digital filter embrace registers to save lots of the samples of signals, adders to carry out total operations and variety for multiplication of the filter coefficients with signal samples [8]. Even with the particular undeniable fact that designing of digital filter seems straightforward, but the planning bottleneck is its number block for speed, house and power consumption [9]. Complexness is primarily dominated by constant multiplication operation [10,11]. therefore on cut back quality, the filter coefficients square measure depicted in CSD illustration that wants the littlest quantity form of Computations [12].The multiplication of 2 numbers x*y is enforced by accumulating the shifted partial product xiy, for every digit xi of the multiplier x.

So, the amount of necessary addition operations needed to total the partial product is one less than the amount of nonzero digits within the illustration of the corresponding constant number x. the event of quick CSD and MSD conversion algorithms has been the main target of a lot of effort. Booth's coding was given [13] in 1951, to expeditiously multiply 2 numbers using coding multipliers. In 1960, Reitwiesner developed an rule to convert two's complement numbers to CSD [14].

The remaining of the paper is organized as follows: an outline of CSD is given in section II. Section III consists of various adder logics for quick carry generation. Section IV describes the planned work for CSD improvement. In section V simulation results are mentioned. Finally, section VI concludes the paper by summarizing the foremost contributes.

NANO SCALED LIB/STATCOM FOR POWER QUALITY IMPROVEMENT IN A GRID INTERCONNECTED RES

M. Aruna Bharathi[1], K Sainadh Singh[2]
[1]Professor in EEE Dept, Geethanjali College of Engineering and Technology
Cheeryal, Keesara (M), Medchal (Dist.),Hyderabad, India
[2]Asst. Professor: department of EEE, B V Raju Institute of Technology, Narsapur, Medak Dist., T.S, India

Abstract
The Renewable energy systems, particularly 'Wind Energy' development, showed its remarkable growth in the recent years, that can create pollution less and environment friendly atmosphere. The Nano Scaled Li-ion batteries are getting enormous attention as power sources and energy storage devices in Renewable energy system. Interconnecting the wind energy into the grid effects the power quality due to variable wind speed components. This paper shows the existence and mitigation of power quality problem due to installation of wind turbine with the grid i.e Harmonics. LIB plays critical role under clean energy system because it contribute for reduction of greenhouse gas emission. The performance of LIB is improved by developing high energy density electrode materials at Nano scale. A novel Nano Scaled LIB/STATCOM control scheme for grid connected wind Energy system has been developed using the MATLAB/SIMULINK to mitigate the power quality problems. In this the STATCOM is inputted by the Nano Scaled Li-Ion Battery Energy Storage system (LIB) it rapidly injects or absorbed reactive power to stabilize the grid system. Finally the results with LIB/ STATCOM, with STATCOM and without LIB and without LIB/STATCOM are compared and a mark reduction in total harmonic reduction is observed.

Keywords: LIB Li-ion battery energy storage; Nano Scale; PQ power quality; STATCOM;

I. INTRODUCTION

There is a current global need for clean and renewable energy sources where renewable energy sources can curb our need for fossil fuels. Fossil fuels are non-renewable and require finite resources, which are dwindling because of high cost and environmentally damaging retrieval techniques. So, the need for cheap and obtainable resources is greatly needed. The efficient and more feasible alternative option is solar, wind etc. Nano technology is the best tool for achieving breakthrough in Li-ion battery electrode material. In order to improve the performance of batteries it is desired to develop high energy density cathode materials using Nano materials. Now a day's Lead acid batteries have been used for solar electric systems but Li-ion offers higher energy density, longer cycle life, and no memory effect compared to lead acid batteries. [1]-[2]

A conventional STATCOM is a shunt-connected device which consists of a Voltage Source Inverter (VSI) and a dc capacitor. Since the dc capacitor is not a bulk energy storage device, the STATCOM does not have the ability of active power compensation. If an energy storage system, such as a Nano Scaled Li-ion battery, is connected to the dc capacitor, the power regulation ability of the STATCOM can be expanded to both reactive and active power compensation. The Active power control function can work faster than conventional synchronous generators and so, it has better performance. On the other hand, the reactive power control can enhance the power quality of

VSI BASED D-STATCOM IN A DISTRIBUTED POWER SYSTEM FOR ENHANCEMENT OF POWER QUALITY

B.Naveen Kumar[1], CH.Anishreddy[2], P.Saicharan Rao[3], M.Pradeep[4]
Geethanajli College of Engineering and Technology,
Cheerayal (V), Keesara (M), R.R.Dist, Telangana (INDIA)

Abstract

This paper proposes a new Voltage controlled distributed static compensator (D-STATCOM) operating in voltage-control operation mode (VCOM). The proposed scheme exhibits several advantages compared to traditional voltage-controlled D-STATCOM where the reference voltage is arbitrarily taken as 1.0p.u. The proposed scheme ensures that more accurate power quality is achieved at the load terminal during nominal operation, which is not possible in the traditional method. Also, the new D-STATCOM injects lower currents and, therefore, improves quality of power in the feeder and voltage-source inverter (VSI). Promote, a more saving in the rating of D-STATCOM is achieved which improves its capacity to mitigate voltage-sag. Nearly UPF is maintained, while regulating voltage at the load end, during change in load. This model of D-STATCOM is incorporated with an advanced PI controller for fast load voltage regulation during voltage sags and swells. With these features, this scheme allows D-STATCOM to deal with power-quality issues by providing harmonic elimination, power factor correction, load balancing and voltage regulation based on the load requirement. Simulation and experimental results are presented to show the efficacy of the proposed algorithm.

Index Terms: Current control operation mode (CCOM), power quality (PQ), voltage-control operation mode(VCOM), voltage-source inverter(VSI).

I.INTRODUCTION

DISTRI voltage-related power-qual BUTION system suffers from current as well as ity (PQ) problems, which include poor power factor, distorted source current, and voltage disturbances [1], [2]. A D-STATCOM, connected at the point of common coupling (PCC), has been utilized to mitigate both types of PQ problems [2]–[12]. When operating in current control mode (CCOM), it injects reactive and harmonic components of load currents to make source currents balanced, sinusoidal, and in phase with the PCC voltages [3]–[7]. In voltage-control mode (VCOM) [2], [8]–[12], the D-STATCOM regulates PCC voltage at a reference value to protect critical loads from voltage disturbances, such as sag, swell, and unbalances. However, the advantages of CCOM and VCOM cannot be achieved. In CCOM, the Static compensator cannot compensate for disturbances in volatage. Hence, CCOM operation of D-STATCOM is not usefiil under

voltage disturbances, which is a major disadvantage of this mode of operation [13]. Traditionally, in VCOM operation, the D-STATCOM regulates the PCC voltage at 1.0 p.u. [2], [8]–[11]. However, a load works satisfactorily for a permissible voltage range [14]. Hence, it is not necessary to regulate the PCC voltage at 1.0 p.u. While maintaining 1.0-p.u. voltage, D-STATCOM compensates for the voltage drop in feeder. For this, the compensator has to supply additional reactive currents which increases the source currents. This increases losses in the voltage-source inverter (VSI) and feeder. Another important aspect is the rating of the VSI. Due to increased current injection, the VSI is de-rated in steady-state condition. Consequently, its capability to

DAMPING OF POWER SYSTEM OSCILLATIONS USING SVC AND STACTOM

B Madhu[1], Harish Pulluri[2], T.Srihari[3], M. Anil Kumar[4]
[1]Assistant Professor, [2]Associate Professor, [3]Assistant Professor. [4]Assistant Professor
[1,2,3,4]Department of EEE. [1]ACE Engineering College,
[2]Geethanjali College of Engineering Technology, [3]Gurunanak Institutions Technology Campus.
[4]St Mary's Group of Institution

Abstract

Today's Power system is a complex network; the integration of two neighboring power systems by an interconnecting lines may often offer attractive benefits to both parties. Inter-area oscillations are inherent in large interconnected power systems. System outage resulting from these oscillations is of growing concern. Over the last three decades, attention has been focused on power system damping control design to reduce the risks of system outage following undesirable oscillations. Flexible AC Transmission provides unprecedented way for controlling transmission grid and increasing transmission capacity. This paper is Highlighting the concept of the power system transient stability analysis and its improvement by FACTS controllers and this approach can be applied in complex power system network

Index Terms: Damping, FACTS controllers, inter area Oscillations, Power Oscillation, STATCOM, SVC

I. INTRODUCTION

A problem of interest in the power industry at which FACTS Controllers could play a significant role in it is increasing damping of low frequency power oscillations that often arise between areas in large interconnected power grid networks. These oscillations are named as inter-area oscillations, which are generally characterized by poor damping [1-4].The integrated power system therefore is prone to low-frequency "inter-area" power swings, when the equilibrium between generational load balance in each system and the power transfer along the interconnection line is being disturbed. Such disturbances may be caused by loss of a main transmission line. These transient disturbances can be produced by switching operations, load changes, and particularly, loss of excitation and faults.

Ideally, the loads must be fed at constant voltage and frequency at all times. In recent times, the use of FACTS devices has become a common practice to make full utilization of existing transmission capacities instead of adding new lines which are often restricted for economic and environmental reasons [3].

The high- voltage transmission system connects the generating stations and the load centers [8-9]. Interruptions in this network may unstable power flow to the load. Since almost all power systems are interconnected with neighboring systems. So random changes in load are taking place at most of times, with subsequent changes in generation. Synchronism may be frequently lost in that transition period, or increasing oscillations may occur over a transmission line, eventually leading to its tripping.

Power system stability may be broadly defined as that property of a power system that enables it to remain in a state of operating equilibrium under normal operating conditions and to regain an acceptable state of equilibrium after being subjected to a disturbance phase shifter. Series capacitor and shunt capacitor are different approaches to strengthen the power system load

DESIGN OF FUZZY LOGIC CONTROLLER OF RESIDENTIAL ELECTRIC WATER HEATERS

Mrs.E.Himabindu[1], Mr.D.Krishna[2]
[1]Geethanjali College of Engineering (Autonomous), Assistant Professor EEE
Cheeryal(V), Keesara(M), Medchal(D), Hyderabad
[2]Anurag Group of institutions (Autonomous), Assistant Professor, EEE
Venkatapur(V),Ghatkesar(M),Medchal(D),Hyderabad

ABSTRACT:
With the impending deregulation of electric utility industry, customer satisfaction with utility services will be crucial. Utilities will need to place a greater emphasis on their customer's preferences and desires. This paper describes a fuzzy logic-based control strategy for shifting the average power demand of residential electric water heaters from period of high demand for electricity to off-peak periods. A minimum temperature for hot water, defined as customer comfort level, is used as a control variable. Water temperature is not allowed to fall below the minimum temperature set by the customer. Simulation result show that the proposed strategy can shift the average power demand of residential water heater to improve the load factor of residential load profile.

Key words: Fuzzy Logic control, mat lab tool box, Electric water Heater.

I. Introduction:

An Englishman Benjamin Maugham, in 1868 invented the first instant water heater called "The Geyser", a device where the water was heated as it flowed into the bath. They were known to be quite dangerous.Maughn's invention influenced the designs of a Norwegian mechanical engineer by the name of Edwin Ruud, who immigrated to Pittsburg. Ruud who invented the electric water heater (automatic storage) in 1889, founded the Ruud Manufacturing Company, which is still in operation today, and pioneered the advancement of water heaters, in both the residential and commercial market.

Population growth along with technological growth force the utility companies to continue struggling to meet the ever-increasing need for electricity. With the majority of residents conforming to the 8 AM-5PM work schedule, the utility companies experience overwhelming demand peak associated with large amount of power being consumed at the same time. Complementing this effect are periods of low demand. Although over a period of time, the average amount of power consumed by community may be easily generated by a utility, that utility still has to provide enough generation to meet its highest power demand peak. It is in the best interest of the utility companies as well as the consumer to try to reduce these high peak demand periods and out their power demand profiles as much as possible.

One way this can be accomplished is by controlling residential electric water heaters. The Electric water heater accounts for the single largest contributor to the total power consumption of a residence. Existing electric water heater DSM (Demand-side management) strategies focus on on/off control of the water heater, where a group of heater are disabled during certain periods of time using a direct load control strategy [5].When water heater are energized, they are either on consuming a fixed amount of power , i.e.4.5kW.or they are off. the paper presents a fuzzy logic based variable power control strategy, where the power consumed by the water heater can be controlled based on the information available from the water heater such as water temperature, maximum and minimum water temperature allowed (or desired),and distribution level power demand. Based on the status of the above variables, the fuzzy controller will determine

A COMPARATIVE STUDY ON UPFC AND DPFC TOWARDS LOW HARMONIC DISTORTION

Mulla Gouse Basha, D. Radhika
Geethanjali College of Engineering and Technology
Geethanjali College of Engineering and Technology
m.gousebasha@gmail.com, radhika7.dora@gmail.com

Abstract

The technological advancements in power electronic devices and circuits lead to complete automation of both the power transmission/Distribution system as well as automatic control of industrial and domestic loads, which in turn increase nonlinear load currents drawn from the supply system. Additional heating losses, low power factor, low efficiency, higher temperature etc., are some of the results of these nonlinear currents. A new D-FACTS device is proposed to reduce the total harmonic distortion in the transmission system near load points. A comparative analysis will also be made with the existing FACTS device, UPFC.

Keywords: **Non linear loads, total harmonic distortion, UPFC, DPFC.**

1. INTRODUCTION

The attention of today's Power system engineers is towards the analysis of harmonics present in the currents and voltages of the power system. This is due to the fact that for a typical industry, the percentage of non-linear loads over the total load is ever increasing. This increased proportion of non-linear load has prompted more stringent recommendations in IEEE Std. 519 and stricter limits imposed by utilities. It is necessary to create awareness of harmonic issues to increase the reliability of power system.

The effects of these harmonics include distortions in voltage, current, increased power losses, thermal stress, etc. The time varying impedance characteristics of diodes, silicon controlled rectifiers, thyristors, PWM systems, and induction and arc furnaces for various applications, mainly causes the distortions in voltage waveforms.

The spikes at constant intervals as multiples of the fundamental frequency are known as Harmonics. If 50 Hz is the fundamental frequency, then the 3rd harmonic is five times that frequency 50, i.e. 150 Hz. Likewise, the 5th harmonic is five times the fundamental, i.e. 250 Hz, and so on. Harmonics can be discussed in terms of current or voltage.

The amount of harmonics present in the original wave can be determined by the formula of Total Harmonic Distortion (THD). The following is the formula for calculating the THD for voltage:

$$V_{THD} = \sqrt{\frac{\sum_1^n V_n^2}{V_1}}$$

Where n represents the harmonic order

V_1 is the voltage with fundamental frequency

There are several methods available to reduce this harmonics which includes passive filter design, shunt compensators, UPFC etc. Here in this paper first an UPFC is modeled in MATLAB/SIMULINK for reducing total harmonic distortion. A new D-FACTS based device, Distributed Power Flow Controller is then proposed for the reduction of total harmonic distortion and its output being compared with the results of UPFC.

"THREE PHASE PARALLEL MULTILEVEL INVERTER FED ASYNCHRONOUS MACHINE USING PHASE DISPOSITION SCHEME"

[1]N V Bharadwaj, [2]Dr. P. Chandra Sekhar, [3]Dr. M. Siva Kumar
[1]Associate Professor Electrical and Electronics Engineering GCET Hyderabad
[2]Associate Professor MGIT Hyderabad, India
[3]Professor & Head, Gudlavalleru Engineering College

Abstract

This Paper presents the Phase Disposition Scheme, which is topology independent. This scheme is used in Multilevel Inverters, interleaved parallel combination. Analysis on the other scheme which is Phase Opposition Disposition has also been performed. The best strategies related to the paralleling of inverters are evaluated, particularly those associated to current balancing between commutation cells of the same phase. Pulse width modulation (PWM) strategies and methods for multilevel converters are usually developed for series converters. In this paper it is shown that they may be applied to parallel converters using interleaving techniques, given that these converters also have multilevel characteristics. PWM methods based on carriers' disposition and on zero sequence injection are studied for parallel multilevel inverters. Analysis shows that the best method in terms of load current ripple is the phase disposition method. The current balancing between commutation cells of the same phase is comparatively superior with this method. Another objective on which work was done was to analyze these problems and to propose a solution to cancel current imbalance when using PD strategy. In addition to the above scheme POD (Phase Opposition Disposition) strategy has also been simulated which has shown comparatively same results as that of the PD strategy. The load was chosen to be a three phase induction motor drive and its parameters such as Stator Current, Speed and Electromagnetic Torque have been analysed as such.

INTRODUCTION

Power electronic converters, especially dc/ac PWM inverters have been extending their range of use in industry because they provide reduced energy consumption, better system efficiency, improved quality of product, good maintenance, and so on.For a medium voltage grid, it is troublesome to connect only one power semiconductor switches directly [1,2,3]. As a result, a multilevel power converter structure has been introduced as an alternative in high power and medium voltage situations such as laminators, mills, conveyors, pumps, fans, blowers, compressors, and so on. As a cost effective solution, multilevel converter not only achieves high power ratings, but also enables the use of low power application in renewable energy sources such as photovoltaic, wind, and fuel cells which can be easily interfaced to a multilevel converter system for a high power application.

The most common initial application of multilevel converters has been in traction, both in locomotives and track-side static converters [4]. More recent applications have been for power system converters for VAR compensation and stability enhancement[5], active filtering [6], high-voltage motor drive [3], high-voltage dc transmission [7], and most recently for medium voltage induction

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Modeling and Harmonic Analysis of Domestic Loads and Harmonic Mitigation Techniques

S.Poorna Chander Rao, G.Mohan Babu
Department of Electrical Engineering, GCET AND PCET, JNTU Hyderabad

Abstract— *Distribution system is the part of power system consisting of different combinations of linear and non-linear loads. The widespread application of power electronics is introducing non-linear loads in the distribution system resulting in the distortion of current voltage waveforms. The objective of this project is to study the harmonic distribution in a typical distribution system and suggest suitable harmonic compensation technique. Various domestic loads such as TV/CPU, computer, fluorescent lamp, CFL lamp, fan, light dimmer, washing machine, water pump, refrigerator, air conditioner dish washer and small scale industry loads such as adjustable speed drive, arc welder and lift water pump are modelled in PSCAD/EMTDC. These models are then used for harmonic analysis of domestic and small scale industrial system. Voltage and current harmonics injected at point of common coupling (PCC) due to these nonlinear loads is tested for an individual house, village and a typical industry. THD of voltage and current are used as harmonic indices and harmonic components are found.*

Current and voltage harmonic analysis is performed for standard IEEE 13-Bus medium voltage industrial distribution system by performing simulation using PSCAD/EMTDC. Adjustable speed drive is modelled and used as nonlinear loads and RL loads as static loads. The harmonic distribution in found and THD of voltage and current is found at all buses. Harmonic mitigation is performed by using single tuned, double tuned and reactance one-port filters. Also, use of shunt and series active filters is made for mitigating harmonics at PCC. Sensitivity analysis is then performed to analyse the effect on harmonic distribution and filter performance various load conditions, variation in system or transformer or feeder X/R ratio, change in filter positions and effect of power factor correction capacitor.

Index Terms—Harmonic analysis, Mitigation Techniques, Power quality

I.INTRODUCTION

In an ideal ac power system, energy is supplied at a single constant frequency and specified voltage levels of constant magnitudes. However, this situation is difficult to achieve in practice. The undesirable deviation from a perfect sinusoidal waveform (variations in the magnitude and or the frequency) is generally expressed in terms of power quality. The power quality is an umbrella concept for many individual types of power system disturbances such as harmonic distortion, transients, voltage variations, voltage flicker, etc. Of all power line disturbances, harmonics are probably the most degenerative condition to power quality because of being a steady state condition. The Power quality problems resulting from harmonics have been getting more and more attention by researchers.

1.2: Power Quality Problems

- The characteristics of the utility power supply can have a detrimental effect on the performance of industrial equipment.
- Harmonics produced by industrial equipment, such as rectifiers or ASDs, can have a detrimental effect on the reliability of the plant's electrical distribution system, the equipment it feeds, and on the utility system.
- The characteristics of the current and voltage produced by ASDs can cause motor problems. While power quality is basically voltage quality, it is not strictly a voltage issue. Since the supply system has a finite, rather than an infinite, strength, currents outside the direct control of the utility can adversely affect power

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Design of Fuzzy Logic Controller of State Estimation Uncertainty Reduction for IEEE14-Bus System

M.Pradeep[1]
[1]Asst. Professor, Department of EEE, Geethanjali College of Engineering & Technology, Cheeryal(V), Keesara(M), Medchal(D), Telangana, India
D.Krishna[2]
[2]Asst. Professor, Department of EEE, Anurag Group of Institutions, Venkatapur(V), Ghatkesar (M), Medchal(D), Telangana, India

ABSTRACT

State estimation is widely used for bad data detection and identification. To further insure the validity of measurements from the power system, additional information is incorporated into sensor fault detection and isolation schemes. In particular, we develop a fuzzy logic-based state estimation method that includes data such as historical usage trends and component reliability. Results from applying this hybrid fuzzy classifier system to the IEEE 14-bus test system are presented.

KEY WORDS — Fuzzy logic, State estimation.

I. INTRODUCTION

POWER networks are critically dependent on information and sensing equipment for system reliability, operation, protection and maintenance. In the competitive electric market, this reliance has increased with the development of information and control infrastructures. In energy management systems, state estimation is responsible for processing a set of noisy and redundant measurement data in order to provide an accurate real-time database to be used by application programs, such as economic dispatch and security analysis. The correct estimation of the system operating states in the presence of uncertain measurement data is a crucial challenge for real-time power system monitoring. Contamination of sensor data is customarily viewed as being caused by instrument inaccuracies and failures. Lately, intrusion into computer systems has become a threat to power system monitoring and sensory applications due to this potential source of corrupted data. Hence, measurement uncertainty can be introduced by a variety of causes.

Human operators have an advantage over control and protection systems in terms of their experience and ability to assimilate a wide spectrum of information and new data. In contrast, computers have the advantage of being able to process such information much faster than their human counterparts. This research is aimed at augmenting state estimation methods using an approach that can incorporate additional information that is not traditionally included as a part of the state variables. Considering the additional information such as historical usage trends, weather, and system/component reliability data engineering interpretations become highly subjective and Context dependent. Fuzzy logic is an artificial intelligence tool that can take advantage of the operators' experience and the fast data processing capability of computers. Consequently, fuzzy logic is selected in this research to create a Hybrid Fuzzy Classifier System (HFCS). Presented herein are the HFCS and its application to the IEEE 14-bus test system.

II. BACK GROUND

A. STATE ESTIMATION

The sensory network and control systems are a strategic component of power and communication infrastructures. State estimation has long been used as a method for bad data detection and identification and suppression [i-ii]. The inputs to an estimator are imperfect power system measurements of voltage magnitudes and power, VAR, or ampere-flow quantities. The estimator is designed to create best estimates of

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Biogeography based Optimization Technique for Noncascaded Short Term Hydrothermal Scheduling with Reservoir Constraint

Harish Pulluri
Associate Professor, EEE Department Geetanjali College of Engineering & Technology
Hyderabad, Telangana

T. Srihari
Assistant Professor, EEE Department Guru nanak Institutions Technical Campus,
Hyderabd, Telangana-

U. Mohan Rao
Associate Professor, EEE Department
Lendi Institute of Engineering & Technology
Vizianagaram, Andhra Pradesh

M. Girish Kumar
Assistant Professor, ECE Department
Vidya Jyothi Institute of Technology
Hyderabd, Telangana-

Abstract—Short term hydrothermal scheduling aims at determining the optimal hydro and thermal generations to achieve minimum production cost of thermal plants for a 1 day or a 1 week while satisfying various hydraulic and electric system constraints. This paper presents, a biogeography based optimization approach for solving short term hydrothermal scheduling problem. The practical hydrothermal system is highly complex and possesses linear, nonlinear relationship of the problem variables that makes the short term hydrothermal scheduling problem difficult to solve using conventional optimization methods. To overcome these shortcomings, the proposed biogeography based optimization is employed for solving this complex optimization problem. To show its efficiency and robustness, the proposed approach applied on standard hydrothermal test system consists of one hydro and one thermal plant. Numerical result of the proposed approach is compared with those obtained with gradient search method, genetic algorithm, simulated annealing, evolutionary programming, differential evolution, particle swarm optimization and clonal selection algorithm approaches. The simulation results reveal that the biogeography based approach appears to be better in terms of convergence speed, solution time and minimum cost when compared with other reported approaches. Finally, this approach is considered to be a promising alternative approach for solving the hydrothermal scheduling problems.

Keywords—biogeography based optimization; short term hydrothermal scheduling; fixed head hydro plants;

I. INTRODUCTION

Optimal scheduling of hydrothermal power system is a complex programming problem involving nonlinear objective function and combination of linear and nonlinear constraints. In a short term hydro thermal scheduling (STHTS) problem, the objective is to determine the minimum cost of thermal generation simultaneously satisfying the constraints are load balance, operating capacity of hydro and thermal units, water discharge limits, upper and lower bounds on reservoir volumes and hydraulic continuity restrictions etc. The whole scheduling horizon in short term hydrothermal system is normally one day to one week.

Several approaches have been proposed for solving optimal scheduling of hydrothermal system. Some of these approaches such as gradient search (GS) method [1], mixed integer programming method [2], dynamic programming method [3] etc., have been applied to STHTS problems and concluded that may perform well but inefficient due to nonconvexity problems, large scale systems, computational burden and dimensionality of problem. In this context, the algorithms such as heuristics methods such as artificial neural network [4], simulated annealing (SA) [5], genetic algorithm (GA) [6], evolutionary programming [7-8], particle swarm optimization (PSO) [9], clonal selection algorithm (CSA) [10], cuckoo search algorithm [11] etc., have been developed and applied successfully

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Colliding Bodies OptimizationAlgorithm for Optimal Power Flow Problem of Power System

[1]Pooja Rani. T
Assistant Professor, EEE Department,
Geetnanjali College of Engineering& Technology
Hyderabad, Telangana

[2]T. Srihari
Assistant Professor, EEE Department
Guru nanak Institutions Technical Campus
Hyderabad, Telangana

[3]Preeti
Assistant Professor, EEE Department,
ABES Engineering College
Ghaziabad, Utter Pradesh

[4]S. Anil Kumar
Assistant Professor, EEE Department,
St Mary's Group of Institution Hyderabad
Hyderabad, Telangana

Abstract—A new evolutionary algorithm called colliding bodies optimization (CBO) considered in this paper to solve optimal power flow (OPF) problem in a power system network. CBO is based on natural phenomenon of one dimensional collision between two objectives. It does not have any control parameters and is simple in structure. IEEE 30-bus system with various objective functions like; minimization of total fuel cost with valve point loading effect, minimization of emission profile are considered to test the feasibility and effectiveness of the CBO algorithm. In comparison with the other existed methods presented in the literature, the proposed CBO algorithm gives better optimal solutions for single objective OPF problems.

Keywords—colliding bodies optimization; evolutionary algorithm; optimal power flow; emission profile

I. INTRODUCTION

Optimal power flow (OPF) has asignificant importancein power system planning and operation control. OPF was first defined by Dommel and Tinneyin 1960. The main goal of OPF is to find a most favorable settings of any givenobjective functionby adjusting some of the control variables to satisfythe set of equality and inequality constraints imposed by the power system. The control variables include real power outputs except slack bus and voltage magnitudes of generated buses, shunt var compensators connected at various buses, and transformer taps.The equality constraints are the nonlinear power flow equations, and inequality constraints are the load buses voltage magnitudes, transmission line flows, slack bus real power output and reactive power limits of the generators [1].

Various analytical and conventionalmethods are used to solve the OPF problemslike, linear programing (LP) [2], Interior point [3], Newton method [4]. Nevertheless, these methods are difficult to solve when the objective functions and constraints are nonlinear. In order to defeat the drawbacks in conventionalmethods and to getapproximate optimal solution evolutionary algorithms such as, genetic algorithm (GA) [5], tabu search (TS) [6], differential evolution (DE) [7], evolutionary programming (EP) [8], artificial bee colony (ABC) [9], particle swarm optimization PSO [10],teaching learning based optimization (TLBO) [11], shuffle frog leaping algorithm (SFLA) [12]and Stud Krill Herd (SKH) [13] are developed to solve the several OPF problems.

Recently, Kaveh and Mahdavideveloped a new evolutionary called colliding bodies optimization (CBO) [14] to solve the continues optimization problems. CBO is a multi-agent algorithm and it is inspired from natural phenomenon of one-dimensional collision between two objective bodies. In CBO each agent is considered, as a colliding body (CB) with specified mass and velocity. A collision occurs between any two pair of objects and its new positions are updated with new velocities based on the collision laws. The main advantage of CBO is that, it does not have any tunable parameters and simple is in its structure. The CBO algorithm has been successfully applied to many real world problems [15-17] and obtained results have proven that the CBO is effective and superior to solve the optimization problems. In this paper, CBO is applied to solve the OPF problems of IEEE 30-bus system with different objective functions.

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HYBRID POWER GENERATION USING NON-CONVENTIONAL ENERGY SOURCES AND SEA WATER BY ELECTROLYSIS PROCESS

Thakur.PoojaRani[1], Manjul Khare[2] , D Radhika[3]

[1]*Assistant Professor, Dept. of EEE, Geethanjali College of Engineering and Technology, Keesara, Hyderabad (India)*

[2]*Assistant Professor, Dept. of EEE, Geethanjali College of Engineering and Technology, Keesara, Hyderabad (India)*

[3]*Assosiate Professor, Dept. of EEE, Geethanjali College of Engineering and Technology, Keesara, Hyderabad (India)*

ABSTRACT

In this paper we explore hybrid power sources which uses solar, wind and sea- water batteries that are not only instructive, but which can be used to drive low-power devices. It is considered only to be placed near sea-shore area as the concept involves the basic way of producing energy and converts that into electrical energy by burning metals and gets electricity (or electrical energy) by a condition for oxidation which by itself is the same as slow burning and stored in a battery storage system to provide continuous power supply when combined with hybrid power sources(solar and wind). This paper explores the electrochemistry behind an air battery using copper cathode, aluminum anode, and saltwater. If we have exact solution of saltwater and some metals we were able to generate small voltage. This on a higher generation of voltage will give another non-conventional source of energy for generation of power. This system proposes a new idea to generate hybrid power more effectively with sea water activated battery which injects an uninterrupted power supply for the load demand under all necessary conditions. The advantages, disadvantages, biological impacts and applications are also presented.

Keywords: Electrolysis, Distributed Generation, Non-conventional sources, Generation of Electricity.

I INTRODUCTION

World energy consumption is continuously rising, especially in the developing countries, to meet their energy requirements we need to expand the use of renewable sources. Sea water is one of the most upcoming renewable energy sources used now a day's. Sea water power generation is not affected by daylight, storms and earth quake, and can function 24 hours per day year round. Further, seawater power generation does not take up large piece of land, with no carbon dioxide production and can desalinate seawater. Seawater power generation is the best new energy solution for coastal regions and countries with oceanic climate, as it makes effective use of

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Novel Method for Loss Reduction and Voltage Profile Improvement with Multiple DGs

[1]Azra Zaineb, [2]J. Sridevi

Abstract— Distributed generation (DG) can be integrated into distribution systems to meet the increasing load demand. This paper discusses the sizing and sitting issue of DG placement in radial distribution systems using novel method. The main objective of the work is to minimize the active and reactive power loss and enhance voltage profile of overall system. This paper presents a methodology for optimal distributed generation (DG) location and sizing in distribution systems. The main objective of the added DG units is minimizing the total electrical network losses with acceptable voltage profile. The effectiveness of the novel method has been successfully tested on IEEE 33 bus radial distribution system in ETAP software and the results are found to be in very good agreement.

Index Terms— Voltage profile, real power losses, reactive power losses, radial distribution system, distributed generation,

1 INTRODUCTION

The electric utility system is usually divided into three subsystems which are generation, transmission, and distribution. The distribution system is commonly broken down into three components: distribution substation, distribution primary and secondary. At the substation level, the voltage is decreased and the power is distributed in smaller amounts to the customers. Consequently, one substation will supply many customers with power. Thus, the number of transmission lines in the distribution systems is many times that of the transmission systems. Furthermore, most customers are connected to only one of the three phases in the distribution system.

When you on the traditional power grid energy generation and distribution was relatively simple. The generator produced electricity at plant and the transmission system carried electricity from the plant to substations. At the substation, voltage was reduced and electricity continued to travel along the distribution system where transformers converted into voltage used by customer. At the customer site electricity passed through the meter which recorded usage as electricity was consumed. Energy flow was essentially one way. On a smart grid with distributed generation, energy can be generated close to the point of use and those who produce this power have the option to resell it to the utility [1],[2].

A generator is installed behind the metre to provide power. When this generator is not in operation power can be drawn from the grid. However, if there is an outage or when power prices peak, users can go off-grid and use a private generator to produce power. Solar, wind and thermal energy are renewable sources that can generate energy close to the point of use. Unlike major power stations, renewable energy resources can be installed in small increments and they have extremely low on-going costs. Though renewable energy resources are less predictable than the power generated by traditional means, hybrid systems can utilize both renewable and traditional power. With access to distributed generation resources within a smart grid, utilities can configure the existing systems to meet peak power needs and diversify the range of energy resources to increase the reliability of energy flow [3],[4]. For customers distributed generation supports

(i) Reduced energy costs

(ii)Reduced reliance on fossil fuels and

(iii) Increased use of renewable resources

Despite its relative unpredictability, renewable energy can fit with the load curve. For instance, in summer the sun produces high energy during the hardest part of the day when air conditioning is required, so solar energy is in affect converted into electric energy for cooling. Within the smart grid, integrated into the smart home and monitored by smart metering distributed generation is a new paradigm for energy distribution and use. For the first time energy flows to users as well as away from the users enabling utilities and their customers to work together to ensure that power is high quality, reliable, green and low cost.

Distribution systems hold a very significant position in the power system since it is the main point of link between bulk power and consumers. Effective planning of radial distribution network is required to meet the present growing domestic, industrial and commercial load day by day.

2 LOAD FLOW ANALYSIS

Consider a branch connected between buses 1 and 2 as shown in Fig. 1

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Wind Inter connection of Grid at the Distribution level to improve the Power Quality by Using Resonant Controller

Azra Zaineb[1], J. Sridevi[2]
EEE, Department[1,2], Geethanjali College of Engineering & Technology[1]
Gokaraju Rangaraju Institute of Engineering & Technology[2]
Email:azrazaineb@gmail.com[1], sridevi.j.8@gmail.com[2]

Abstract- Sustainable power source assets are as a rule progressively associated in dispersion frameworks using power electronic converters. This Paper manages an exceptional control technique To beautify the Power excellent at the dissemination framework by making use of a four-leg Inverter. The Inverter is appearing multifunction in that ability as 1) manage converter to infuse manage constituted of RES to the network, and a pair of) shunt APF to repay modern-day unbalance, stack cutting-edge sounds, stack receptive strength request and load nonpartisan present day. This new control idea is exhibited with broad MATLAB/Simulink reproduction thinks about. The Performance was tried for Proposed Resonant controller and Conventional PI controller and THD is likewise thought about.

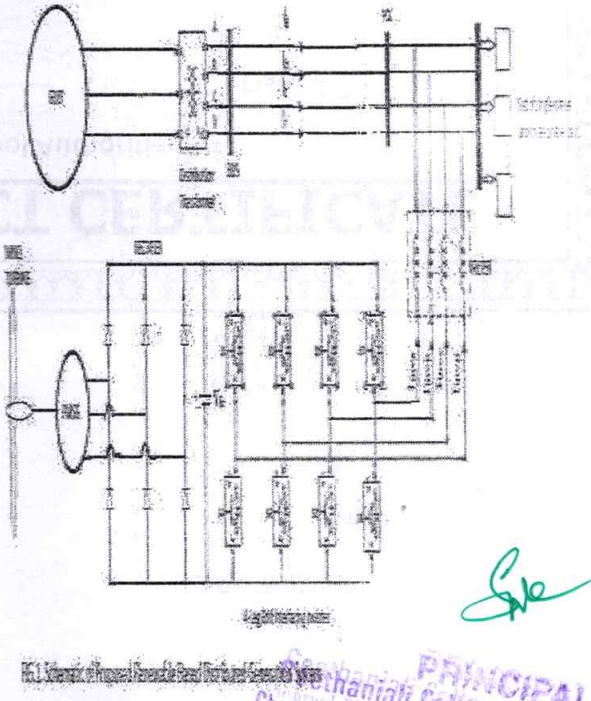
1. INTRODUCTION

Sustainable strength source is energy that is collected from inexhaustible belongings like daytime, wind, rain, tides, waves and geothermal power[1].Wind control is the usage of wind move thru breeze mills to mechanically manage turbines for electricity. Twist control,asan other to consuming petroleum products, is rich, inexhaustible, broadly appropriated, clean, creates no gas emanations all through task, expends no water, and uses next to no land[2]. The net impacts on the air are far less tricky than those of non-inexhaustible power sources. Wind control gives variable power, that is predictable from year to year however has vital variety over shorter time scales.

A breeze cultivate is a group of twist turbines inside a similar area utilized for generation of electrical power. A huge breeze homestead may incorporate numerous hundred individual breeze turbines appropriated over a broadened region. A breeze homestead may likewise be set seaward. Lion's share of all huge breeze turbines have comparative plan — a level pivot wind turbine having an upwind rotor with 3 sharp edges, snared to a nacelle over a tall tubular pinnacle..

2. SYSTEM DESCRIPTION

The proposed framework comprises of a breeze turbine framework which is associated with lattice through AC-DC-AC converter as appeared in Fig.1.Here AC to DC change is done through a Diode Bridge Rectifier(DRB) and DC to AC transformation is finished by 4-leg Voltage Source Inverter(VSI). A DC connect is utilized to interface AC-DC-AC converter and matrix. Also, network is associated with an arrangement of direct and non-straight loads through a conveyance transformer. The 4-leg voltage source inverter is a key segment of a DG framework as it interfaces the breeze turbine framework to the matrix and conveys the created control. The breeze turbine framework is an AC source with rectifier coupled to dc-interface. The variable pace wind mills create control at variable air conditioner voltage[6]-[8]. The dc-capacitor decouples the Wind turbine from matrix and conjointly permits independent management of converters on either aspect of dc-connect. Inductor is associated with 4-leg VSI which



Design of A Multilevel Inverter on Power System Performance using Interline Power Flow Controller

V. Padmaja[1,a)] and Dr. Y Siva Reddy[2,b)]

[1] *Research scholar, Department of Electrical and Electronics Engineering, JNTU Ananthapur, 515002, India*
[2] *Professor, Department of Electrical and Electronics Engineering, G.Pulla Reddy Engineering College, Kurnool, 518007, India*

[a)] Corresponding author: padmajavoleti08@gmail.com
[b)] yvsreddy_123@rediffmail.com

Abstract. There is a large increase in power demand and by using Flexible AC transmission systems (FACTS) controllers various steady state control problems in power system can be resolved. In FACTS devices converters form the main component. Apart from the existing multilevel inverters here a new design of inverter is proposed which aims at reducing the number of switches and thus reducing the switching losses. The scheme proposed here is used on an Interline Power Flow Controller (IPFC). The inverter can produce the pulses with different width and magnitude and the output almost resembles a sine wave. The proposed multilevel inverter is applied to an IPFC for protecting voltage sags, swells and momentary interruptions. The dynamic performance is analyzed and verified through MATLAB/SIMULINK.

INTRODUCTION

The transmission power in ac systems can be given by $P=V_sV_rSin\delta/X$ thus by appropriate assumptions achieve desirable power flow control can be achieved. Flexible AC Transmission System (FACTS) controllers conceptualized during 1980's are mostly used for solving different power system steady state control problems. [1, 2]

The quick growth of power electronics in FACTS technology helped in development of FACTS controllers which are classified in two different groups-Thyristor-controlled FACTS controllers and Voltage Source Converter (VSC) based FACTS controllers. VSC-based FACTS controllers symbolize the novel technology for ac transmission system compensation. [3, 4]

One of the VSC-based FACTS controllers includes the Interline Power Flow Controller (IPFC) which is the main issue of this paper. [1, 3, 4]

Gyugyi first proposed Interline Power Flow Controller which can compensate a number of transmission lines at a substation. [5]

IPFC has two or more SSSC with a common dc-link. The major component of these FACTS devices is a converter, and various types of converters have been already proposed which aim at reducing the harmonics [6].

This paper proposes a unique design of inverter with reduced number of switches which is used for FACTS controllers [7]. The proposed multilevel inverter is applied to an IPFC which has been used to prevent voltage sag and swell and to improve power quality problem. The dynamic performance is analyzed and verified through with the help of MATLAB /SIMULINK software.

PROPOSED MULTILEVEL INVERTER AND SWITCHING SCHEME

In the proposed topology for 7 level output we are using 4 DC sources and 8 switches which is shown in Figure 1.

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Comparative Study of Maximum Torque Control by PI ANN of Induction Motor

Dr. G.Madhusudhana Rao[1] and G.Srikanth[2]

[1]Professor of Electrical and Electronics Engineering, TKR College of Engineering and Technology, Hyderabad, India.
[2]Associate Professor, Department of Electrical and Electronics Engineering, Geethanjali college of Engineering and Technology, Hyderabad, India.

Abstract

A novel maximum torque per Ampere (MTPA) controller for the induction motor (IM) drives is presented. It is shown to be highly suited to applications that do not demand an extremely fast dynamic response, for example, electric vehicle drives. The proposed MTPA field oriented controller guarantees asymptotic torque (speed) tracking of smooth reference trajectories and maximizes the torque per Ampere ratio when the developed torque is constant or slow varying. An output ANN based feedback linearizing concept is employed for the design of torque and flux subsystems to compensate for the torque-dependent flux variations required to satisfy the MTPA condition. As a first step, a linear approximation of the IM magnetic system is considered. Then, based on a standard saturated IM model, the nonlinear MTPA relationship for the rotor flux are derived as a function of the desired torque, and a modified torque-flux controller for the saturated machine is developed. The static and dynamic flux reference calculation methods to achieve simultaneously an asymptotic field orientation, a torque-flux decoupling, and an MTPA optimization in a steady state, is proposed. The proposed ANN based MTPA control algorithm also demonstrates a decoupling of the torque (speed) and flux dynamics to ensure asymptotic torque tracking. In addition, a higher torque per Ampere ratio is achieved together with an improved efficiency of electromechanical energy conversion.

INTRODUCTION

During recent decades there has been a growing trend within many applications to replace the induction machine (IM) with a permanent magnet synchronous machine (PMSM) due to its higher efficiency, torque, and power density. However, the cost of a PMSM is significantly higher than that of the IM due to the use of rare-earth magnetic materials which have a very limited origin and their cost is continuously increasing. The tendency to reduce the use of expensive rare-earth magnets in industrial and electrical traction drives has driven a renewed interest for research into advanced design and control concepts for IM. Field-oriented vector control (FOC), advanced FOC, and direct torque control (DTC) of IMs have been established as a defacto industrial standard for high and medium dynamic performance applications. Vector controlled and DTC IM drives typically operate with constant flux magnitude even at low values of produced torque which results in a good dynamic performance. However, conversely, the machine efficiency and power factor can be low, especially for small torque values.

The IM torque is a product of the flux amplitude and the torque component of the stator current, providing a degree of freedom for reduction of the power conversion losses or for attaining other performance criteria. The optimization techniques typically reported in publications adjust the flux level as a function of the electromagnetic torque using various optimization procedures. The flux regulation restricts the drive's dynamic performance; hence, this approach can be employed in applications not requiring an extremely fast response, for example, in electric vehicle drives where the drive only operates at a rated torque for a limited proportion of time. A number of control strategies to optimize different performance objectives are known including minimization of active and total losses, power factor maximization, maximum torque per Ampere (MTPA) control, maximum torque per voltage control, and maximum power transfer. The established optimization methods are designed for a steady-state operation (i.e., the drive is operating in constant torque). Dynamic behavior optimization during torque transient is only considered in very few papers.

MTPA control minimizes the stator current for a given machine torque. Maximizing the machine torque by having limited source voltage and inverter current capability improves the electromechanical system performance. This is particularly beneficial for traction systems. Under the MTPA control strategy, the torque controller adjusts the flux reference to increase the efficiency at low loads. As a result of this optimization, the torque per Ampere ratio is maximized and, in addition, the achievable values of motor efficiency are close to those obtained using the minimum active losses optimization criterion. The basic MTPA control objective is achieved by controlling stator current torque and flux components, expressed in terms of rotor flux reference frame, to be equal. This leads to an IM operation with a constant slip frequency which is equal to the reciprocal of the rotor time constant. The MTPA relations are derived from the condition of the IM when producing constant electromagnetic torque. A few theoretical results based on vector and scalar control concepts are: modified field-orientated control nonholonomy approach, and voltage frequency control. However, simultaneous control of machine torque and flux results in poor torque dynamics; moreover, these dynamics cannot be specified due to the complexity and nonlinearity of the controlled plant (IM).

For all the optimization techniques above, an important issue for the variable flux operation is the machine saturation effect. This effect results in varying machine inductances; hence, the assumption of linear magnetic circuits, common for standard

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Tire Multi Axial Nut Setter

B.Subbarao[1], Dr. E.Ramjee[2], Dr. T. Siva Prasad[3]

[1]*Associate Professor, Dept. of Mechanical engineering, Geethanjali College of engg. and Tech., Telangana, India*
[2]*Professor, Dept. of Mechanical engineering, JNTU Hyderabad, Telangana, India*
[3]Professor, *Dept. of Mechanical engineering, Geethanjali College of engg. and Tech., Telangana, India*

Abstract - Many Female drivers, physically challenged people and elders face a problem in opening/tightening the car wheel when it is punctured. In order to overcome this problem a very simple product can replace the whole tool kit which is used for tire replacement. Today's world is of the fast and rapid process. Everybody wants to save time and effort by inventing some newer technique or mechanism and implement them in the daily life. The objective of this paper is to atomize the labor work in tightening or losing the nuts one by one. This is achieved by developing a planetary gear mechanism as such ours which reduced the time and effort for the above mentioned task that is losing or tighten the nut of the car wheel. If we consider a four wheeler remove and replace the car wheel is a very frequent job performed by the worker. Normally each of the four nuts is removed/tightened individually by simultaneously applying the spanner/lever., most of the families have at least one vehicle, typically, car, to move easily and quickly. With the increment of the number of cars on the road; the number of car problem due to tire failure has increased. Often, the car is provided with tire wheel nuts remover and jack for instance spare tire replacement. The obstacles are time waste and force needed. Based on the capability of torque application by these drivers, a vehicle all-wheel-nuts remover is designed. This wheel nut removal is working with a gear system usage to reduce the force needed to remove a one nut and directly remove all four nuts At same time. This paper may be has solved the four nut removal problem and force usage utilization..

Key Words: CAD,GEAR,FEM & ANSYS.

1.INTRODUCTION

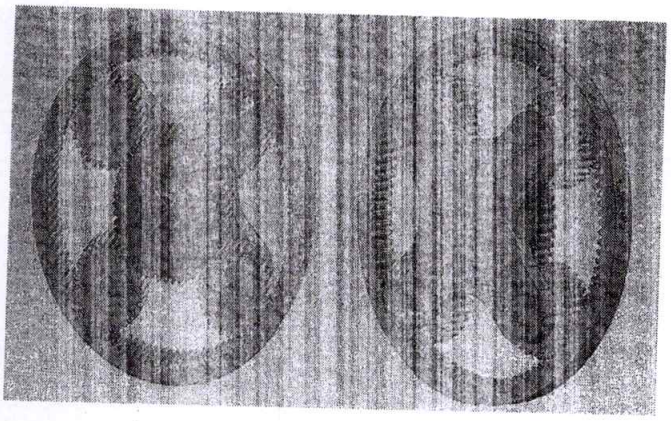
Design :

1.2 Need:

Many Female drivers, physically challenged people and elders face a problem in opening/tightening the car wheel when it is punctured. In order to overcome this problem a very simple product can replace the whole tool kit which is used for tire replacement. Today's world is of the fast and rapid process. Everybody wants to save time and effort by inventing some newer technique or mechanism and implement them in the daily life. The objective of this paper is to atomize the labor work in tightening or losing the nuts one by one. This paper focuses on the minimization of human effort and time consumed for fixing all four nuts of the four wheeler tire with a single stroke of lever by using multiple operated spanners. This is achieved by developing a planetary gear mechanism as such ours which reduced the time and effort for the above mentioned task that is losing or tighten the nut of the car wheel.

1.3 Working principle:

Planetary gear box works on the principle of planetary movement. Each stage planetary gear box consists of a central Sun gear in gearing with exactly those three satellites around him, which in turn engaged with internal teeth of the external ring gear. As a rule, the ring gear is stationary and forms part of the Corps, the entrance shows the Sun gear and the output obtained from three planetary gears through the led. However, of these three members can be permanently, the second is controlled by the input and output can be obtained from the third element. Because of this flexibility, the planetary gearboxes have a wide variety and countless applications. As the total load is distributed on three planets, the treatment time of power of this type of transmission is very high compared to all other types of transmissions. Construction Planetary gear box works on the principle of planetary movement.



Planetary arrangement view-1
Planetary arrangement view-2

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Investigation Into Flow Field of Centrifugal Pump Impeller

B.Subbarao [1], Dr. E.Ramjee [2], Dr. M. Devaiah[3], Dr. T. Siva Prasad[4]

[1, 3, 4] *Department of Mechanical Engineering, Geethanjali College of Engineering and Technology, Telangana State, India*

[2] *Professor, Department of Mechanical Engineering, JNTU Hyderabad, Telangana, India.*

Abstract

This study deals with the design and performance analysis of centrifugal pump impeller. In this thesis, centrifugal pump is analyzed by using a single-stage end suction centrifugal pump. Two main components of a centrifugal pump are the impeller and the casing. The impeller is a rotating component and the casing is a stationary component. In centrifugal pump, water exits radially, while water enters axially through the impeller eyes. The pump casing is to guide the liquid to the impeller, converts the high velocity kinetic energy of the flow from the impeller discharge into pressure. A mean of centrifugal pump impeller is passed out and analyzed to get the best performance point. The design and performance analysis of centrifugal pump impeller are chosen because pump is the most useful mechanical Rotodynamic machine in fluid works which is widely used in domestic, irrigation, industry, large plants and river water pumping system. In this study, the pump is driven by 5.5 KW electric motor and the design is done in CFturbo 9 modeling package. The head and flow rate of this pump are 19.50 m and 20 LPS respectively and the motor speed is 2900 rpm. The number of impeller blade is 6 blades. The performance study of centrifugal pump is carried out after designing the dimensions of centrifugal pump. Simulation of present work is carried out in a commercial CFD software ANSYS fluent 14.5. Corresponding pressure contours and velocity contours are plotted at design flow rate (20 LPS), part flow rate (16 LPS) and excess flow rate (25 LPS). The simulation values are compared with analytical solution

Key Words: CFD and ANSYS fluent 14.5.

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Finite Element Analysis of Hydroforming Components (Bellows) Using ANSYS

G. Jagan Naik[1], Dr. M. Devaiah[2], Pogu Raamcharaaun[3]

[1, 3]Department of Mechanical Engineering, Avanthi's Scientific Technological Research and Academy, Hayathnagar, R.R. Dist, Telangana, India.

[2]Department of Mechanical Engineering, Geethanjali College of Engineering & Technology, Cheeryal (V), Keesara (M), Medchal Dist. 501301, Telangana, India.

Corresponding Author:Devaiah.malkapuram@gmail.com

Abstract

The application of finite element Analysis (FEA) in the area of metal forming and material processing has been increasing rapidly during the recent years. Hydro forming is a manufacturing process where fluid pressure is applied to ductile metallic blanks to form desired component shapes. The blanks are either sheet metal or tabular sections. If sheet metal blanks are used, the process is called sheet metal hydro forming, and if tabular-section blanks are used, it is called tube hydro forming. In either of these processes, a hydro forming tool (or die), a hydraulic press and a fluid-pressure intensification system are required.

The challenges that are present during sheet hydro forming processes are divided into two categories viz Material and Fluid Pressure. The material challenge refers to the choice and behavior of the sheet metal. One of the major obstacles concerns the balance between the fluid pressure and the ductility of the material chosen for the hydro forming process. The fluid pressure needs to be high enough to stretch and bend the sheet through its radius of curvature to conform to the shape of the punch yet the material needs to be ductile enough to form without rupturing. Thus the Project mainly focussses on study of effect of the two parameters i.e. material and fluid pressure on the hydro formed components. Finite element modeling and analysis of sheet hydroforming has been performed using ANSYS.

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Report on modification of I.C.Engines

[1] Shivaprasad Reddy. K, [2] M. Devaiah, [3] N. Satya Guha
[1,3] Students IV Year B.Tech, Department of Mechanical Engineering, Geethanjali College of Engineering and Technology, Hyderabad, India.
[2] Professor Departments of Mechanical Engineering, Geethanjali College of Engineering and Technology, Hyderabad, India.

Abstract: – **Depleting Natural resources and Global warming has become a very huge challenge for mankind and one of the reasons for environmental degradation is emission of harmful gases due to incomplete combustion or over combustion of the fuel. The problem is becoming severe day by day because of increase in the vehicular density. Numerous solutions have been proposed till date to overcome this challenge. In this paper, the effects of engine on nature how it acts under the manipulation of strokes (internal combustion engine convertible from two-stroke to four strokes or vice-versa). With this mechanism air charged from high pressure receiver charges the engine through the electric valve independently of the fuel and enables, due to a great difference in pressures, fast performance of the process eliminating the intake and compression strokes which results in a two-stroke cycle operation. This downsizing leads to a 30% reduction in fuel consumption and correspondingly lowered emissions. Replacing the mechanical exhaust valve with the electric valve enables switching from two-stroke to four-stroke mode of operation and vice versa only by the electronic instruction which is either by manual operated command or by pre-installed electronic device with the valve timing commands similar to E.C.U. Location of the fuel nozzle directly in the compression chamber and its operation independently from the electric air valve enable use of the petrol, diesel, gas and oil. Thereby, Increases the overall performance of the engine..**

Keywords - **I.C. Engine, two-stroke, four-stroke, E.C.U, Valves, mechanism, convertible.**

I. INTRODUCTION

In today's world, there are more number of vehicles on road than before. On an average, every house in developed and developing country has at least one two or four-wheeler at their home. Cost escalation and increase in demand of the crude petroleum and failure to invent an alternative source of fuel are the current day problems. Added to this, petrol products when burned in an engine emit harmful effluents as exhaust. Numerous researchers around the world are involved in the field of developing alternate fuels and to reduce emission by external means like use of catalytic convertors and engine modifications. In this present research worka solution enabling the engine designed as a four-stroke engine to operate both as a two-stroke and a four-stroke engine. This means that the respective mode of operation, powerful or economic, can be chosen depending on the situation in the traffic. This engine can also operate either on petrol or Diesel as well as on the atmospheric or compressed air pressure or compressed natural gas.

II. THEORY ON STROKES OF ENGINE

A four-stroke engine (also known as four-cycle) is an internal combustion engine in which the piston completes four separate strokes which comprise a single thermodynamic cycle. A stroke refers to the full travel of the piston along the cylinder, in either direction. The four separate strokes are termed:

INTAKE: this stroke of the piston begins at top dead centre. The piston descends from the top of the cylinder to the bottom of the cylinder, increasing the volume of the cylinder. A mixture of fuel and air is forced by atmospheric (or greater) pressure into the cylinder through the intake port.

COMPRESSION: with both intake and exhaust valves closed, the piston returns to the top of the cylinder compressing the air or fuel-air mixture into the cylinder head.

POWER: this is the start of the second revolution of the cycle. While the piston is close to Top Dead Centre (TDC), the compressed air–fuel mixture in a gasoline engine is ignited, by a spark plug in gasoline engines, or which ignites due to the heat generated by compression in a diesel engine. The resulting pressure from the combustion of the compressed fuel-air mixture forces the piston back down toward Bottom Dead Centre (BDC).

EXHAUST: during the exhaust stroke, the piston once again returns to top dead centre while the exhaust valve is open. This action expels the spent fuel-air mixture through the exhaust valve(s).

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Comparison of Thermal Conductivity Experimental Results of SIC_P/AL_2O_3 Ceramic Matrix Composites with Mathematical Modeling

Dr. Malkapuram Devaiah[1]

[1]*Department of Mechanical Engineering, Geethanjali College of Engineering and Technology, Cheeryal (V), Keesara (M), Medchal Dist. 501301, Telangana, India.*
Corresponding Author: devaiah.malkapuram@gmail.com

Abstract

DIMOX processed SiC_p/Al_2O_3 Ceramic Matrix Composites of dimensions measuring 70 × 70 × 20, in mm with varying SiC volume fraction. The experimental result of $SiCp/Al_2O_3$ composites such as thermal conductivity property is compared with Mathematical models predictions.

In this paper, different mathematical model predictions such as Rule-of-mixture for heat flow parallel to layers (parallel ROM), Rule-of-mixture for heat flow parallel to layers (normal ROM) and Maxwell's model are used to determine the thermal conductivity property values of SiC_p/Al_2O_3 composites with varying SiC volume fraction in the range of 0.35 to 0.43, the results of mathematical model predictions are compared with experimental values of DIMOX processed SiC_p/Al_2O_3 composites with different volume fractions of SiC. The experimental results of SiC_p/Al_2O_3 have relatively good agreement with the model prediction of normal Rule-of Mixture (ROM).

Keywords: Ceramic Matrix Composites, Al_2O_3, SiC, Mathematical models, thermal Conductivity.

INTRODUCTION

Ceramics have excellent strength-to-weight ratio when compared to advanced metals and alloys. These attractive properties can also be maintained to extremely high temperature, which make them a sole choice for high temperature applications. A variety of structural applications of ceramic materials ranging from high temperature gas turbines and adiabatic diesel engines to cutting tools and other wear-resistant parts. In each of the said applications, beneficial properties of ceramics such as high stiffness, strength and hardness, low density, and good resistance to corrosion, oxidation, and wear at high temperatures have been explored. With the ever-increasing performance requirements of engineering materials, the properties of monolithic materials are pushed to their limits. Monolithic ceramics possess high strength but lack the fracture toughness, required in many applications, such as components in jet engines. Ceramic materials have properties that make them ideal candidates for many elevated temperature applications such as heat exchangers and turbine engines components. Due to the refractory nature of ceramics, they are, at times, the sole selection for a material that may probably satisfy the foremost hard-to-please necessities significantly at high temperatures. In addition to giving high melting or decomposition temperatures, several ceramics posses different enticing options like low density, warm temperature strength, high hardness and resistance to creep deformation, thermochemical stability and lack of reactivity in-tuned with different materials and varied atmospheres, and, last, however not least, high wear resistance

In this paper, validation of SiC_p/Al_2O_3 composites fabrication through directed metal oxidation process, and its mechanical and physical properties was modeled which had been experimentally tested and reported by devaiah *et al.* [7]. This is followed by a comparison of the finite element with experimental results on SiC_p/Al_2O_3 composites fabrication through directed metal oxidation process in the following study.

A.S. Nagelberg *et al.* studied thermal conductivity of SiC particulate reinforced alumina matrix composites fabricated by directed metal oxidation process. The conductivity of the composites varies between 70 W/m.^{0}K - 20 W/m.^{0}K for temperatures 25°C to 1000°C. They also, reported the thermal conductivity of 2-D Nicalon/alumina composites produced by directed metal oxidation process. The conductivity of the composites varies between 8.7 W/m.^{0}K to 5.5 W/m.^{0}K, for temperatures between 100°C to 1200°C [1]. M. Belmonte *et al.* report thermal conductivity of Al_2O_3/20 vol.% SiC composites prepared by hot pressing at 1500°C as a function of SiC grain size. The thermal conductivity was measured by the laser flash method was falls in the range of 17.10 to 31.0 W/m.^{0}K at room temperature to 500°C [2]. L. Fabbri *et al.* reported that the thermal conductivity of Al_2O_3/SiC_w composites is slightly greater than pure Al_2O_3, and the highest value reported for Al_2O_3 -30 vol. % SiC_w composites at levels of 40 W/m.^{0}K [3]. Marianne. I.K Collin *et al.* indicated thermal conductivity of Al_2O_3 -30 vol. % SiC_w prepared by hot pressing process in a protective atmosphere of pressure 25 MPa and temperature of 1850°C for 60 min. the conductivity was falls in the range of 24 - 34 W/m.^{0}K [4]. Rafael Barea *et al.* studied thermal conductivity of hot pressed 0 - 30 vol.% of SiC/Al_2O_3 platelet composites. The conductivity measured as a function of the platelet content was varying in the range of 42 - 49 W/m.^{0}K [5]. In the present work, the thermal conductivity of directed metal oxidation processed SiC particulate reinforced Al_2O_3 matrix composites is evaluated as a function of SiC volume fraction. The thermal conductivity of the SiC particulates has been estimated from the composite data and compared to published values for SiC.

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Optimization of Process Parameters in Arc Welding On Material Mild Steel

Dr. M. Devaiah[1], R. Sudarshan[2]

Professor, Department of Mechanical Engineering, Geethanjali College of Engineering & Technology, Cheeryal (V), Keesara (M), Medchal Dist. 501301, Telangana, INDIA[1].

Associate Professor, Department of Mechanical Engineering, Geethanjali College of Engineering & Technology, Cheeryal (V), Keesara (M), Medchal Dist. 501301, Telangana, INDIA[2].

Abstract: The aim of this paper is to predict and optimize ARC welding of mild steel in house hold purpose, through applying tensile loads in ANSYS software, working practically on material and optimizing the welding operation by controlling selected welding parameters; tapered angles and welding current, to relate the ultimate tensile strength to the selected input welding parameters. The materials studied in this work are Mild steel. The experimental results which are obtain corresponding to the effect of different Tapered angles(30,45,60), and different welding currents (100,130and160Amp), on ultimate tensile strength of welding MILD STEEL , are use to find out the significance of input parameter on output by experimenting on UTM and thermal analysis in ANSYS software. This result shows its better ultimate tensile strength prediction capability and applicability to various purposes by ARC welding leading to effective selection of machining parameter for better ultimate tensile strength.

Keywords: Ultimate tensile strength, ARC welding, Modeling-PROE, Universal Tensile Machine-UTM, Thermal Analysis-ANSYS

I. INTRODUCTION

Welding is a manufacturing process of creating a permanent joint obtained by the fusion of the surface of the parts to be joined together, with or without the application of pressure and a filler material. The materials to be joined may be similar or dissimilar to each other. The heat required for the fusion of the material may be obtained by burning of gas or by an electric arc. The latter method is more extensively used because of greater welding speed.

Welding is extensively used in fabrication as an alternative method for casting or forging and as a replacement for bolted and riveted joints. It is also used as a repair medium e.g. to reunite a metal at a crack or to build up a small part that has broken off such as a gear tooth or to repair a worn surface such as a bearing surface.

Arc welding is the process, in which heat is generated by an electric arc struck between an electrode and a work piece or between two electrodes. Electric arc is luminous electrical discharge between two electrodes through ionized gas. This electric arc between the electrode and work piece close the electric circuit and create temperature up to 3600^{0}C, which is sufficient for fusion the work piece edges and join together. Most of these processes use some shielding gas while others employ coatings or fluxes to prevent the weld pool from the surrounding atmosphere. Joining of dissimilar metals has found its use extensively in power generation, electronic, nuclear reactors, petrochemical and chemical industries mainly to get tailor- made properties in a component and reduction in weight. However efficient welding of dissimilar metals has posed a major challenge due to difference in thermo-mechanical and chemical properties of the materials to be joined under a common welding condition. This causes a steep gradient of the thermo-mechanical properties along the weld. A variety of problems come up in dissimilar welding like cracking, large weld residual stresses, migration of atoms during welding causing stress concentration on one side of the weld, compressive and tensile thermal stresses, stress corrosion cracking, etc., Now before discussing these problems coming up during dissimilar welding, the passages coming below throw some light on some of the causes of these problems.

In dissimilar welds, weldability is determined by crystal structure, atomic diameter and compositional solubility of the parent metals in the solid and liquid states. Diffusion in the weld pool often results in the formation of inter metallic phases, the majority of which are hard and brittle and are thus detrimental to the mechanical strength and ductility of the joint.

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Optimization of fluid flow apportionment in a manifold for a skewed flow distribution

Bura Sreenivas

Abstract— Fluid flow optimization of an 8-parameter flow manifold for skewed flow distribution is dealt in this paper. We deal with a one-by-four manifold. We have to optimally locate the guide plates. The objective of the work is to minimize the standard deviation of the actual flow rates from the set points by controlling 8 parameters four of which are lengths and four of which are angles of deflection. The set points are flows in ratios of 40:30:20:10. We take the input as the 60 data points generated by the process of CFD. Using the combination of ordinary least squares and genetic algorithms we develop the minimization algorithm for the objective function. We have successfully evaluated the objective and 8 parameters for skewed flow distribution. Since we needed to achieve skewed distribution, the guide vanes were found to have greater role in offering resistances in flow apportionment as compared to the case of equal flow distribution, thus serving as high value resistors in the manifold circuit.

Keywords—genetic algorithms, least squares, manifold, skewed flow distribution

I. INTRODUCTION

The optimization algorithm employed in this work is from the category of non-gradient based algorithms which is the genetic algorithms. The use of genetic algorithms needs a fairly large population solution to start the optimization algorithm. The approach we need to follow is to use the meta models.

Elsayed & Lacor[1] and Elsayed & Lacor[2] built CFD simulations using the technique of ordinary least squares.

In order to facilitate principal component analysis(PCA) and support vector machine application, Li, Fevens & Krzyz[3] present an algorithm for clinical image segmentation. They classified the image processing process into two steps. These two steps are learning and segmentation.

Among many applications that are possible for PCA, Narasimhan[4] use PCA for model identification. They advocate a method for obtaining an approximate estimate of the model and error covariance matrix. They also provide an approach for model order determination and data scaling. The data scaling has been noted and used in this work. In addition to usual PCA, they have also evaluated results using iterative principal component analysis (IPCA). Shariati-rad and Hasani[5] employed PCA for determining the number of species that form during the equilibrium in the complex metal formation of ions with 1-10-phenantroline.

Coussement, Gicquel and Parente[6] employ PCA to investigate low dimensional manifold in the combustion process. They have also used a clustering method where they determine the number of principal components along with the number of clusters in MGLPCA.

Lindau et al.[7] constructed PCA to obtain statistical shape modeling for the virtual assemblies. Their paper demonstrates how PCA can be extended to larger applications to develop more tailor-made and robust applications that are suitable for the given domain. The application they considered were car-bodies.

Godoy, Vega, and Marchetti[8] present a detailed comparison between PCA and partial-least squares regression (PLSR) and brings out a relationship between them. They initially present the geometric properties of the decomposition of input(X-PCA) and output data(Y-PCA) in relation to the PCA. They have achieved the decomposition using partial least squares regression. They have then presented the analogies of data subject to PLSR and YXPCA (input-output PCA). PLSR was found out to be more reliable for output-prediction, while YXPCA was more reliable for reducing redundancies. They have pointed out that the main difference between YXPCA and PLSR is that YXPCA does not distinguish between inputs and outputs and combines them in a single matrix, while PLSR differentiates between inputs and outputs. They have presented the derivations for the modeling for both PLSR and YXPCA in a separate sub-section. They have presented another section containing the relationship between PLSR and PCA.

Manifolds with guide vanes are employed in chemical process industries to achieve various kinds of flow distributions of various desirable ratios. The chemical process operations include heat exchangers; fuel cells etc. and their uses are versatile. The flow manifolds employed in this work use guide vanes to select flow distributions as against the rigid wall based manifolds that do not contain guide vanes. The advantage of placing guide vanes in the entrances of the outlets is that we can tune our desired flow distribution without the need to alter the construction of the walls of the manifolds. In our work we discuss the use of manifolds for skewed flow distribution.

A more realistic flow optimization for skewed flow distribution was carried out by Srinivasan & Jayanti[9] . They used Box complex method for skewed flow apportionment, which is a gradient based method as an optimization algorithm while in this work we use evolutionary algorithms for

Dr. Bura Sreenivas, is an alumni of Department of Mechanical Engineering, Indian Institute of Technology Madras, Chennai-600036 and is currently working as a Professor in the department of Mechanical Engineering, Geethanjali Institute of Engineering and Technology, Hyderabad, State of Telangana, India-501301 (e-mail: burasreenivas @gmail.com)

Optimization of Fluid Flow Distribution for a Skewed Flow Pattern in a Manifold

BURA SREENIVAS[1], JAN SKRINSKY[2]

[1]Department of Mechanical Engineering
Geethanjali College of Engineering and Technology
Cheeryal, Hyderabad, State of Telangana,
INDIA-501301

[2]Energy Research Centre,
VSB-TU Ostrava, 17. Listopadu 15, 70030,
CZECH REPUBLIC

burasreenivas@gmail.com, jan.skrinsky@vsb.cz

Abstract: Fluid flow optimization of an 8-parameter flow manifold for skewed flow distribution is dealt in this paper. We deal with a one-by-four manifold. We have to optimally locate the guide plates. The objective of the work is to minimize the standard deviation of the actual flow rates from the set points by controlling 8 parameters four of which are lengths and four of which are angles of deflection. The set points are flows in ratios of 40:30:20:10. We take the input as the 60 data points generated by the process of CFD. Using the combination of ordinary least squares and genetic algorithms we develop the minimization algorithm for the objective function. We have successfully evaluated the objective and 8 parameters for skewed flow distribution. Since we needed to achieve skewed distribution, the guide vanes were found to have greater role in offering resistances in flow apportionment as compared to the case of equal flow distribution, thus serving as high value resistors in the manifold circuit.

Keywords: Genetic algorithms, Least squares, Manifold, Skewed flow distribution

1 Introduction

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DESIGN AND FABRICATION OF ARI (AIR ENERGY REPLENISHING INSTRUMENT)

[1]Peram Laxmireddy, [2]D.Emmanuel Raju, [3]SK.Haneefulla Shariff, [4]T. Sai Sukumar, [5]T. Sindhuranjali
[1]Asst. Professor, [2345]IV Year Student
[12345]Department of Mechanical Engineering,
[12345]Geethanjali College of Engineering and Technology, Hyderabad, India

Abstract: ARI is an acronym for air energy replenishing instrument. Whenever vehicles travel, they experience resistance to their movement by air. This air resistance is called air drag and is the main reason why vehicles cannot achieve high speeds while travelling in open air. ARI is a device which harnesses energy from this air drag and this energy can be stored in a power bank from where power can be used whenever required. ARI can also function as a study lamp and an emergency fan. It can be mounted onto both cars and bikes. After the charging is done, the battery case can be separated from the device which enhances the flexibility of the device. ARI is very compact in size and can be dissembled when not in use with ease.

Index Terms – Air Energy Replenishing Instrument, Air drag, harness, Power bank, Flexibility.

I. INTRODUCTION

After the *discovery* of electricity and its properties to be stored in a battery, mankind made a shift from mechanical concepts and theories to electrical world. Electricity blended into human lives to such an extent that without electricity the civilization takes a pause. The quest for ways to generate electricity is a never ending phenomenon and in fact there will always be a dearth in this aspect. Renewable energy sources like the wind, sun, geothermal, water etc quench this energy thirst to a certain extent. But the shortcoming of these methods is that their efficient use is yet a dream. With this, we had invented ARI, an air energy replenishing instrument to give the solution for energy generation crisis in our way. We are pleased to present to the world today, ARI.

ARI is a small, portable instrument, a miniature wind turbine of sorts which can be fitted on to vehicles. When these vehicles move, the air drag hitting them can aid in the rotation of ARI propeller which in turn rotates the shaft of the generator, generating power. This energy generated can be applied across batteries as voltage potential hence charging them for further use. ARI is one of a kind and its design is very unique compared to the regular power banks available in the market. These unique features, design considerations and the details which make ARI so special are discussed further in the report.

II. KEY FEATURES OF ARI

In this project, there are two main design aspects which distinguish ARI from the rest of power banks available and make this project stand out. They are electrical switching and angle adjustment mechanisms.

2.1 Switching mechanism

We know that for batteries connected in series, the resultant voltage is the sum total of individual voltages whereas in the case of parallel connection, the resultant voltage is the individual voltage itself. This means, it would be beneficial if the batteries are connected in parallel while charging as the potential needed to be generated is less. And it would be beneficial to connect them in series while discharging as the time for complete discharge increases. To favor from both these aspects, we made a switching mechanism which is nothing less than an invention. To explain the previous sentence in simple terms, our batteries are connected in parallel while charging and they can be switched to series connection while discharging by just twisting of a shaft.

We are using 5 li-ion batteries in this project. They are held together in a circular fashion by the battery holder. This holder is mounted on a shaft which can be rotated. Battery contact points are 20 in number, i.e. 10 for each side. At one instance, 5 batteries can maintain contact with 5 points at a side. When the shaft is twisted, these batteries make contact with the other 5 points. In this way, parallel to series and vice versa switching is done. More technical and design details regarding this switching mechanism is elaborated further in the report.

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POWER GENERATION FROM SPEED BREAKERS USING MULTIPLE ROLLER MECHANISM

ARDHENDU CHAKRABORTY[1], K. BHARADWAJ[1], MS. SANDEEPA V.[2]
[1]Students Of IV Year, Department Of Mechanical Engineering, Geethanjali College Of Engineering And Technology, Hyderabad, India.
Email- chakraborty.ardhendu621@gmail.com,
bharadwajkallakuri04@gmail.com
[2]assistantprofessor, Department Of Mechanical Engineering, Geethanjali College Of Engineering And Technology, Hyderabad, India.
Email- sandeepa1609@gmail.com

Abstract:-Electricity plays a major part in our society today. On one hand, we have the conventional resources of power generation using fossil fuels such as coal, petroleum and natural gas. Although these are very useful and provide adequate amount of power, the fossil fuel reserves are depleting at a much greater rate than ever if used at the current rate. To generate sufficient amount of power generation and also for a sustainable future, we need to change to un-conventional power generation as in Solar Energy, Wind Energy etc. Un-Conventional Power Generation is advantageous because it requires less maintenance, produce little to no harmful gases and are sustainable. One such un-conventional method is generating electricity using speed-breakers. When any vehicle moves over the inclined planes of a conventional speed breaker, it gains height resulting in an increased potential energy, which is then wasted as the vehicle comes down without any appropriate conversion of energy taking place. In the new design, the speed breaker consists of a roller which rotates freely when any vehicle passes over. This in turn rotates a geared shaft which then rotates the armature of the connected dynamo and thus the kinetic energy is converted into electricity. In this paper, power is generated from the Speed Breakers using multiple roller mechanism. The experimental model makes use of wooden rollers, cast iron for sprockets, wooden ramps, and grey cast iron for fabrication and hardened mild steel for shaft. Approximately, 100 watts per hour can be generated using this mechanism.
Keywords- Power Generation, Speed Breaker, Rollers, Grey Cast Iron, Hardened Mild Steel.

INTRODUCTION

This paper shows how electrical energy can be harnessed from a very commonly used system. Here, the system we refer to is the speed breakers. Speed breakers serve as speed controlling devices on the roads so as to control the speed of the automobile at any given instance of time.A well-known fact is that vehicles such as automobiles are increasing exponentially day by day. Thus, we found out an innovative way of tapping this energy through mechanical means and store it in utility and use it as necessary. The underlying principle is utilizing the kinetic energy which is wasted by the automobiles through friction, whenever they traverse through the breakers. The breakers in turn rotate which converts the kinetic energy of the vehicle to electrical energy. This electrical energy conversion takes place at the generator fitted underneath the breakers. So, the speed breakers are devised as the power generating units which can power up lamps and minimal electrical needs.The present experimental model includes the usage of a fabricated ramp which can utilize the kinetic energy of the vehicleto generate power. Such ramps can be used in places where speed breakers are required, but also serve the purpose of electricity generation. These can be used in places like toll gates, vehicle parking lots etc.This paper consists of the following modules. Module II discusses the "Scope of the Project" as of how better can the mechanism be utilized in the current scenario. Module III deals with the "Literature Review" containing valuable insights of previous experimental models.Module IV has the "Improvements Incorporated in our design" when compared to the existing designs. Module

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Design and Analysis of Large Transportable Vacuum Insulated Cryogenic Vessel

VIJAY KESOJU[1], V. SANDEEPA[2], , ANVESH.A[3]

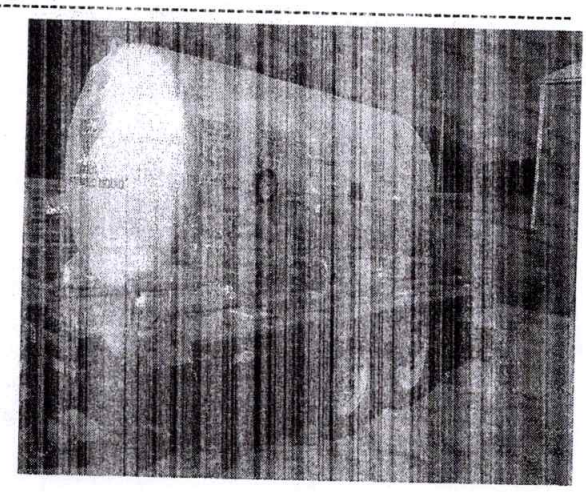
[1,2] Assistant Professor, Dept. Of Mechanical Engg, Geethanjali college Of Engg. and Technology.
[3]M.TECH Student, Dept. Of Mechanical Engg, St.Peter's engineering college, Telangana, India.

Abstract - This project is aimed to study, design and analyze a large portable vacuum insulated cryogenic vessel that will be attached to a truck in order to keep, maintain and transport by road liquid methane at a temperature of -162 °C. Considerations such as different pressure loads, dimensions, materials as well as their mechanical properties, constraints, masses, insulation systems and weather-environmental conditions are made in the mechanical analysis. Furthermore, calculations and dimensions satisfy the requirements given by following the standards SS-EN 13530-1: Cryogenic vessels - Large transportable vacuum insulated vessel; Part 1: Fundamental requirements and SS-EN 13530-2: Cryogenic vessels - Large transportable vacuum insulated vessel; Part 2: Design, fabrication, inspection and testing. The CAD software Pro/Engineer (Creo1.0) is used to visualize the models for the chosen designs. In addition, the finite element module in ANSYS is used to obtain results of mechanical analyses in order to determine if the stresses are within margins.

Key Words: CAD, Pro/Engineer (Creo1.0) and Cryogenics

1. INTRODUCTION

Cryogenics is the study of the production and behavior of materials at very low temperatures (below −150 °C, −238 °F or 123 K). A person who studies elements that have been subjected to extremely cold temperatures is called a cryogenics. Rather than the comparative temperature scales of Celsius and Fahrenheit, cryogenicists use the absolute temperature scales. These are Kelvin (SI units) or Rankine scale (Imperial and US units). Most of the common applications of the cryogenics are, they can be used as rocket fuels, coming to the mechanical applications, As these all are the sub-zero gases or fuels these can used in the precession engineering of the mechanical components. For E.g. fits and tolerances of the mechanical components such as piston and piston rings, these components are to be précised correctly otherwise the efficiency of the machine will reduced. Using cryogenics such typical tolerances can be set. Considerations such as different pressure loads, dimensions, materials as well as their mechanical properties, constraints, masses, insulation systems and weather-environmental conditions are made in the mechanical analysis.



Transportable Vacuum Insulated Cryogenic Vessel.

1.2 CRYOGENICS

Cryogenics

The branches of physics and engineering that involve the study of very low temperatures, how to produce them, and how materials behave at those temperatures.

Cryobiology

The stem of biology involving the study of the effects of low temperatures on organisms (most often for the purpose of achieving cryopreservation).

Cryosurgery

The branch of surgery applying very low temperatures (down to -196 °C) to destroy malignant tissue, e.g. cancer cells.

Cryonics

The emerging medical technology of cryo-preserving humans and animals with the intention of future revival. Researchers in the ground seek to apply the results of many sciences, including cryobiology, cryogenics, theology, emergency medicine, etc. "Cryogenics" is

PERFORMANCE STUDIES ON HIGH CHAMBER PRESSURE LIQUID ROCKET ENGINE

V. Sandeepa[#1], K. Niranjan Kumar[#2], A. Moulika[#3]

[#1,2] *Assistant Professor, Mechanical Egineering Dept, Geethanjali college of Engineering &Technology, Cheerya(v), Keesara(M), Medchal Dist. 501301.*

[#3] *UG Student,Mechanical Engineering Dept, Geethanjali college of Engineering &Technology, Cheerya(v), Keesara(M), Medchal Dist. 501301.*

[#1] *sandeepa1609@gmail.com,* [#2] *niru.nirmalram@gmail.com,* [#3] *moulikasai01@yahoo.com*

Abstract: *- Liquid Rockets are used to propel space vehicles, missiles for multiple applications. These engines use essentially two energetic liquid media called Oxidizer & Fuel. Most of these systems are designed in such a way for long duration of operation. Chamber pressure & specific impulse are few of the important parameters which are used to assess any engine's performance. High Chamber pressure engines find importance in space & weight constraint having advantage in compact sizing with high performance in minimum envelope.*

The proposed paper is towards the development of "High Chamber Pressure thruster with an ultrafast response valve" to use it fast response Reaction Control Systems. The study involves preliminary design of propellant valve, engine and its accessories followed by prototype testing using propellants. As a part of design, few design codes also will be developed using Mat lab or MathCAD software.

Keywords: **Thrust Chamber, Liquid Propellant, MathCAD, Specific impulse, C_{star} Efficiency**

LIQUID ROCKET ENGINE

A rocket in its simplest form is a chamber enclosing a gas under pressure. A small opening at one end of the chamber allows the gas to escape, and in doing so provides a thrust that propels the rocket in the opposite direction. A good example of this is a balloon.

Newton's Laws of Motion

Newton's first law can be stated as an 'object at rest tends to stay at rest and an object in motion tends to stay in motion unless acted upon by an unbalanced force'.

Newton's second law of motion is essentially a statement of a mathematical equation. The three parts of the equation are mass (m), acceleration (a), and force (f). Using letters to symbolize each part, the equation can be written as follows:

$$F = ma$$

If applied this principle to a rocket. The pressure created by the controlled explosion taking pláce inside the rocket's engines is a force called thrust. That pressure accelerates the gas one way and the rocket the other. Newton's second law of motion can be restated in the following way: the greater the mass of rocket fuel burned, and the faster the gas produced can escape the engine, the greater the upward thrust of the rocket.

Newton's third law can be stated as for 'every action has an equal and opposite reaction, If you have ever stepped off a small boat that has not been properly tied to a pier, you will know exactly what this law means. The boat goes forward, you go backward!

A rocket can lift off from a launch pad only when it expels gas out of its engine. The rocket pushes on the gas, and the gas in turn pushes on the rocket. With rockets, the action is the expelling of gas out of the engine. The reaction is the movement of the rocket in the opposite direction. To enable a rocket to lift off from the launch pad, the action, or thrust, from the engine must be greater than the mass of the rocket. In space, however, even tiny thrusts will cause the rocket to change direction.

Putting the Laws of Motion Together

An unbalanced force must be exerted for a rocket to lift off from a launch pad or for a craft in space to change speed or direction (first law). The amount of thrust (force) produced by a rocket engine will be determined by the mass of rocket fuel that is burned and how fast the gas escapes the rocket (second law). The reaction, or motion, of the rocket is equal to and in the opposite direction of the action, or thrust, from the engine (third law).

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Enhancement of Heat Transfer in Solar Air Heater with Parallelogrm Protrusions as Roughness Elements

Dr. A. Nagaraju[1], U. Sreekanth[2], Dr. B. Chandra Mohan Reddy[3],
[1]*Lecturer, Department of mechanical engineering, JNTUACEA, A.P, INDIA*
[2]*Assistant Professor, Department of mechanical engineering, GCET, T.G, INDIA*
[3]*Assistant Professor, Department of mechanical engineering, JNTUACEA, A.P, INDIA*

Abstract: *This paper presents the results of an experimental investigation of heat transfer rate in solar air heater duct having parallelogram protrusions as artificial roughness elements with different apex angles (30^0, 45^0 and 60^0). The parallelogram protrusions of base side 10mm, thickness 3mm and with a pitch 25mm are made as zig-zag pattern throughout the length of the plate. The range of parameters for this study has been decided on the basis of practical considerations of the system and operating condition of the solar air heater. The results shows that the ducts with parallelogram protrusions have higher heat transfer rate than the smooth plate, with Reynolds number ranging from 10000-12500 , nusselt number from 50-112 and friction factor is from 4.5-6.7*10^{-3}. Among the protrusions heat transfer rate is high for 45^0plate.*
Keywords: *solar air heater, heat transfer, Reynolds number, Nusselt number, Friction factor.*

I. INTRODUCTION

In all our daily activities energy is required for transportation, industrial, domestic, agricultural purposes etc… in different forms (heating, electricity etc..). For all these purposes major extent of energy comes from conventional sources like coal , petroleum and natural gas. As a result of their limited availability we need to replace them with renewable energy sources like solar, wind, hydel energy etc…. Among these renewable sources utilization of solar energy is very easy and if we even collects 1% of solar radiation that comes from the earth and convert it into different forms like heat or electricity it will be sufficient for the whole world to survive for one year. The most simplest and economical way to utilize solar energy is to convert it into thermal energy for heating applications by using solar collectors. Solar air heaters because of their inherent simplicity are cheap and most widely used solar collectors. Due to low convective heat transfer co-efficient between the air and the absorber plate solar air heaters have low efficiency which leads to higher temperature of the absorber plate leading to high heat losses to the environment. Hence in order to increase the heat transfer co-efficient of solar air heater various methods have been proposed. One of the methods is creating the turbulence on the absorber plate in the form of artificial roughness. Providing the roughness over the existing surface is easy way to disturb the flow and also increase the heat transfer rate from surface to the air flowing through the solar air heater duct. For many years researchers have studied the enhancement of heat transfer co-efficinets of solar air heaters by having artificial roughness on the air flow side of the absorber plate in various ways to improve the thermal efficiency of solar air heater (Karwa et al.,1999; Muluwork et al.,2000; Prasad et al.,1988; Bhagoria et al.,2002; Momin et al.,2002; Karwa et al.,2003) by applying different types of rib roughness. The present investigation is taken up with the of experimentation on parallelogram protrusions as artificial roughness to the underside of one broad wall of the duct to evaluate enhancement of heat transfer co-efficient of solar air collector subjected to uniform heat flux. The apex angle of the protrusions on plates is varied to find out how they affect heat transfer rate.

II. NOMENCLATURE

A_p	Absorber plate area, m^2
A_0	Cross-Section area of the orifice, m^2
AR	Aspect ratio of duct
A_1	Pipe Diameter
C_d	Coefficient of discharge of orifice
C_{pair}	Specific heat of air at constant

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SEISMIC ANALYSIS OF MISSILE CANISTER TESTING CHAMBER

A. Santhosh*[1], K. Anusha[2]

[1]Asst. Prof, Dept. of Mechanical Engineering, Geethanjali College of Engineering &Technology Hyderabad, India.

[2]Asst. Prof, Dept. of Mechanical Engineering, Samskruti College of Engineering &Technology, Hyderabad, India.

ABSTRACT

Canister testing Chamber is one of the most critical components in Defence Organization. Unavailability of data and literature regarding Missile Canister, are considered to be one of the main contributors for the failure of manufacturing Canister Chambers in a local industry. Canister is used for carrying, storing and launching of missile. During storage and launching, the canister is subjected to an internal pressure of 45 kg/cm2 and external pressure of 9 kg/ cm2 important to test the canister for these pressures. The internal and external pressure testing chamber is used to test the canister. The canister is placed inside the testing chamber. Thus, the primary objective of this thesis is to develop a canister testing chamber and predicting the performance of canister by ANSYS a finite element analysis package. The internal and external pressure testing of the canister is done by closing the canister both ends by dummy dished ends. The chamber will be used for the testing of the integrated canister assembly for the external pressure of 9 kg/ cm^2 45 kg/ cm^2 specially to perform internal and external pressure testing of the canister. To estimate the structural stress, three-dimensional model of a canister chamber was made by finite element method using CATIA software. Here in this dissertation, bolt size is gradually varied from M24 to M36 and the results were analyzed to select a bolt size which ensures zero leak-proof joint and can sustain for the internal pressures induced.

1. INTRODUCTION

1.1 Canister: Canister is a cylindrical container for holding, carrying, storing and launching of missile. Usually specified object or substance.

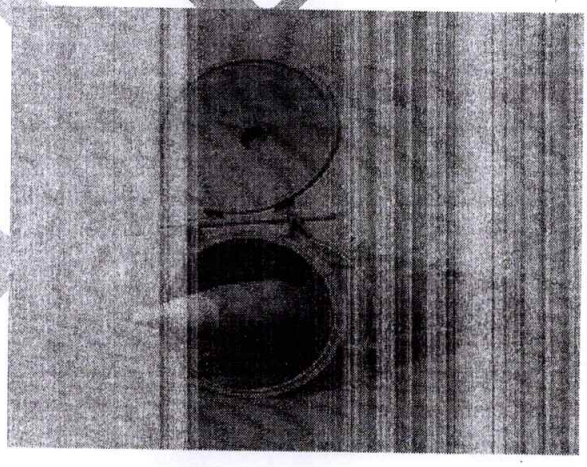

Fig.1.1 Canister with missile

1.2 Types of Canisters

1. Horizontal canister
2. Vertical canister

*Corresponding Author

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DESIGN FABRICATION AND TESTING OF VERTICAL AXIS WIND TURBINE POWERED COOLING TOWER

B. Bhasker[#1], Rajasekhar Vangala[#2], N. Rajendar[#3]

[#]Mechanical Engineering Department, Geethanjali College Of Engineering and Technology, Cheeryal(v), Keesara(M), Medchal Dist.501301.

[1]bhaskerb786@gmail.com

[2]raajsv_0333@yahoo.com

[3]narri.rajendar@gmail.com

Abstract— Cooling tower is a heat rejection device that rejects waste heat to the atmosphere through the cooling of a water stream to a lower temperature. Cooling towers use the evaporation of water to remove process heat and cool the working fluid to near the wet-bulb air temperature.

Industrial cooling towers can be used to remove heat from various sources such as machinery or heated process material. The primary use of large, industrial cooling towers is to remove the heat absorbed in the circulating cooling water systems used in power plants, petroleum refineries, petrochemical plants, natural gas processing plants, food processing plants, semi-conductor plants, and for other industrial facilities such as in condensers of distillation columns, for cooling liquid in crystallization, etc.

Induced draught cooling towers are more popular due to its small size and low capital cost when compared to natural draught cooling towers. Power consumption of fans used in induced draught cooling tower ranges from 10KW to 100KW and there are thousands of such installations worldwide.

If we can replace 50% of motors used in induced draught cooling towers we can save huge amount of electricity (nearly 10000MW) and also protect the environment from harm full gases produced from fossil fuel based power plants installed to generate the above 10000MW.

As a part of our project dissertation we are planning to fabricate and test the VAWT (Vertical Axis Wind Turbine) Powered Cooling Tower.

Keywords— heat rejection, evaporation, draught, fabricate, fossil fuel.

I. INTRODUCTION

COOLING TOWERS

A cooling tower is a heat rejection device that rejects waste heat to the atmosphere through the cooling of a water stream to a lower temperature. Cooling towers may either use the evaporation of water to remove process heat and cool the working fluid to near the wet-bulb air temperature or, in the case of *closed circuit dry cooling towers*, rely solely on air to cool the working fluid to near the dry-bulb air temperature.

Cooling towers vary in size from small roof-top units to very large hyperboloid structures (as in the adjacent image) that can be up to 200 metres (660 ft) tall and 100 metres (330 ft) in diameter, or rectangular structures that can be over 40 metres (130 ft) tall and 80 metres (260 ft) long. The hyperboloid cooling towers are often associated with nuclear power plants, although they are also used in some coal-fired plants and to some extent in some large chemical and other industrial plants. Although these large towers are very prominent, the vast majority of cooling towers are much smaller, including many units installed on or near buildings to discharge heat from air conditioning. Cooling towers are also used in HVAC systems that have multiple water source heat pumps that share a common piping *water loop*. In this type of system, the water circulating inside the water loop removes heat from the condenser of the heat pumps whenever the heat pumps are working in the cooling mode, then the externally mounted cooling tower is used to remove heat from the water loop and reject it to the atmosphere. By contrast, when the heat pumps are working in heating mode, the condensers draw heat out of the loop water and reject it into the space to be heated. When the water loop is being used primarily to supply heat to the building, the cooling tower is normally shut down (and may be drained or winterized to prevent freeze damage), and heat is supplied by other means, usually from separate boilers.

Industrial cooling towers

Industrial cooling towers can be used to remove heat from various sources such as machinery or heated process material. The primary use of large, industrial cooling towers is to remove the heat absorbed in the circulating cooling water systems used in power plants, petroleum refineries, petrochemical plants, natural gas processing plants, food processing plants, semi-conductor plants, and for other industrial facilities such as in condensers of

DESIGN AND FABRICATION OF STATIC LOAD TESTING MACHINE BY SCREW JACK MECHANISM

N. Rajendar[#1], Rajasekhar Vangala[#2], K Niranjan Kumar[#3]
[#]Mechanical Engineering Department, Geethanjali College of Engineering and Technology, Cheeryal(v), Keesara(M), Medchal Dist.501301
[1]narri.rajendar@gmail.com
[2]raajsv_0333@yahoo.com
[3]niru.nirmalram@gmail.com

Abstract— A static load is a mechanical force applied slowly to an assembly or object. Any force applied steadily without moving an object is considered a static load. Tests of static load are useful in determining the maximum allowable loads on engineering structures, such as bridges, and they can also be useful in discovering the mechanical properties of materials. This force is often applied to engineering structures because engineers need to know the maximum force and to know the knowledge of how much loading a structure can handle before it reaches its yield point.
The static load testing machine is used to test the tensile and compressive loads acting on specimen/material. The static load testing machine works on the principle of "Screw jack Mechanism".
The main aim of my project is to manufacture a "static load testing machine using a screw jack mechanism" and to study the various components involved in it in a detailed fashion. Generally Universal Testing Machine is used to test the tensile and compressive strength of heavier materials/specimen. In order to perform those tests on smaller materials a load testing machine with medium capacity has been designed.
The maximum load sustained by the machine is upto500 N and the expected specifications of static load testing machine are mild steel material with 210Gpa young's modulus, poisson's ratio 0.3 and density 7850×10^{-9} Kg/mm^3

Keywords— **static load, young's modulus, yield point, Screw jack Mechanism, compressive strength.**

I. INTRODUCTION

1.3 Screw Jack:

A jackscrew is a type of jack that is operated by turning a lead screw. In the form of a screw jack it is commonly used to lift moderately heavy weights, such as vehicles. More commonly it is used as an adjustable support for heavy loads, such as the foundations of houses, or large vehicles. These can support a heavy load, but not lift it. An advantage of jackscrews over some other types of jack is that they are *self-locking*, which means when the rotational force on the screw is removed, it will remain motionless where it was left and will not rotate backwards, regardless of how much load it is supporting. This makes them inherently safer than hydraulic jacks, for example, which will move backwards under load if the force on the hydraulic actuator is accidentally released

The mechanical advantage of a screw jack, the ratio of the force the jack exerts on the load to the input force on the lever, ignoring friction is

$$F_{load}/F_{in} = 2\pi r/l$$

where

F_{load} is the force the jack exerts on the load

F_{in} is the rotational force exerted on the handle of the jack

r is the length of the jack handle, from the screw axis to where the force is applied

l is the lead of the screw.

This derives from two factors, the simple lever advantage of a long operating handle and also the advantage of the inclined plane of the lead screw. However, most screw jacks have large amounts of friction which increase the input force necessary, so the actual mechanical advantage is often only 30% to 50% of this figure

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Experimental Analysis of Hydrogen Fuel Based IC Engine

M. RAVINDRA GANDHI[1], K. RAJU[2], RAJASEKHAR V[3]

[1]Assistant Professor, Dept of Mechanical Engineering, Geethanjali College of Engineering & Technology, Hyderabad, TS, India, Email: mails4gandhi@gmail.com.

[2]Assistant Professor, Dept of Mechanical Engineering, Geethanjali College of Engineering & Technology, Hyderabad, TS, India, Email: kunchala324@gmail.com.

[3]Assistant Professor, Dept of Mechanical Engineering, Geethanjali College of Engineering & Technology, Hyderabad, TS, India, Email: raajsv_0333@yahoo.com.

Abstract: In the history of internal combustion engine development, hydrogen has been considered at several phases as a substitute to hydrocarbon-based fuels. Starting from the 70's, there have been several attempts to convert engines for hydrogen operation. Together with the development in gas injector technology, it has become possible to control precisely the injection of hydrogen for safe operation. Since the fuel cell needs certain improvements before it is widely used in vehicles, the conventional internal combustion engine is to play an important role in the transition. This study examines the performance characteristics and emissions of a hydrogen fueled conventional spark ignition engine. Slight modifications are made for hydrogen feeding which do not change the basic characteristics of the original engine. Comparison is made between the gasoline and hydrogen operation and engine performance parameters are discussed.

Keywords: Combustion, Gas Injector, Gasoline, Characteristics.

I. HYDROGEN USE IN SPARK IGNITION (SI) ENGINES

Hydrogen can be used as a fuel directly in an internal combustion engine, almost similar to a spark-ignited (SI) gasoline engine.. Most of the past research on H2 as a fuel focused on its application in SI engines. Hydrogen is an excellent candidate for use in SI engines as a fuel having some unique and highly desirable properties, such as low ignition energy, and very fast flame propagation speed, wide operational range. The hydrogen fuel when mixed with air produces a combustible mixture which can be burned in a conventional spark ignition engine at an equivalence ratio below the lean flammability limit of a gasoline/air mixture.

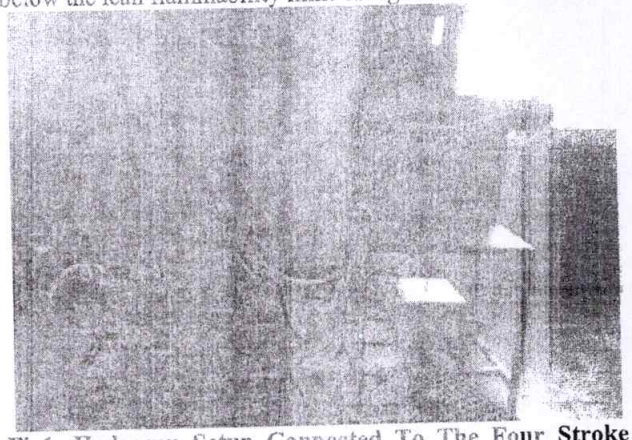

Fig1. Hydrogen Setup Connected To The Four Stroke Petrol Engine.

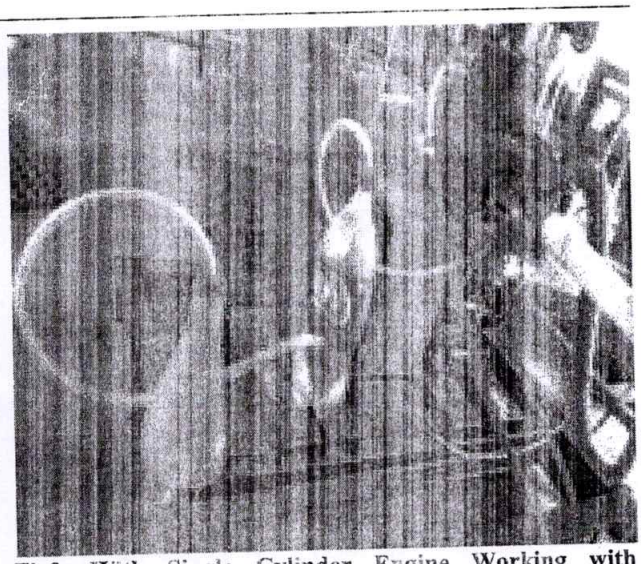

Fig2. With Single Cylinder Engine Working with Hydrogen Gas.

Table1. Petrol Readings

S.No	Watts	Volts	Amps	RPM	Temperature in °C	Pipette Reading in ml	Time Taken For Pipette Reading(sec)	Specific Fuel Consumption In Kg/Kw-Hr	Efficiency η
1	500	229	2.72	3106	21.6	10	27	1.95	3.82
2	1000	214	5.15	3050	36.2	10	22	1.20	6.21
3	1500	202	6.25	2990	40.2	10	20	0.88	8.48
4	2000	196	6.30	2969	35.8	10	21	0.63	11.87

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FABRICATION & EXPERIMENTAL ANALYSIS OF HYBRID COMPOSITE MATERIAL (CARBON & E-GLASS)

RAJASEKHAR VANGALA
Assistant Professor, Department of Mechanical Engineering, Geethanjali College of Engineering & Technology, Cheeryala, Keesara(m) Hyderabad-501301, Telangana, India., raajsv_0333@yahoo.com

K. RAJU
Assistant Professor, Department of Mechanical Engineering, Geethanjali College of Engineering & Technology, Cheeryala, Keesara(m) Hyderabad-501301, Telangana, India., kunchala324@gmail.com ,

RAVINDRA GANDHI M.
Assistant Professor, Department of Mechanical Engineering, Geethanjali College of Engineering & Technology, Cheeryala, Keesara(m) Hyderabad-501301, Telangana, India., mails4gandhi @gmail.com

P. SATYANARAYANA
Assistant Professor, Department of Mechanical Engineering, Geethanjali College of Engineering & Technology, Cheeryala, Keesara (m) Hyderabad-501301, Telangana, India., satyamech343@gmail.com.

ABSTRACT
Composite materials are considered to be designer materials because of their ease in tailor ability of properties, high specific strengths, high specific modulus, low densities, etc .based on the application. Presently they are playing a vital role in aerospace, defence, transport, sport applications, worldwide researchers are keenly interested in finding out their behavior in real life exposed to various environmental conditions, variety of loads etc. The key interest in the research is due to the variable properties of the same material, same compositions with respect to the manufacturing process undergone.

This paper deals the fabrication and experimentation deals with the know how the behavior and mechanical properties of E-glass epoxy composite and a hybrid composite made of E-glass and carbon fabric reinforcements and compared with the conventional materials.

KEY WORDS: Composites, composition, properties.

INTRODUCTION
Composite materials are engineering materials made from two or more constituent materials that remain separate and distinct on a macroscopic level while forming a single component.

Further, though composite types are often distinguishable from one another, no clear determination can be really made.

PROPERTIES OF MATRIX MATERIALS
Naturally fibers and whiskers are of little use unless they are bonded together to take form of structural element that can carry loads. The binder material is usually called a matrix. The purpose of the matrix is manifold support of fibers or whiskers, protection of the fibers or whiskers, stress transfer between broken fibers or whiskers, etc. Typically the matrix is of considerably lower density, stiffness, and strength than fibers or whiskers.

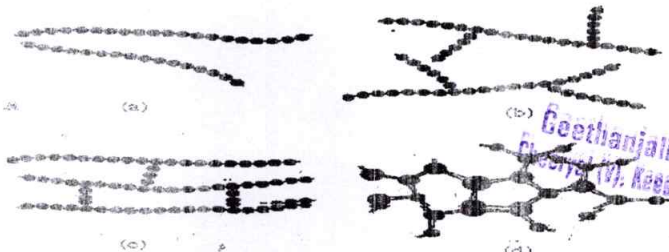

Fig: a) linear b)branched c)cross linked d)network

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Effect of high pressure coolant jet (HPCJ) in drilling AISI 4340 steel

1. **P satyanarayana**
Assistant professor, Department of mechanical engineering, Geethanjali College of engineering and technology, Telangana, India
2. **B.Anitha**
Assistant professor, Department of mechanical engineering, Geethanjali College of engineering and technology, Telangana, India
3. **Yalagandala Akshay Kumar**
Assistant professor, Department of mechanical engineering, CVSR College of Engineering, Hyderabad, India.

Abstract

— High production machining, grinding and drilling inherently generates large amount of heat leads to high cutting zone temperature for its higher cutting velocity, feed and depth of cut, Such high cutting temperature if not reduced impairs surface integrity of the product and reduce the dimensional accuracy as well as tool life. Applications of cutting fluids change the performance of machining operations because of their lubrication, cooling, and chip flushing functions. However, the conventional cutting fluids are not that effective in such high production drilling. Low boiling temperature cause vaporization of cutting fluid and prevent it to enter into the cutting interface making a barrier to flow. In addition, flowing chips through drill flute prevent the fluid to enter into the cutting zone. Further, they also deteriorate the working environment and lead to general environmental pollution.

High-pressure coolant presents itself as a viable alternative for drilling with respect to heat dissipation, roundness deviation and taper of the hole, chip formation mode and tool wear. This study compares the mechanical performance of high-pressure coolant to completely dry lubrication for the drilling of AISI-4340 steel based on experimental measurement of roundness deviation, surface roughness, chip formation mode and tool wear, Results indicated that the use of high-pressure coolant leads to lower roundness deviation and surface roughness, favorable chip-tool interaction and reduced tool wear.

KeyWords: *Speed,Depth of cut,Cutting zone,heat dissipation,high pressure coolant,dry lubrication,AISI steel.*

etc...

1.INTRODUCTION

In the present days,production industries are concered with high productivity and superior quality. Productivity depends on the work materials and machining processes, which are associated with many parameters like machining speed, feed rate, depth of cut, and cutting environment. Cutting environment is one of the most important parameter to increasing the product quality. Product quality and overall economy in manufacturing by machining, grinding and drilling, particularly to meet the challenges thrown by liberalization and global cost competitiveness, insists high material removal rate and high stability and long life of the cutting tools. However, high production machining, grinding and drilling with high cutting velocity, feed rate and depth of cut is inherently associated with generation of large amount of heat and high cutting temperature. Such high cutting temperature not only reduces dimensional accuracy and tool life but also impairs the surface integrity of the product and quality. Worst Quality of product is affected on customer satisfaction and reduces customer demand.

Longer cut under high cutting temperature cause thermal expansion and distortion of the job particularly if it is slender and small in size,which lead to dimensional and form in accuracy. On the other hand, high cutting temperature accelerates the growth of tool wear and enhances the chances of premature failure of the tool by plastic deformation and thermal fracturing. The changing of cutting tool within a short time is committed due to tool wear and tool fracture, for this tool cost and tool changing time increases. In both the cases, production cost is increased. The surface quality of the products also deteriorates with the increase in cutting temperature due to

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An Experimental Investigation on NOx Emission Reduction and Performance Evaluation of CI Engine using EGR System

Mr. M. Ravi Kumar[1] and Dr.Ratnakar[2]
[1]Asst.Professor,
Dept of Mechanical Engineering
Geethanjali College of Engg & Tech, Hyderbad
[2]Professor,
Dept of Mechanical Engineering
MLRIT, Hyderabad

ABSTRACT
Internal combustion engines are established as the main power source for the automobile vehicles. At present emission norms became strict for any IC engine. The main pollutants are HC, CO, NOx, Particulate Matter, Soot, etc. out of which NOx is of the most harmful component. It is possible to limit the negative effect of the NOx on the environment by using exhaust gas recirculation (EGR).

The earlier research work on the EGR system by several researchers revealed that NOx emission from tail pipe of homogeneous charged engine is reduced. Because, EGR system lowers the oxygen concentration inside the combustion chamber. It is also found that EGR system increases intake charge temperature, decreases peak cylinder temperature and decreases the air fuel ratio.

The aim of the proposed project work is to investigate experimentally the effect of rate of EGR on NO_X emission reduction and performance at different loads. A single cylinder, direct injection, compression ignition engine has been selected for investigation, arrangement for EGR system and loading have been made by the project investigation. The research work has been carried out at IC Engines Laboratory, Mechanical Engineering Department, JNTUA College of engineering (Autonomous), Anantapuramu. The experiments obtained have been presented in the project and an analysis of it has been carried out. The results obtained have been presented in the project work.

Keywords: SingleCylinder I/C Engine,Direct Injection ,Compression Ignition,Exhaust Gas Recirculation(EGR)

1. Introduction:

An engine is a device, which transforms one form of energy into another form. While transforming energy from one form to another, the efficiency of conversion plays an important role. Normally, most of the engines convert thermal energy into mechanical work and therefore they are called 'heat engines'. Heat engine is a device that transforms the chemical energy of a fuel into thermal energy and utilizes this thermal energy to perform useful work. Thus, thermal energy is converted to mechanical energy in a heat engine.

Fuel economy of engines is greatly improved from the past and probably continued to be improved, increased in number of automobiles alone dictate that there will be a great demand for fuel in the near future. Alternative fuel technology, availability, and use must and will become more common in thecomingdecades. However, the use of an alternative fuel decreases the break thermal efficiency of engines, due to lower calorific values compared to normal diesel fuel. Because of the high cost of the petroleum products, some developing countries are trying to use alternative fuels for their vehicles.

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A STRUCTURAL STUDY IN FINDING MECHANICAL PROPERTIES OF AL6062 REINFORCED WITH FLYASH/BRONZE/NICKEL

P. SANDEEP KUMAR
Asst. Prof. Mech Eng.
Geethanjali Collegeof Engineering and Technology
Cheeryal, Keesara, Medchal
skumarcharyp@gmail.com

P. NARSIMHA
Senior Lecturer in Mech Engg
Govt Polytechnic,
Nalgonda
pnarsimha271@gmail.com

Abstract: *This paper reviews the consequences of an experimental study of effect of particle size of fly ash particles on mechanical properties of fly ash reinforced aluminium alloy (Al6062) composites samples, processed by stir casting route reported. Fly ash is one of the most promising inexpensive and low density reinforcement available in large quantities among other reinforcement. Aluminium (Al) based metal matrix composite can be an efficient and effective compared to and matrix alloy. In the present investigation, Al6062 composites were fabricated by stir casting method by varying weight percentage of reinforcements for Sample (Al 2021 89% + Br 3% + 1% Ni + 8% flash) Chemical compositions, micro hardness, wear test and tensile test were performed to study the mechanical behaviour of all the test specimens. The surface morphology was studied using microscopic inspection to indicate the distribution of reinforcement particles and bonding between the matrixes. Composites containing hard oxides (like Br)are preferred for high wear resistance along with increased hardness and high temperature oxidation resistance. The result reveals that wear rates of the composite materials is lower than that of the matrix alloy and friction coefficient was minimum.*

Keywords: Al6062, Fly ash, Br, Ni, Mechanical properties, Metal Matrix Composites, Hardness

1.0 Introduction:

Composite materials all in all are notable designing materials with the greater part of them having the remuneration of higher particular weight and particular modulus and furthermore better warm strength, exhaustion properties and wear protection contrasted with a few of the metals and combinations. It is seen that the higher cost of assembling of nonstop fiber fortified metal grid composites has prompted the utilization of molecule strengthened and bristle strengthened MMCs. In such manner, the filler material having lower thickness and cost, for example, fly fiery remains has been a solid support material for creating AMMCs. Wellbeing risks can be caused by the fly fiery remains produced from the power plant in India. It is evaluated that of the 90Mt of coal burning side-effects produced every year, just 25% is presently utilized, a lot of it is in type of extenders in concrete and in polymers; the rest of up in arrive filling or surface impoundments. It is thusly expected that the fly powder particles as support in aluminium would advance yet another utilization of this minimal effort squander side-effect. The blend throwing strategy is generally utilized among the diverse preparing procedures accessible. Blend throwing normally includes delayed fluid support contact, which can cause significant interface response. Matrix Composite (MMCs) has been assuming a noteworthy part in designing applications especially in lightweight material applications. Aluminum (Al) based metal framework composites can be a proficient and

12-18 (100)

Designing and Simulation of Baler Included with Combine Harvester

Dr.M. Devaiah, Professor, Department of Mechanical Engineering, Geethanjali College of Engineering and Technology, Hyderabad, India. E-mail:Devaiah.malkapuram@gmail.com

Katta Shiva Prasad Reddy, IV Year B.Tech Student, Department of Mechanical Engineering, Geethanjali College of Engineering and Technology, Hyderabad, India.

Karna Koti Reddy, IV Year B.Tech Student, Department of Mechanical Engineering, Geethanjali College of Engineering and Technology, Hyderabad, India.

Abstract--- Mechanized agriculture is that the method of using agricultural machinery to fasten the work of agriculture productivity. At present situation, supercharged machinery has replaced many farm jobs once assigned by labour or by animals. In point of increased energy usage and world's depleting fuel reserves, which offer the most important supply of the energy, one measure is that the attachment of the harvester with the baler therefore on scale back the residue i.e., along-side the grain bin for grain collection from the forward section grain transfer assembly and also the baler at the end moving as an integral a part of the harvester to get rid of the surplus effort applied by the balers at the top. The transversal crop residue baler can also be towed by the mix and is connected to the mix by two wide spaced-apart joints that allow solely movement within the pitch axis. In this paper, baler designed as an integrated half within the harvester using CAD package (Solid works and Unigraphics) and simulating their individual functions to ascertain the compatibility of overall machine with the new half integrated using the solid works software that helps in reducing the work load of running two totally different machines in real time. The fuel and also the machinery price are additionally minimized because the two machines area unit simplified to one.

Keywords--- Bale, Harvester, Solids Works, Unigraphics, Simulation, Agriculture.

I. Introduction

The modern combine harvester, or just combine, could be a versatile machine designed to expeditiously harvest a range of grain crops from the sector to deliver clean grains, sometimes collected within the machine tank and discharged sporadically for transportation and more process and storage. The waste straw left out on the ground is that the dried stems and leaves of the crop with restricted nutrients that is either cut and unfolds on the sector or baled for feed and bedding for placental mammal. Combine harvesters are one in all the foremost economically vital labour-saving inventions, considerably reducing the fraction of the population that must be engaged in agriculture the first mix was invented by Hiram Moore in 1838. It took several decades for mix to become common. Modern combines are dynamic in nature and engines are employed for power. A major advance within the style of combines was the rotary style. In concerning the 1980's aboard electronics were introduced to measure separation potency. This new instrumentation allowed operators to urge higher grain yields by optimizing ground speed and alternative operative parameters.

Early mix harvesters follow the principle of engine-driven, self-propelled ones that we have a tendency to use today; the header cuts the crops and sweeps them into no matter enclosure it's engineered with. Yuming Guo's [2] paper describes the relation between the stalk strength and therefore the cutting force that's needed for cutting the soybean. This paper concisely describes the strength of assorted crops and compares it with the soybean. This relationship helps in giving a rough plan regarding the cutting speed needed to chop the crop. N. S. L. Srivastava [3] checked within the interests of the farmers and therefore the issues they face whereas harvest home and maintaining the agriculture field.

This paper was associate full study of the farming conditions of the farmers and their basic issues. Indian Government Analysis [4] was the survey done by Indian Government within the yr of 2012-13. This survey was supposed to analyse and collect the information associated with the issues and difficulties long-faced by the Indian farmers. Asia and Pacific Commission on Agricultural Statistics ordinal Session Siem Reap, Cambodia, 26-30 Gregorian calendar month 2010 [5] was supposed to debate the characteristics of tiny scale farmers across Asia. This commission identifies the issues long-faced, the typical land holdings and therefore the average financial gain of the little scale farmers. Dr. S.D. Kulakarni Central Institute of Agricultural Engineering (CIAE) Bhopal [6]

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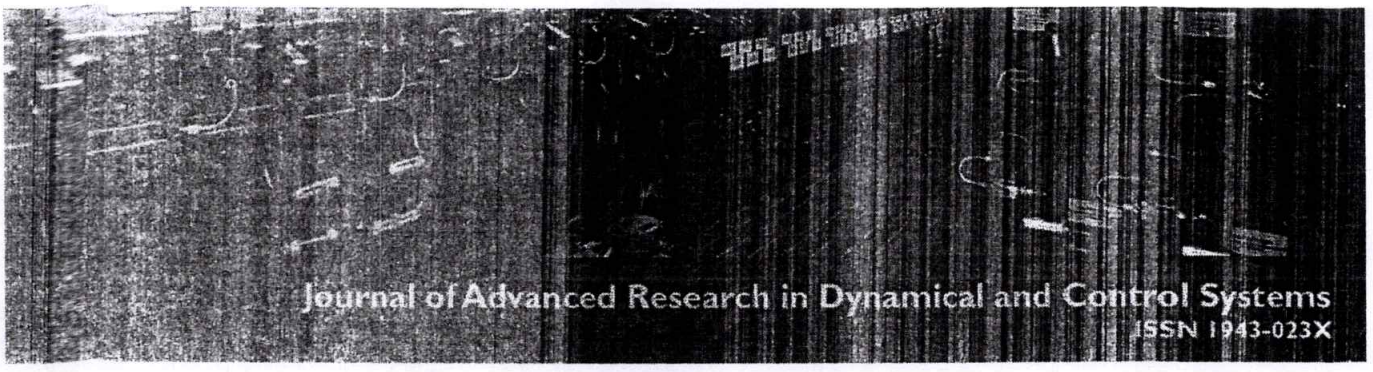

Designing and Simulation of Baler Included with Combine Harvester

Dr.M. Devaiah, Katta Shiva Prasad Reddy and Karna Koti Reddy

Abstract

Mechanized agriculture is that the method of using agricultural machinery to fasten the work of agriculture productivity. At present situation, supercharged machinery has replaced many farm jobs once assigned by labour or by animals. In point of increased energy usage and world's depleting fuel reserves, which offer the most important supply of the energy, one measure is that the attachment of the harvester with the baler therefore on scale back the residue i.e., along-side the grain bin for grain collection from the forward section grain transfer assembly and also the baler at the end moving as an integral a part of the harvester to get rid of the surplus effort applied by the balers at the top. The transversal crop residue baler can also be towed by the mix and is connected to the mix by two wide spaced-apart joints that allow solely movement within the pitch axis. In this paper, baler designed as an integrated half within the harvester using CAD package (Solid works and Unigraphics) and simulating their individual functions to ascertain the compatibility of overall machine with the new half integrated using the solid works software that helps in reducing the work load of running two totally different machines in real time. The fuel and also the machinery price are additionally minimized because the two machines area unit simplified to one.

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Effect of Frustrated Exchange Interactions and Spin-half Impurity on the Electronic Structure of Strongly Correlated $NiFe_2O_4$

Kodam Ugendar[1,§], S. Samanta[2,§], Sudhendra Rayaprol[3], V. Siruguri[3], G. Markandeyulu[1], B. R. K. Nanda[2,*]

[1] *Advanced Magnetic Materials Laboratory, Department of Physics, Indian Institute of Technology Madras, Chennai 600 036, India*

[2] *Condensed Matter Theory and Computational Lab, Department of Physics, Indian Institute of Technology Madras, Chennai 600 036, India* and*

[3] *UGC-DAE Consortium for Scientific Research, Mumbai center, Bhabha Atomic Research Centre, Trombay, Mumbai - 400 085, India*

Spin-polarized density functional calculations, magnetization, and neutron diffraction measurements are carried out to investigate the magnetic exchange interactions and strong correlation effects in Yb substituted inverse spinel nickel ferrite. In the pristine form, the compound is found to be a mixed insulator under the Zaanen-Sawtazsky-Allen classification scheme as it features both charge transfer and Mott insulator mechanism. Estimation of magnetic exchange couplings reveals that both octahedral-octahedral and octahedral-tetrahedral spin-spin interactions are antiferromagnetic which is typical of a spin-frustrated triangular lattice. However, the latter is dominant compared to the former leading to a forced parallel alignment of the spins at the octahedral site which is in agreement with the results of neutron diffraction measurements. The substituent Yb is found to be settled in +3 charge state, as confirmed from the XPS measurements, to behave like a spin-half impurity carried by the localized $f_{z(x^2-y^2)}$ orbital. The impurity f spin significantly weakens the antiferromagnetic coupling with the spins at the tetrahedral site, which explains the experimental observation of fall in Curie temperature with Yb substitution.

I. INTRODUCTION

The cubic inverse spinel $NiFe_2O_4$ (NFO) has been extensively investigated in the context of nanomagnetism [1], spin-filtering [2, 3]. spintronics [4] and multiferroics [5]. In addition, it exhibits unusual electronic and magnetic properties when Fe^{3+}/Ni^{2+} ions are partially substituted by other transition metal (M) ions, rare earth (R) ions or ions of non-transition elements [6–11]. Collinear Néel type ferrimagnetic structure of $NiFe_2O_4$ yields to triangular Yafet-Kittel structure upon substantial Cr substitution at the Fe sites [6]. The octahedra containing Fe^{3+} ions in NFO, when partially substituted by rare-earth (R^{3+}), become non-centrosymmetric to make the compound ferroelectric. Experimentally it has been shown that, substituents like Sm^{3+} and Ho^{3+} induce magnetoelectric effect in NFO [8].

Significant changes in the electronic, magnetic and structural behavior of Ni-Zn ferrite upon diluting with several rare earth ions have been observed [9–11]. With substitution of 2% of Fe by R (= Yb, Er, Dy. Tb, Gd, Sm and Ce) in $Ni_{0.7}Zn_{0.3}Fe_2O_4$, while lattice has been reported to expand and resistivity has increased, both magnetization and Curie temperature have decreased [9–11]. Larger ionic radii of R^{3+} ions cause lattice expansion and the $4f$ elections are more localized than the itinerant $3d$ electrons and hence, the resistivity increases [9–11]. The reported value of Curie temperature (T_C) of $NiFe_2O_4$ is 853 K [7, 12]. A decrease in T_C upon the partial substitution of R^{3+} for Fe^{3+} in $NiFe_2O_4$ has been reported from our lab [7, 8]. In $Ni_2Fe_{1.925}R_{0.075}O_4$ compounds, the T_C decreases to 775 K, 812 K and 839 K respectively for Dy [7], Ho^{3+} and Sm^{3+} substitutions [8]. However there are no concrete mechanisms and evidence to explain the decrease in magnetization and Curie temperature, even though qualitatively it has been attributed to weaker R-Fe exchange coupling replacing the stronger Fe-Fe exchange coupling [12, 13].

In this paper, results from DFT calculations and experimental studies are presented and analyzed to explain the electronic and magnetic structures of Yb substituted NFO *viz.* $NiFe_{2-x}Yb_xO_4$ (x = 0, 0.05, 0.075). The reasons for choosing Yb were manifold: (a) Structural distortion is expected to be weak or negligible, since the radius of Yb^{3+} ion (0.86 Å) is smaller compared to those of the other rare earth ions. (b) Yb ion can stabilize in +2 and +3 charge states. (c) Yb^{3+} is magnetic and has lower spin moment compared to the other R^{3+} (R = Gd, Tb, Dy, Ho, Er, Tb) ions [12] and hence, large reduction in magnetization as well as Curie temperature. (d) Yb^{3+} is expected to provide a spin-half f impurity state. Therefore, it serves as a model system to study host (d spin)-impurity (f spin) magnetic interactions.

Experimentally, X-ray photoelectron spectroscopy (XPS), Raman spectroscopy and neutron diffraction (ND) measurements are performed and theoretically, spin-polarized band structure is calculated to explain the electronic structure of $NiFe_{2-x}Yb_xO_4$. In addition, various magnetic exchange couplings are estimated from the total energies of several possible magnetic configurations so that the spin-spin interactions in this compound can be better understood. Emphasis is given on the magnetic coupling of Yb and Fe spins and its

* nandab@iitm.ac.in; § equal contribution

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Enabling Sustainable Growth of SME'S through Delivery Excellence and Intellectual Property

* J. V. Madhuri, LNS Prakash Goteti[+]
* *Geethanjili college of Engineering and Technology, Hyderabad,*
[+] *Tech Mahindra Technology Center, Tech Mahindra, Hyderabad*
Corresponding Author: J. V. Madhuri

Abstract: *India's SME sector comprises of 30 million units employing nearly 60 million people and producing more than 8000 products. With changing global economic scenario, it is very appropriate to focus on growth that is economically, environmentally and socially sustainable. For competing in the global markets, efforts should be engaged in producing goods/services through lean approaches towards better, cheaper and smarter solutions to the customers. SME's need to explore options to invigorate their existing techno functional expertise and protect their firm's intangible assets. In this aspect awareness and understanding of Intellectual property aspects plays vital role primarily due to availability of rich repository which is being enriched with creativity and innovation. Intellectual property being a technological dimension needs to be integrated as a part of business strategy and organization's culture by augmenting the fruits of scientific endeavor, innovation and creativity. For developing countries like India, it is important to strengthen its productive capacity and strive for inclusive, sustainable and equitable economic growth in order to be a global economy player. In this work we present some of the global challenges faced by Indian SME's and propose a framework to leverage on innovation, delivery excellence and intellectual property towards sustainable growth.*

Keywords: *Intellectual property rights, SME, sustainable growth, innovation management.*

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I. Introduction

Globalization provides challenging opportunities towards economic growth. India being a developing country the volatility in the market climate is influencing significantly the growth of SME's. Organizational strategy towards business investments, lean processes and practices to minimize operational cost and deliver quality play an important role and help in sustainable development of the organization keeping socio economic and environmental conditions. SME's being the major contributor to the Indian economy [1-3], it is justifiable to say that, this sector needs to develop a path to excellence in turn making a mark in the global economy. For this it is needless to say that SME's should understand their business in the perspective of internationalization and evaluate their business potential and associated risks as well. Delivery excellence is possible only through sustainability and inclusion which in turn can be achieved through understanding of organizational structure, delivery models connected with operational, pricing, marketing strategies leveraging existing knowledge and resources [4, 5].

In addition to delivery excellence, creativity and innovation drive the knowledge based economies through Intellectual property (IP) assets. The country's policies determine the business strategies and in this aspect IP acts as a tool for wealth creation in a country. These factors also have influence on India to be one of the signatory nations in TRIPS council [6]. But, as the studies indicate [7, 8] there is a lacuna in the SME's understanding and awareness regarding intellectual property rights. This is especially true for SME's present in the rural sector. For a developing country like India, that is rich in traditional, folklore, agricultural, traditional medication like Ayurveda, homeopathy, unani etc, there is a great need to develop a strategic, sustainable generic framework that is suitable for various sectors to adapt and evaluate their knowledge in the perspective of intellectual property. This is need of the hour to sustain in the global market as well as to generate wealth. Due to the rapid proliferation of the technology in this digital age, it is crucial that the SME sector brings its intangible mode of knowledge to the tangible mode through IP that acts as a catalyst in the progress of the nation economically.

In this present work, we try to give a generic frame work that might be adapted with modifications suitable to their business in general by the SME's present in the technical sector. Our basic motive in this work is to highlight integration of the delivery excellence that is crucial for business with Intellectual property to enhance/create knowledge assets for itself and in turn for the country.

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Chemical Education

Does A Partition or Distribution Coefficient Exist For A Solute That Distributes Between Two *Miscible* Solvents?

R. Sanjeev[1], R. Ravi[2] and V. Jagannadham[3*]

1. Department of Chemistry, Geethanjali College of Engineering and Technology, Cheeryal-501301, **INDIA**
2. Department of Chemistry, Ashoka Institute of Engineering & Technology, Hyderabad-508252, **INDIA**
3. Department of Chemistry, Osmania University, Hyderabad 500007, **INDIA**

Email: jagannadham1950@yahoo.com

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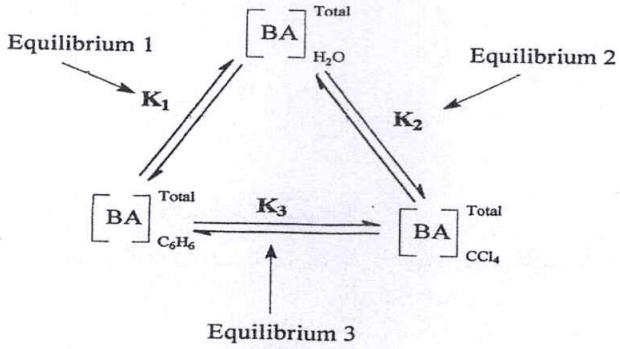
ABSTRACT

It is known that for any solute, the Nernst distribution law is between two solvents which are immiscible[1]. It is a well established fact that partition coefficient is meant for un-dissociated species and distribution coefficient is that for total concentration of the un-dissociated and dissociated solute[2]. At constant temperature a solute can distribute between two immiscible solvents so that the ratio of the amounts or concentrations of the solute in two solvents is constant. For all practical purposes and to avoid any confusion we have used the total concentration of the solute in this article.

Keywords: Nernst distribution law, Distribution coefficient, Partition coefficient.

INTRODUCTION

Our concern is, is there any distribution or partition law of a solute between two solvents which are completely ***miscible***? If so can it be determined? We have taken benzoic acid (BA) as an example. From the scheme 1 below



Scheme 1

17-18 (109)

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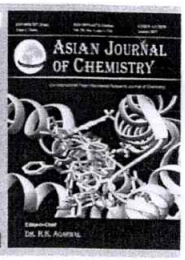

Conventional and Microwave Assisted Synthesis of Quinoxaline Carboxamide Derivatives

K. SHASHIKALA[1], E. LAXMINARAYANA[2] and M. THIRUMALA CHARY[3,*]

[1]Geethanjali College of Engineering and Technology, Keesara, Rangareddy-501 301, India
[2]Sreenidhi Institute of Science and Technology (Autonomous), Ghatkesar, Hyderabad-501 301, India
[3]Jawaharlal Nehru Technological University Hyderabad, Kukatpally, Hyderabad-500 085, India

*Corresponding author: Tel/Fax: +91 984 8511562; E-mail: elxnkits@yahoo.co.in; mtcharya@yahoo.com

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The synthesis of carboxamide derivatives containing quinoxaline scaffold is described. They were prepared from 3-hydroxy quinoxaline-2-carbohydrazide in a series of steps using conventional as well as microwave assisted methods.

Keywords: Carboxamide derivatives, Quinoxaline, Microwave assisted synthesis.

INTRODUCTION

The versatility of the quinoxalines, in addition to its chemical simplicity and accessibility, makes them the most promising sources of bioactive heterocycles.The quinoxaline skeleton is used as an intermediate in designing novel quinoxaline derivatives with potential as anticancer [1-3], antiviral [4], antimicrobial (or antifungal) [3], anticandida [5,6], antithrombotic [7], anxiolytic agents and other activities. Moreover, quinoxaline based drugs have shown to be photochemical DNA cleaving agents making them highly promising scaffolds for anticancer therapeutics.

Especially tetracyclic quinoxaline carboxamides showed cytotoxic activity which is helpful in treating cancers. Cisplatin is a platinum containing anticancer drug, used to treat various types of cancers, including sarcomas, some carcinomas, bladder cancer, lymphomas and cervical cancer. The synthesis of new platinum compounds using quinoxaline-2-carboxamide as a ligand would reveal the significance of quinoxaline derivatives [8]. They show cytotoxic activity, though displaying poor activity, compared to cisplatin [9]. Quinoxaline 2-carboxamides are efficient 5-HT_3 receptor antagonists, which reduce the side effects of cancer treatment like nausea and vomiting [10].

High blood pressure is the main cause of sudden cardiac arrest. Some of the quinoxaline derivatives are antagonists of bradykinin, which is a peptide responsible for the dilatation of blood vessels, thus leading to the lowering of blood pressure [11].

It is found that microwave enhances the rate of chemical reaction, thereby reducing reaction time, improving yields, purity and suppressing the formation of side products. Considering the significance of microwave assisted synthesis, we planned to synthesize some of the quinoxaline compounds through microwave.

EXPERIMENTAL

Chemicals and solvents used were purchased either from Fluka or Merck. All the reagents were of analytical grade. Microwave assisted synthesis was carried out in BP090 Laboratory grade microwave oven. Thin-layer chromatography (TLC) was performed on E.Merck AL silica gel 60 F254 plates and visualized under UV light. IR spectra were recorded as KBr pellet with a Perkin-Elmer spectrum gx FTIR instrument and only diagnostic and/or intense peaks are reported. ^{1}H NMR spectra were recorded in DMSO-d_6 with a Varian Mercury plus 400 MHz instrument. All the chemical shifts were reported in δ (ppm) where TMS is used as an internal standard. The ^{1}H NMR chemical shifts and coupling constants were determined assuming first-order behaviour. Mass spectra were recorded with a PE Sciex model API 3000 instrument. All the reactions were carried out under argon atmosphere.

RESULTS AND DISCUSSION

All the quinoxaline derivatives were synthesized by both conventional and microwave-assisted synthetic methods. Synthesis of N-[3-chloro-2-(aryl)-4-oxoazetidin-1-yl]-3-hydroxy-quinoxaline-2-carboxamides were carried out according to **Scheme-I**. The condensation of 3-hydroxyquinoxaline-2-carbohydrazide (**2**) and aldehyde in ethanol was carried out under reflux conditions for 1 h. The yields ranging from 55 to 65 % when synthesized by conven-tional method. The yield

Dr. S.Rajeswari,
M.A., M.phil, PGCTE, Ph.D
Associate Professor, Geethanjali College of Engineering and Technology, Hyderabad
e-mail: rajishankar96@gmail.com

BRUTALITY AND CORRUPT IN PAUL SCOTT'S *THE TOWERS OF SILENCE*

Abstract:

Paul Scott's novels show the sense of truth and the liberation it permits. *The Towers of Silence* (1973), the third novel of *The Raj Quartet*, is very much about women. Scott with his extraordinary range of characters skilfully portrays the last days of British India. The women in the novel experience conflict largely, the consequences for their male associates. As their men folk, their lives are changed. The novel provides the real substance as these women strive to maintain normality within the abnormal. The novelist's primary concern is to show how partition affected the socio-cultural attitudes of different communities that changed even their mutual relationships. Barbie Batchelor, a British missionary and schoolteacher shares Rose Cottage with Mabel Layton as her companion at Pankot. The individual characters of Barbie and Mabel alluded as towers of silence that Scott examines the *Raj* during the end of World War-II. Barbie Batchelor befriends a British family and witnesses the trial of Hari Kumar, an Indian man accused of assaulting his beloved Daphne Manners, while observing the dangerously cruel Captain Ronald Merrick.

Key words: socio-cultural attitudes, different communities, strive, normality, alluded

Introduction

Paul Scott's novels show the sense of truth and the liberation it permits. *The Towers of Silence* (1973), the third novel of *The Raj Quartet*, is very much about women. Scott with his extraordinary range of characters skilfully portrays the last days of British India, "A somewhat reserved man who stood resolutely aloof from all fashions, schools and cliques in writing" (*The Times*, March 3, 1978). Paul Scott was the recipient of the Eyre and Spottiswoode Literary

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Peristaltic Transport of a Micropolar Fluid with Nanoparticles in an Inclined Tube with Permeable Walls

K. Maruthi Prasad[1], N. Subadra*[2], M. A. S. Srinivas[3]
[1]Department of Engineering Mathematics, School of Technology, GITAM University, Hyderabad Campus, Hyderabad, Telangana, India-502329.
Email: kaipa_maruthi@yahoo.com
[2]Department of Mathematics, Geethanjali College of Engg.& Tech., Cheeryal (V), Keesara (M), R.R. Dist., Telangana, India-501301.
Email: nemani.subhadra@gmail.com
[3]Department of Mathematics, JNTUH, Kukatpally, Hyderabad, Telangana, India-500085.
Email: massrinivas@gmail.com
* Corresponding author: nemani.subhadra@gmail.com

Abstract: The paper deals with the theoretical investigation of peristaltic transport of a micropolar fluid in an inclined tube with permeable walls. The closed form expressions for velocity, pressure drop, time averaged flux, frictional force and mechanical efficiency have been investigated under the assumptions of low Reynold's number and long wave length. Effects of different physical parameters like micropolar parameter, coupling number, inclination, Brownian motion parameter, thermophoresis parameter, local temperature Grashof number, local nano particle Grashof number, slip parameter on pressure rise, frictional force, mechanical efficiency, temperature profile, nano particle phenomena, heat transfer coefficient, mass transfer coefficient and streamline patterns have been studied. The computational results are presented in graphical form. The present study puts forward an important note that peristaltic transport of a micropolar fluid with nano particles can be considerably controlled by suitably adjusting the parameters of micropolar fluid like micropolar parameter, coupling number, and also the parameters of nano particle like Brownian motion parameter, thermophoresis parameter. The peristaltic transport can also be controlled by slip parameter and inclination.

Keywords: Peristalsis, Micropolar fluid, Nano particles, Brownian motion parameter, Thermophoresis parameter, Mechanical efficiency, Slip Effect.

I. INTRODUCTION

Peristalsis is a mechanism which is involved in transportation of fluids from one place to another due to contraction or expansion of a tube containing fluid. Peristalsis appears to be the major mechanism in many physiological systems and mechanical situations.

Several researchers have investigated peristalsis in both physiological and mechanical situations.[Fung & Yih, (1968), Shapiro et al.,(1969), Devi & Devanathan, (1975), Meijing et al.,(1993), Maruthi Prasad & Radhakrishnamacharya, (2009), Pincombe et al., (1999), Maruthi Prasad et. al.,(2015), Santhosh et al., (2015)].

Nicoll et al., (1946) suggested that peristalsis plays a vital role in circulation of blood. The effects of an endoscope on peristaltic flow of micropolar fluid was investigated by Hayat et al., (2008). The effect of peripheral layer on the peristaltic transport of a micropolar fluid was studied by Maruthi Prasad et al., (2009).

Nano fluid is a fluid containing nano meter sized particles known as nano particles. The nano particles in nano fluids are typically made of metals, carbides, or carbon nano tubes. Nano fluids possess special properties that make them potentially useful in several applications in heat transfer, including microelectronics, pharmaceutical processes, fuel cells and hybrid powered engines.

Choi, (1995), was the pioneer of study of nano fluid technology. Sohail Nadeem et al., (2014) studied Mathematical model for the peristaltic flow of nanofluid through eccentric tubes comprising porous medium. Peristaltic transport of a nano fluid in an inclined tube was studied by Maruthi Prasad et al., (2015). Maruthi Prasad et al., (2015) also studied the peristaltic transport of nanoparticles of micropolar fluid in an inclined tube with heat and mass transfer effect.

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Taft Equation - A Convenient Tool to Decide the Position of Attack in the Reactions of Aliphatic Amines and Thallium(iii)

R. SANJEEV[1]*, V. JAGANNADHAM[2], ADAM A SKELTON[3], PANDIRI SREEDHAR[1] V.E.M. MAMATHA BETHAPUDI[1] and R. VEDA VRATH[4]*

[1]Department of Chemistry, Geethanjali College of Engineering and Technology, Cheeryal, Medchal District, 501301, Telangana, India.
[2]Department of Chemistry, Osmania University, Hyderabad-500007, India.
[3]Department of Pharmacy, School of Health Science, University of Kwazulu Natal, Durban South Africa.
[4]Department of Chemistry, L N Gupta Evening College, Hyderabad-500002, India.
*Corresponding author E-mail: rachuru1sanjeev1@rediffmail.com,vedavrathr@rediffmail.com

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ABSTRACT

In our earlier article[1], we had shown the application of Hammett equation of finding the site of attack. The application is based on the relative position of substituent on the aromatic ring from the center of the reaction. We had shown why we have to use σ_m value for σ_p and σ_p value for σ_m value, when we use Hammett's plot. In the present article we have demonstrated the use of the Taft equation for finding the site of attack. Here too, similar necessity arises. Often occasion arises in research, related to oxidation of aliphatic amines, where there is more than one site of attack, and we have to find the right one. One of the sites may be the N-H bond of the functional group; others being the α-C-H bond and the lone pair of electrons of the nitrogen atom. In such a circumstance, the Taft equation plays a deciding role in location of the site of attack. This equation is apparently simple but requires judicious application. It is in the fitness of this aspect, an attempt is made to make the application more understandable and student friendly. Also we feel that it should be essential part of Physical Organic Chemistry Graduate Curriculum.

Keywords: Amines, Oxidation, One Electron Oxidant and Two Electron Oxidant.

INTRODUCTION

The Hammett equation, which is based on the linear free energy relation, does not apply to the reactions of aliphatic compounds and ortho substituted benzene derivatives. This is because of interference of substituent by the reaction center. Also Hammet's σ values concern groups attached to an aromatic system engaged in resonance.

For aliphatic compounds, the Taft equation in simple form is described as $\log k = \log k_o + \sigma^* \rho^*$ where k = rate constant for a particular member of a reaction series, k_o = rate constant for the parent

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RESEARCH ARTICLE

Estimation of Taft ρ* of Dissociation Equilibriums of Methanium Ions RCH_4^+ the Hydrocarbon Super Acids: A Chemical Education Practice in Physical-Organic Chemistry Class-Room

R. Sanjeev[1] and V. Jagannadham[2,*]

[1]*Department of Chemistry, Geethanjali College of Engineering and Technology, Cheeryala-501301, Rangareddy Dist., Telangana, India and* [2]*Department of Chemistry, Osmania University, Hyderabad-500007, India*

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Abstract: In continuation of our efforts on the study of 'attenuation effect' in aromatic and aliphatic systems prompted us to give another attempt to estimate the Taft ρ* value of the dissociation equilibriums ($RCH_4^+ \rightleftharpoons RCH_3 + H^+$) of the methanium ion ($CH_5^+$) and substituted methanium ions (RCH_4^+) based on the attenuation effect on the dissociation equilibriums of alkyl ammonium ions ($RNH_3^+ \rightleftharpoons RNH_2 + H^+$) with one, two, three, four, five and six atoms between the ionizable proton and the first carbon atom of the substituent.

Keywords: Taft reaction constant (ρ*), attenuation effect, methanium ions, super acids.

INTRODUCTION

A super acid is defined as an acid with acidity greater than that of the acidity of 100% pure sulfuric acid, where acidity is in modern definition is defined as the chemical potential of the proton in a given medium is higher than that in pure sulfuric acid [1]. The first super acid where perchloric acid could protonate aldehydes and ketones in non-aqueous solvent like acetic acid that was known is nearly a century ago [2]. Later, many super acids were prepared in the Olah laboratory [3] at the University of Southern California by protonating hydrocarbons using a magic acid, a mixture of antimony pentafluoride (SbF_5) and fluorosulfonic acid (FSO_3H) was found by one of Olah students R. H. Schlosberg who dissolved a paraffin candle in the above mentioned magic acid. Examination of this solution by ^{1}H-NMR showed the presence of the t-butyl cation [4] that had been formed by protonation and subsequent isomerization of the original paraffin hydrocarbon. Concluding that this magic acid could protonate alkanes, it was found that methane can also be protonated at 140°C and at 1 atm. pressure to form the CH_5^+ ion as an intermediate [3]. As the ammonium ion is derived from ammonia by protonation, in the same analogy the CH_5^+ cation is called methanium ion as it was produced by protonation of methane. According to Hammett acidity function the H_o of CH_5^+ would be less than that of the magic acid because the magic acid was used to produce CH_5^+ by protonation of methane (CH_4) by a magic acid which must be a stronger acid than CH_4. H_o for some concentrated acids are [5]: Fluoroantimonic acid: -31.3, Magic acid: -19.2, Carborane superacid: -18.0, Fluorosulfuric acid: -15.1, Triflic acid: -14.1, Chlorosulfuric Acid: -12.78, Sulfuric acid: -12.0. Therefore, it is not unreasonable to propose a H_o value for CH_5^+ as little less than the value of magic acid i.e. - 19.2. One can put an upper limit of -19.0. Formulating an equation similar to Taft Polar Linear Free Energy (TPLFER) relationship [6-9]:

$$\frac{H_o^R}{H_o^H} = \rho^*\sigma^* \qquad (1)$$

where H_o^R and H_o^H are the Hammett acidity functions of the substituted and un-substituted methananium ions. To obtain H_o^R values of substituted methananium ions one needs the value of Taft ρ* as required in equation 1. In continuation of our efforts on the study of

*Address correspondence to this author at the Department of Chemistry, Osmania University, Hyderabad-500007, India; E-mail: jagannadham1950@yahoo.com

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SHAKESPEARE'S HEROINES: A REVOLUTION FOR HUMAN RIGHTS

Sharmila Deshmukh
Assistant Professor, Department of Science & Humanities (English)
Geethanjali College of Engineering &Technology, Telangana

Abstract

William Shakespeare is undoubtedly the greatest playwrights of all times. His plays have the element of humour, wit, wisdom, intelligence and strength very beautifully portrayed through his characters. The essence of feminism and the strength associated with being women is reflected through his heroines. Shakespeare heroines are not just ordinary women; they are very powerful and portray a very strong personality. They are born leaders with ' Beauty with Brains '.Most of his women characters take the aid of disguise- a powerful literary device. The irony lies in the fact in spite of the strength that his heroines possess, at the end of the play they are supposed to play their gender roles as prescribed by the society and family. Whether it is Cordelia, Rosalind or Portia, at the end they are required to fulfil their gender roles by getting married and be in the service of their family.

No doubt that Shakespeare has given his women characters a life of wit and wisdom, beauty and intelligence, and power and strength, but he made them submissive to the society's norms. At the same time his plays also convey the need to respect the basic human rights.

Freedom and equality are basic human rights that were denied to the women across the globe since times immemorial. Shakespeare's play indirectly conveys the need for basic human rights for all the individuals in the society more so for the women.

His women characters convey a very powerful message of the need for freedom, equality and justice across the globe. The paper is an attempt to bring out the strength of these women characters and the message of equality, freedom and justice through the study of few select plays of Shakespeare. These women characters convey a sense of revolution to realise the need for the basic human rights not only for the women in Shakespeare's times but also to the present times, and across the globe.

Introduction

The Elizabethan era was a patriarchal society just as it was across the globe. The gender roles were defined. Women were submissive. Women belonging to the rich families portrayed some strength and power, but ultimately they had to be submissive behind the curtains. Women indeed had strong influence on men in the social and political field. Though not directly, these women exerted their power through their counterparts. The need for freedom and justice is portrayed through the characters in the plays. The leadership qualities of women are brought out through the women characters in Shakespeare's plays.

The irony lies in the fact that women were not allowed to act on the stage. As such, the role of women was acted by a male actor. It was funny at times when these male actors in the role of a women character had to disguise as a male person. The literary device- disguise conveyed the status of women in the society. The heroines of Shakespeare are very strong characters whose qualities have influenced the women across the globe and perhaps to some extent brought about a revolution to understand and provide the basic human rights of freedom, equality and justice.

Human Rights: Freedom, Equality and Justice

Though Shakespeare's heroines are portrayed strong, they had to fight silently for their basic human rights. But their actions and dialogues convey the deprivation of their rights not only in the society but also in the domestic sphere. In the play 'The Merchant of Venice ', Portia has no choice of hers in choosing her better half. Though her father is dead, he has a powerful hold on her through his Will. There is indeed a conflict between the parental Will and the basic right of individual freedom to make a choice. Portia is intelligent but still doesn't have the right to choose her life partner. She says,

'In terms of choice I am not solely led
By nice direction of a maiden's eyes;
Besides the lottery of my destiny

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Heat and Mass Transfer Effects of Peristaltic Transport of a Nano Fluid in Peripheral layer

[1]K. Maruthi Prasad, [2*]N. Subadra and [3]M. A. S. Srinivas

[1]Department of Engineering Mathematics
School of Technology
GITAM University - Hyderabad Campus
Hyderabad Telangana India-502329
Email: kaipa_maruthi@yahoo.com

[*2]Department of Mathematics
Geethanjali College of Engg. & Tech
Cheeryal (V) , Keesara (M), Medchal Dist.
Telangana India-501301
Email: nemani.subhadra@gmail.com

[3]Department of Mathematics
JNTUH, Kukatpally
Hyderabad Telangana India-500085
Email: massrinivas@gmail.com

*Corresponding editor

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Abstract

This paper deals with a theoretical investigation of heat and mass transfer effects of peristaltic transport of a nanofluid in peripheral layer. By using appropriate methods, the velocity in the core region as well as in the peripheral region, pressure drop, time averaged flux, frictional force, temperature profile, nanoparticle phenomenon, heat transfer coefficient and mass transfer coefficient of the fluid are investigated, using lubrication theory. Effects of different physical parameters like viscosity ratio, mean radius of the central layer, Brownian motion parameter, thermophoresis parameter, local temperature Grashof number as well as local nanoparticle Grashof number on pressure rise characteristics, frictional force, heat transfer coefficient, mass transfer coefficient, velocity profiles and streamline patterns of the fluid are studied. The computational results are presented in graphical form.

Keywords: Peristalsis; Nano fluid; Homotopy perturbation method; Peripheral Layer; Heat transfer coefficient; Mass transfer coefficient

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Silver Bullet For The Computation Of Equivalent Weight Of Sodium Thiosulphate In The Reaction

$$2S_2O_3^{2-} + I_2 \rightarrow S_4O_6^{2-} + 2I^-$$

SANJEEV. R[1]*, V. JAGANNADHAM[2], VEDA VRATH . R[3], V. E. M. MAMATHA BETHAPUDI[1] and ADAM. A. SKELTON[4]

[1]Department of Chemistry, Geethanjali College of Engineering and Technology, Cheeryal,Medchal District, 501301, Telangana, India.
[2]Department of Chemistry, Osmania University, Hyderabad-500007, India.
[3]Department of Chemistry, L N Gupta Evening College, Hyderabad-500002, India.
*Corresponding author E-mail: rachuru1sanjeev1@rediffmail.com

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ABSTRACT

When we standardize sodium thiosulphate solution either by iodometry or by a iodimetry, we base our understanding on $2S_2O_3^{2-}+I_2 \rightarrow +S_4O_6^{2-}2I^-$ .While addressing the freshmen students, especially during the pre-experimental lectures, we teach them the computation of equivalent weight of sodium thiosulfate (hypo); this necessitates the knowledge of the difference in oxidation state of sulphur atoms in the product (2.5) and the reactant side (2.0); the difference in oxidation state of sulphur atoms is 0.5. The overtly observable query which occurs to the students is, "Is the equivalent weight and molecular weight of sodium thiosulphate same or different?" If yes, then the change in the oxidation state apparently does not conform to the difference, 0.5. This article deals with this apparently simple but extremely perplexing question

Key word: Oxidation States, Molecular Weight, Sodium Thiosulphate.

INTRODUCTION

If one attempts to calculate the equivalent weight of hypo in the title reaction i.e. the reaction between sodium thiosulphate and iodine molecule, the conventional method involves the evaluation of the oxidation state of sulphur in the reactant and product sides; this in essence gives the change in the number of electron(s) in the reaction. Then finally, we divide the molecular weight of sodium thiosulphate by the change in the number of electrons.

DISCUSSION

Let us apply the conventional method for the computation of equivalent weight of sodium thiosulphate to the title reaction. The first step

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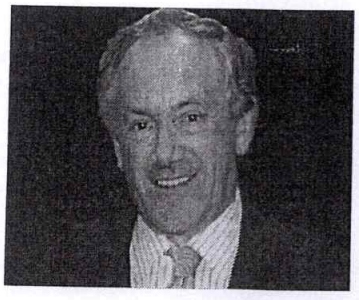
The '*Yard Stick*' to Interpret the Entropy of Activation in Chemical Kinetics: A Physical-Organic Chemistry Exercise

R. Sanjeev[1], D. A. Padmavathi[2], V. Jagannadham[2,*]

[1]Department of Chemistry, Geethanjali College of Engineering and Technology, Cheeryal-501301, Telangana, India
[2]Department of Chemistry, Osmania University, Hyderabad-500007, India
*Corresponding author: jagannadham1950@yahoo.com

Abstract No physical or physical-organic chemistry laboratory goes without a single instrument. To measure conductance we use conductometer, pH meter for measuring pH, colorimeter for absorbance, viscometer for viscosity, potentiometer for emf, polarimeter for angle of rotation, and several other instruments for different physical properties. But when it comes to the turn of thermodynamic or activation parameters, we don't have any meters. The only way to evaluate all the thermodynamic or activation parameters is the use of some empirical equations available in many physical chemistry text books. Most often it is very easy to interpret the enthalpy change and free energy change in thermodynamics and the corresponding activation parameters in chemical kinetics. When it comes to interpretation of change of entropy or change of entropy of activation, more often it frightens than enlightens a new teacher while teaching and the students while learning. The classical thermodynamic entropy change is well explained by Atkins [1] in terms of a sneeze in a busy street generates less additional disorder than the same sneeze in a quiet library (Figure 1) [2]. The two environments are analogues of high and low temperatures, respectively. In this article making use of Eyring equation a factor usually called '*universal factor*' is derived and made use as a '***yard stick***' to interpreting the change in entropy of activation for physical or physical-organic chemistry senior undergraduate and graduate students' class-room.



Peter Atkins

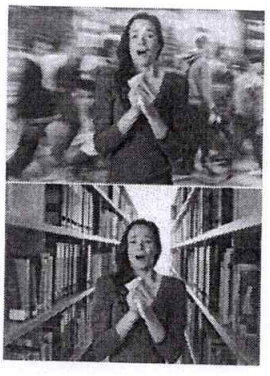


Figure 1.

Keywords: *entropy, universal factor, kinetics*

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1. Introduction

Thermodynamic properties like enthalpy, free energy and entropy of several thousands of organic and organometallic compounds were well documented and a very authoritative explanations and expert critical comments were offered [3,4]. As shown in the Figure 2, as an example taking any property (X = G free energy, or H enthalpy, or S entropy), thermodynamic and activation parameters could be distinguished between thermodynamics and kinetics. The nature of any property accompanied in chemical reactions in terms of energy considerations is nothing but an amalgamation of activation barrier ($\Delta X^{\neq}$) and thermodynamic driving force (ΔX^{o}). Marcus equation [5,6,7] is a successful treatise for treating kinetic data of electron transfer reactions to separate activation ($\Delta X^{\neq}$) and thermodynamic quantities (ΔX^{o}). The change in thermodynamic quantities could be interpreted in terms of

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Cooxidation not to be Confused with Catalysis: A Chemical Education Article to Physical-organic Chemists

R. SANJEEV[1], D. A. PADMAVATHI[2] and V. JAGANNADHAM[2]*

[1]Department of Chemistry, Geethanjali College of Engineering and Technology, Cheeryal-501301, India
[2]Department of Chemistry, Osmania University, Hyderabad 500007, India.
*Corresponding athor E-mail: jagannadham1950@yahoo.com

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ABSTRACT

Two substrates (A) and (B) are oxidized separately by an oxidant (Oxi) with the rate constants k_1 and k_2 and they are oxidized taken together (A + B) under similar conditions with a rate constant k_3, if the value of $k_3 = (k_1 + k_2)$, then it is said to be an example of two reactions "going parallel". If the value of $k_3 >>>> (k_1 + k_2)$, then the redox process is termed as "co-oxidation" (Hasan and Rocek 1972, *JACS*). In this process in the mixture the two substrates are oxidized synchronously by a direct three electron transfer route if the oxidant happens to be Cr(VI) and by a direct four electron transfer route if the oxidant happens to be Mn(VII) (Jagannadham *et al.*, 1986, *Oxidation Communications*). It was realized that the essential condition of the synchronous oxidation of two substrates A and B is that one substrate must have two functional groups and the other must have one functional group or vice-versa. The compound with two functional groups must be a good chelating agent with the metal ion oxidant. A substrate (A) is oxidized by an oxidant (Oxi) with a rate a constant k_4 and is oxidized in presence of a catalyst (Cat) with a rate constant k_5, if $k_5 > k_4$ the redox process is termed as "catalyzed process". It is to be noted that in the catalytic process the catalyst (Cat) is not oxidized and its concentration does not change during the reaction. It only increases the rate of oxidation with lower activation energies. If $k_5 = k_4$ it is to be understood that there is "no catalysis". If $k_5 < k_4$ it is to be understood that the catalyst is called a negative catalyst or "inhibitor" and the reaction goes with higher activation energy. In this paper a lucid description is given for the two processes "co-oxidation" and "catalysis" with putative examples.

Keyword: Cooxidation,Catalysis, Chemical education.

INTRODUCTION

Hasan and Rocek were the first to report a direct synchronous three electron oxidation process where in isopropyl alcohol and oxalic acids were oxidized[1]. Later several publications appeared from his laboratory[2-18]. Sequel to Rocek's discovery[1] of one step three electron oxidations several

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Ultrasonic Velocity Studies in Recycled Edible Oils at 1MHz Frequency

SK Mahammad Ali, Adeel Ahmad

Department of Physics, Geethanjali College of Engineering and Technology, Cheeryal, Medchal District, Telangana, India.
Corresponding Author e-mail: alishaike@gmail.com

ABSTRACT

Because of the cost factor of the edible oils, it became a common practice in household and commercial establishments to reuse edible oil several times i.e. recycling the same oil for cooking purpose which is harmful to human health conditions. Hence an attempt is made to find out whether edible oil is in its pure form or whether recycled by using ultrasonic technique. Ultrasonic velocity was measured in five edible oils in their pure and recycled forms at 1MHz frequency using Ultrasonic Multi frequency Interferometer at room temperature. The present study gives information about the ultrasonic velocity changes when the oil was recycled and data presented will be highly useful to identify whether the given oil is unused, used or how many times it was used.

Keywords: Ultrasonic Velocity, density and Edible Oils.

I. INTRODUCTION

Oil is a viscous liquid at ambient temperatures, which is a neutral and non-polar chemical substance. Oil is both hydrophobic and lipophilic in nature. The chemical composition of oils denotes high carbon and hydrogen content. Oils are usually flammable and viscous. Oils extracted from vegetables are called as vegetable oils. Vegetable oils are originally lipid materials extracted from seeds or flowers of plants. Most of the oils are extracted from seeds of the plants. Oils are composed of triglycerides. Vegetable oils may be edible or inedible. Examples of edible oils are Coconut oil, Palm oil, Cottonseed oil, Rice bran oil, Groundnut oil, Sesame oil, Mustard oil, Soybean oil, Safflower oil, Sunflower oil and Clove oil. Edible oil in its pure form is used for cooking first time and in this process it is heated. The left out oil is preserved leading to cooling process and again it is reused called as recycling. The profit minded commercial establishments are recycling the same oil several times which is hazardous to human health.

Various techniques have been used to study the properties of the oils or characterization of oils. Few such methods are Nuclear magnetic resonance (NMR), refraction measurement (RI), differential scanning calorimetry (DSC), X-ray diffraction and density measurements.

As ultrasonic is a non destructive test device, Ultrasonic velocity studies in vegetable oils were carried out by several scientists leading to an insight into the Physico – Chemical properties of the oils. Ultrasonic techniques have been widely used to study a number of physical properties of oils. Ultrasonic wave velocity data is used to detect adulteration in a number of animal and vegetable oils [1]. Variation of ultrasonic velocity and absorption with temperature and frequency in high viscous vegetable oils were studied and it was observed that ultrasonic velocity of vegetable oils decreases with the increases of temperature [2]. Physical properties of edible oils were measured using velocity of sound [3].

Studies on thermal stability of blended oils like groundnut and cottonseed oils were done. From the thermal studies it was found that blended oils are more stable than the pure or unblended oils. It was also found that groundnut oil and cottonseed oil blends of 50:50 are more stable than pure cottonseed oil [4]. Thermal studies on the vegetable oils were done to know the importance of blended oils on nutritional levels. Pure coconut, groundnut oils and their blends were used for frying of dehydrated potato chips in order to study the pattern of uptake of oil constituents during frying. Investigations on the analysis of the oil and fatty acid composition in the fried product and the oil remaining in the frying pan suggested a preferential uptake of saturated lipid constituents by the potato chips, while

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Double-Blind

Optimization of Waiting Time in Hospitals – A Case Study

V. SUSEELA TRIVENI[1]

[1]*Department of Mathematics, Geethanjali College of Engg. & Tech., Cheeryal (V), Keesara (M), Medchal Dist., Telangana, India*

ABSTRACT

In this paper we present a system-wide model developed to allow management to explore trade-offs between operation rooms (OR) availability, bed capacity, surgeons' booking privileges and wait lists. We are interested to develop a goal programming model to schedule surgical slots for each specialty into ORs and applied it to the hospitals in a NIIMS hospital, located at Hyderabad considering OR time availability, post-surgical resource and waiting time of the patients constraints. The results offer promising insights into resource optimization and wait list management, showing that without increasing post-surgical resources. Hospitals could handle more cases by scheduling specialties differently. Scheduling surgical specialties in a medical facility is a very complex process.

KEY WORDS

Goal programming, operating rooms, waiting time.

DATA OF THE PROBLEM

This study was carried out in NIIMS Hospital which is located at the prime center of the twin cities of Hyderabad and Secunderabad, and spread over an area of about 23 acres. It has the constructed area of more than six lakh sq.ft. The recently constructed giant structure, i.e., Millennium Block, itself has added an area of about one sixth of the total space. This Institute extends its services through 28 Departments. Out of them, 16 are Super and Broad Specialties and others are Supporting Departments. The Institute has bed strength of 985 beds, out of which 684 are in General Wards, 117 in private rooms and 184 in emergency and post-operative care. The average number of out-patients visiting the hospital

A Class Of Univalent Analytic Functions With Fixed Second And Third Coefficients

[1]S. Lalitha Kumari, [2]V.Srinivas
[1]Research Scholar, [2]Professor
[1]Department of Mathematics,
[1]Rayalaseema University, Kurnool, India

Abstract: In this paper we defined a new class of univalent and analytic functions with fixed second and third Taylor coefficients. Coefficient condition, starlikeness and convexity, extreme points, growth and distortion properties for this class are investigated.

IndexTerms – **Univalent function**

I. INTRODUCTION

Let S be the class of functions of the form $f(z) = z + \sum_{n=2}^{\infty} a_n z^n$ that are analytic and univalent in the unit disk $U = \{z \in \mathbb{C} : |z| < 1\}$. Let T be the subclass of functions of S which are of the form

$$f(z) = z - \sum_{n=2}^{\infty} a_n z^n, \quad a_n \geq 0, \quad n = 2, 3, \ldots \tag{1}$$

in U and C be the subclass of functions of T which are convex in U. We have $f \in C$ if and only if $zf' \in T$.

Now we introduce a subclass $T(b, c, B_n) \subseteq T$ by fixing a_2 and a_3, for $0 \leq b \leq \frac{1}{4}$, $0 \leq c \leq \frac{1}{12}$ and $B_n \geq n(n+1)$ for $n \geq 2$,

$$T(b, c, B_n) = \{f(z) \in T: f(z) = z - bz^2 - c\, z^3 - \sum_{n=4}^{\infty} a_n z^n, \ \sum_{n=3}^{\infty} B_n\, a_{n+1} \leq 2b - c\, B_2\}.$$

Let $C(b, c, B_n)$ be a subclass of functions of $T(b, c, B_n)$ which is convex in U.

This paper consists of two sections. In section 1, we find the coefficient conditions for starlikeness and convexity of the class $T(b, c, B_n)$. In section 2 we find extreme points, growth and distortion properties for the class $T(b, c, B_n)$.

SECTION 1

We need the following definitions from [1].

Definition1: [1] A function $f(z) \in S$ is said to be starlike of order α $(0 \leq \alpha < 1)$ in U, if it satisfies the inequality $Re\left[\frac{z f'(z)}{f(z)}\right] > \alpha$ for $z \in U$. The class of starlike functions of order α is denoted by $S^*(\alpha)$.

Definition 2: [1] A function $f(z) \in S$ is said to be convex of order α $(0 \leq \alpha < 1)$ in U, if it satisfies the inequality $Re\left[1 + \frac{z f''(z)}{f'(z)}\right] > \alpha$ for $z \in U$. The class of convex functions of order α is denoted by $C^*(\alpha)$.
We have $f \in C^*(\alpha)$ if and only if $zf' \in S^*(\alpha)$.

We start with a coefficient characterization for the functions of T to be in the class $T(b, c, B_n)$.

Theorem-1
The function $f(z) = z - bz^2 - cz^3 - \sum_{n=4}^{\infty} a_n z^n$, $z \in U$ is in the class $T(b, c, B_n)$ if and only if $\sum_{n=3}^{\infty} n(n+1)\, a_{n+1} \leq 2b - 6c$. The result is sharp.

Proof: If $f(z) = z - b\, z^2 - c\, z^3 - \sum_{n=4}^{\infty} a_n\, z^n$, $z \in U$ belongs to the class $T(b, c, B_n)$,
Then by the definition, we have $\sum_{n=3}^{\infty} B_n\, a_{n+1} \leq 2b - cB_2$
This gives $\sum_{n=3}^{\infty} n(n+1)\, a_{n+1} \leq 2b - cB_2$
or $\sum_{n=3}^{\infty} n(n+1)\, a_{n+1} \leq 2b - c.2.3$
this shows $\sum_{n=3}^{\infty} n(n+1)\, a_{n+1} \leq 2b - 6c$ (2)

Now, suppose that $\sum_{n=3}^{\infty} n(n+1)\, a_{n+1} \leq 2b - 6c$
Then $\sum_{n=2}^{\infty} n\, a_n \leq 1$.
Therefore $f(z) \in T$ by [3].

Crystallization and Dielectric Properties of $PbTiO_3$ based Glass Ceramics

J.Shankar[1]*, G.NeerajaRani[1] and V.K.Deshpande[2]

[1]*Geethanjali College of Engineering and Technology, Cheeryal, Hyderabad-501 301*
[2]*Visvesvaraya National Institute of Technology, Nagpur-440 010*

*Email:jshankar001@gmail.com.

Abstract. Glass samples with composition (50 - X) PbO - (25 + X) TiO_2 - 25 B_2O_3 (where X =0, 5, 10 and 12.5 mol %) were prepared using conventional quenching technique. These glass samples were converted to glass ceramics by following two stage heat treatment schedule. The XRD results in the glass ceramics revealed the formation of tetragonal lead titanate as a major crystalline phase. The SEM results show rounded crystallite of lead titanate. The ferroelectric nature of all the glass ceramic samples is confirmed by P - E hysteresis measurements. The extended heat treatment of glass ceramic samples at 593K for 10 h exhibited saturated hysteresis loops with higher values of remnant polarization.

1. INTRODUCTION

Glass ceramics are polycrystalline solids prepared by controlled crystallization of glasses. Crystallization is accomplished by subjecting suitable glasses to a carefully regulated heat treatment schedule which results in nucleation and growth of crystal phases within the glasses. This method of making a ceramic material represents a radical departure from conventional ceramic preparation processes and it offers a number of important advantages. Since molten glass can be obtained in a homogeneous condition, uniformity of chemical composition can easily be achieved for glass ceramics. The homogeneity of the parent glass together with the controlled manner in which the crystals are developed results in glass ceramic (gc) materials having a very fine grained uniform structure free from porosity. The other unique characteristics, such as no ageing or depoling problems and good stability at high temperature, high-pressure and in harsh environments, make glass ceramics attractive for use in variety of applications. Realizing the advantages of the glass ceramic process, several attempts have been made to produce glass ceramics having high permittivity, low dielectric loss, high electrical resistance and high dielectric breakdown strength by precipitating various ferroelectric phases were crystallized. Prominently these phases are $BaTiO_3$, $LiTaO_3$, $NaNbO_3$, Pb_5GeO_{11}, $LiNbO_3$, $SrTiO_3$, $KNbO_3$, KNN, PZT and $PbTiO_3$. The main emphasis in these investigations was on the study of dielectric and electro optic properties as a function of composition, heat treatment and grain size.

However, the systematic study of crystallization and dielectric properties of $PbTiO_3$ based glass ceramics has not been reported so far. Hence, in the present work the content of TiO_2 was increased by decreasing PbO content and the glass former (B_2O_3) content was kept fixed with an idea to restrict the volume fraction of residual glass phase and to improve crystallization, dielectric and ferroelectric properties of $PbTiO_3$ based glass ceramics.

2. EXPERIMENTAL

Glasses with composition (50-X) PbO - (25+X) TiO_2 - 25 B_2O_3 (where X = 0, 5, 10 and 15 mol %) were prepared from the high purity ingredients heated in an alumina crucibles at 1373 K-1523 K for 1h. The melt was homogenized by stirring it before quenching into aluminium mould at room temperature. The resultant glass

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Enhanced electrical properties of $SrBi_4Ti_4O_{15}$ ceramic with addition of ZrO_2

B. Mamatha, G. Neeraja Rani, and J. Shankar

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Structural, Magnetic and Magnetoreactance Studies In $NiFe_{2-x}R_xO_4$ (x = 0, 0.05; R = Y, Yb and Lu)

Kodam Ugendar[1,2,a)], Venkatrao Chunchu[2,3], G. Neeraja Rani[1] and G. Markaneyulu[2]

[1] *Geethanjali College of Engineering and Technology, Cheeryal, Keesara, Ranga Reddy District – 501 301 (T S)*
[2] *Advanced Magnetic Materials Laboratory, Department of Physics, Indian Institute of Technology Madras, Chennai 600 036, Tamil Nadu, India*
[3] *Powergear Limited, Tambaram, Chennai-600045, Tamil Nadu, India*

[a)] *Corresponding author:* damyug95@gmail.com

Abstract. Structural, magnetic and magnetoreactance (*mr*) properties of $NiFe_{2-x}R_xO_4$ (x = 0, 0.05; R = Y, Yb and Lu) compounds were investigated and the results are discussed and presented in this paper. Rietveld refined X-ray diffraction (XRD) patterns and Raman spectroscopy revealed the cubic inverse spinel phase for all the compounds investigated. The former also identified small amounts of $RFeO_3$ as the secondary phase. Lattice constant values were increased upon partial substitution of Fe^{3+} by R^{3+} (R = Y, Yb and Lu). Magnetization measurements revealed that the magnetic moment of R^{3+} (R = Y, Yb and Lu) substituted compounds decreased compared with $NiFe_2O_4$. *mr* was measured at 3 *kHz* and 3 *MHz* both longitudinal (*LT*) and transverse (*TR*) configuration. A maximum *mr* of 54 % was observed in Y^{3+} substituted $NiFe_2O_4$ in *TR* mode.

I. INTRODUCTION

Gaint Magnetoimpedance (*GMI*) effect is the change in impedance of a ferromagnetic material with the application of a dc magnetic field and is defined as, $MI = \left[\frac{Z(H)-Z(H_{max})}{Z(H_{max})}\right] \times 100$. The *GMI* effect is observed in wires, ribbons, tubes and thin films [1]. Small and negative magnetostriction has been reported to lead to large *MI* values [1-3]. Recently *MI* has been reported in Mn-Zn ferrite at different frequencies and has a maximum value of 61.2 % at 4 *MHz* [4]. Many researchers have reported *MI* in perovskites [5]. Since ferrites are insulators, change in the reactive part of the impedance rather than the skin effect gives rise to the *MI* in ferrites which is nothing but magnetoreactance (mr), $mr = \left[\frac{X(H)-X(H_{max})}{X(H_{max})}\right] \times 100$.

In the present investigations, R^{3+} (= Y, Yb and Lu) was chosen to partially substitute the lighter and smaller Fe^{3+} (ionic radius of Fe^{3+} = 0.63 Å and that of Y^{3+} = 0.89 Å, Yb^{3+} = 0.86 Å and Lu^{3+} = 0.85 Å). In this paper, structural, magnetic, and magnetoreactance properties of $NiFe_{2-x}R_xO_4$ (x = 0, 0.05; R = Y, Yb and Lu) compounds are reported.

II. EXPERIMENTAL DETAILS

The starting materials NiO (99.96 %), Fe_2O_3, Y_2O_3, Lu_2O_3 and Yb_2O_3 (99.99 %) are used to prepare polycrystalline $NiFe_{2-x}R_xO_4$ (x = 0, 0.05; R = Y, Yb and Lu) compounds, by solid state reaction method. The powders of the starting materials were taken in stoichiometric ratios and ground in an agate mortar and pestle for 3 *h* and were heat treated in air at 1200 °C for 12 *h*. The phase formation of the samples was confirmed by powder X-ray diffraction (XRD) technique using a PANalytical (X'pert PRO) X-ray diffractometer employing Cu K_α radiation. Rietveld refinement was carried out using the GSAS program with EXPUGI interface. Raman active vibrational

Dielectric and Impedance Properties of $NiFe_{1.95}R_{0.05}O_4$ (R = Y, Yb and Lu)

Kodam Ugendar[1,2,a)], Hanuma Kumar[1], G. Neeraja Rani[2] and G. Markaneyulu[1]

[1] *Advanced Magnetic Materials Laboratory, Department of Physics, Indian Institute of Technology Madras, Chennai 600 036, Tamil Nadu, India*

[2] *Geethanjali College of Engineering and Technology, Cheeryal, Keesara, Ranga Reddy District – 501 301 (T S)*

[a)]Corresponding author: damyug95@gmail.com

Abstract. The dielectric and impedance spectroscopic properties of $NiFe_{1.95}R_{0.05}O_4$ (R = Y, Yb and Lu) were investigated. The materials were prepared by solid state reaction and crystallized in the cubic inverse spinel phase with a very small amount additional phase of $RFeO_3$ (R = Y, Yb and Lu) as secondary phase. The scanning electron micrograph images clearly show grains (~2μm) which are separated by thin grain boundaries. The presence of all elements were confirmed by the energy dispersive X-ray elemental mapping. The frequency variation of ε' shows the dispersion, following the Koop's phenomenological theory, which considers the dielectric structure as an inhomogeneous medium of two-layers of the Maxwell-Wagner type. Impedance spectroscopic analysis indicates the different relaxation mechanisms, which corresponds to bulk grain and grain-boundaries. Their contributions to the electrical conductivity and capacitance of these materials were discussed in detailed.

I. INTRODUCTION

Ferrite materials have wide range of applications in the fields of electronics, optoelectronics, magnetics and magnetoelectronics due to their high saturation magnetization, large permeability, low eddy current losses and high electrical resistivity. Nickel ferrite crystallizes in inverse spinal structure and is a centro-symmetric magnetic material. Substitution of rare earth ion into the spinal structure has been reported to induce structural distortion and strains in the material [1]. Y, Yb and Lu doped $NiFe_2O_4$ have been prepared and their structural, dielectric and impedance spectroscopic properties were investigated. The objective of the this work is to study the bulk and interface phenomena over a wide range of frequencies in order to obtain information about the relaxation times present in these materials. The results obtained on the Y, Yb and Lu substituted Ni ferrites are presented and discussed in this paper.

II. EXPERIMENTAL DETAILS

The materials were prepared using the solid state reaction method. Powders of starting materials were NiO (99.96% pure), Fe_2O_3, Y_2O_3, Yb_2O_3 and Lu_2O_3 (all 99.99% pure) were ground in a agate mortar and pestle for 3 h and the mixtures were heat treated in air at 1200 °C for 12 h. Surface morphology was studied using scanning electron microscope (Model: Quanta 200) attached with energy dispersive X-ray (EDAX) equipment (for elemental analysis) along with Back Scattered Electron (BSE) imaging. The powders made into pellets, then sintered at 1330°C in air for 24 h, ensuring 95% densification and used for electrical measurements. Dielectric and impedance measurements were carried out employing 'Novocontrol Alpha broad dielectric analyzer'. Highly conducting silver paste was applied on both sides of the pellet and dried before the impedance and dielectric measurements.

RESEARCH ARTICLE OPEN ACCESS

Application of Queuing Model in the Hospital Pharmacy Unit-A Case Study

V. Suseela Triveni*
*Department Of Mathematics, Geethanjali College Of Engg. & Tech., Cheeryal (V), Keesara (M),Medchal Dist., Telangana, India,

ABSTRACT
The Objective Of This Study Was To Analyze Various Design Alternatives In Determining The Manpower Requirements Needed To Run A Hospital's Pharmacy Unit Efficiently. Several Queuing Models Are Used For This Analysis. This Study Enable The Hospital Administration In Understanding And Effectively Using The Manpower Available In Reducing The Waiting Times Of Prescription Orders Under Different Conditions. Three Different Operating Procedures Were Evaluated In Order To Give A Complete Analysis Of The Prescription Order Process Taking Place In The Pharmacy Unit. These Were A Multiple Server Queuing Model With No Priorities, A Priority Discipline Queuing Model Without And With Pre-Emptive Service.
Keywords – Arrivals, Queuing Model, Pharmacy Unit, Service

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I. DATA OF THE PROBLEM

This Study Was Carried Out In The Military Hospital, Situated In Hyderabad. The Primary Responsibility Of The Pharmacy Unit Is To Fill Prescriptions. During The Day, Prescription Orders Are Delivered Either By Messenger Or By Service Personnel At The Pharmacy's Service Window. They Arrive Both As Individual Orders And In Bulk. The Pharmacist Must Perform A Patient Profile On Each Prescription And Update Their Records. When Filled, The Pharmacist Checks Afterwards To See That It Was Done Accurately.

Arriving Orders Are Usually Classified Into Two Categories And Processed According To A Priority System. The Most Urgent Or Stat Orders Are Processed Immediately So That Service On Non-Stat Prescriptions In Progress Is Pre-Empted. All Other Arrivals Are Considered Regular And Include New And Refill Prescription For Non-Emergency Units, Auxiliary Hospital Units And Floor Supplies. Because Of Probabilistic Elements In The Pharmacy's Operation, Queues Tend To Form. Prescription Orders Arrive At Random And The Time Required To Fill An Order Is Random. When No Pharmacist Is Available For Service, Orders Must Wait In Line. The Working Of Pharmacy Unit Was Observed For One Week Duration In Order To Determine The Nature Of The Queue, Arrivals And Services. Throughout This Time, The Data Were Collected During The Busiest Part Of The Day.

II. QUEUE

A Single Line Forms For All Prescription Orders Wait For Service. There Is Always More Than One Pharmacist Working At Any Time. The Sequence In Which Prescriptions Are Filled Is Based On A Priority System. Two Priority Classes Exist: 1 With Stat Orders Receiving The Highest Priority And 2 With Regular Orders, Including Other New Prescriptions, Refills And Floor Supplies, Receiving The Lowest Priority. In Addition, Service Is Pre-Emptive So That Service On An Order Is Interrupted If A Higher Priority Order Enters The Queuing System. The Low Priority Regular Order Resumes Service From The Point At Which It Was Pre-Empted When There Are No More Stat Orders Waiting To Be Processed.

III. ARRIVALS

Prescription Arrives Throughout The Day, Being Delivered By Messenger Or Service Personnel At The Pharmacy Window. Though Some Arrivals Are Makeup Of Several Prescription Orders In Bulk, They Are Treated As Individual Orders Arriving At The Same Time. Arrivals Were Measured Separately For The Two Priority Classes When Data Were Collected Over Consecutive 20 Minute Intervals. The Mean Arrival Rate $\Lambda 1$ And $\Lambda 2$ Of Orders And Regular Orders Are Found To Be 0.092 And 0.27 Per Minute, Respectively.

IV. SERVICE

Data Were Obtained For The Time Required To Service Prescription Orders For Each Of The Two Priority Classes. In That Time, The

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Behavior of Organic Compounds with Different Functional Groups based on Surface Tension, Ramsey-Shields-EÖTVÖS Constants (*k*), Order of Association (x) and Trouton's Rule

R. SANJEEV[1] and V. JAGANNADHAM[2]*

[1]Department of Chemistry, Geethanjali College of Engineering and Technology, Cheeryal-501301, Telangana, India.
[2]Department of Chemistry, Osmania University, Hyderabad, 500007, India.

Abstract

Hydrocarbons and organic compounds having different functional groups with hetero atoms have shown a discriminative behavior toward surface tension, EÖTVÖS constants (k), order of association (x) and Trouton's rule. This was explained in terms of associative and non-associative behavior of these compounds.

Article History

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Keywords:

Taft equation, Eötvös Constant, Ramsay-Shields equation, Trouton's rule, Order of Association, Hydrogen Bond Donor-Acceptor Sites (H_{ad}).

Introduction

Study on associative properties of aliphatic alcohols[1], aliphatic carboxylic acids[2], phenols[3], and aliphatic amines[4] based on their surface tension data, EÖTVÖS constants (k), order of association (x) and Trouton's rule is a major breakthrough from our laboratory hither to not reported earlier in literature.In the present study, various compounds like hydrocarbons, and compounds having different functional groups with different hetero atoms were taken to see the effect of these groups on surface tension, EÖTVÖS constants (k), order of association (x) and Trouton's rule.

Experimental and Data Source

All the surface tension data used in this article is from reference[2]. The detailed procedure for calculation of various parameters mentioned in table 1 are described in references 1-4.Thermo chemical data is from reference[6]. Taft σ^* values are from reference[7].

CONTACT V. Jagannadhamb [redacted] jagannadham1950@yahoo.com Department of Chemistry, Osmania University, Hyderabad, 500007, India.

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An Analysis on Investment in Mutual Fund through Systematic Investment Planning a Smart Investors Preference

K. Naupal Reddy
M.com, MBA, (CS) Asst.Professor
Department of Management Studies
Geethanjali college of Engineering & Technology, Cheeryal Village,
Keesara Mandal, Medchal District., Hyderabad, Telangana 50130 – India

Abstract: ***Experience is the best teacher." This saying is very well applicable in everyone's life. Therefore as a student of management it must apply to me also. Then the question arises that from where we can get this experience. Obviously we must undergo study on Mutual fund. To serve this purpose I have done analysis on Mutual fund through the various sources available and as an outcome I have prepared this In today's corporate and competitive world, I find that Mutual fund has good growth and potential. Study of Mutual fund has given me the opportunity to work and get experience in a highly competitive and enhancing sector. The success story of good market share of different Mutual fund depends upon the returns of the Mutual fund.***

Keywords: ***Investment, portfolio, scheme, Mutual fund sector.***

I. INTRODUCTION

SIP is a method of investing a fixed sum, regularly, in a mutual fund. It is very similar to regular saving schemes like a recurring deposit. An SIP allows you to buy units on a given date each month, so that you can implement an investment / saving plan for yourself. Once you have decided on the amount you want to invest every month and the mutual fund scheme in which you want to invest, you can either give post-dated cheques or ECS instruction, and the investment will be made regularly. In few years Mutual Fund has emerged as a tool for ensuring one's financial well-being. Mutual Funds have not only contributed to the India growth story but have also helped families tap into the success of Indian Industry. The main reason the number of retail mutual fund investors remains small is that nine in ten people with incomes in India do not know that mutual funds exist. But once people are aware of mutual fund investment opportunities, the number who decides to invest in mutual funds will increase to as many as one in five people. The trick for converting a person with no knowledge of mutual funds to a new Mutual Fund customer is to understand which of the potential investors are more likely to buy mutual funds and to use the right arguments in the sales process that customers will accept as important and relevant to their decision.

II. NEED FOR THE STUDY

This study conduct systematic investment planning in mutual funds and It helps to reduce risk through the collection of fund from different securities and invest in different stocks. The benefit of diversification to the investor because it can make investment in different securities diversifying the investment. Moreover It helps to maximize the return of the portfolio because mutual fund is managed by professional and expert team and opportunity about to reinvest the return. The investor feels safety because mutual funds operation and management are closely observed by stock exchange center.