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# AN IMPROVED DOARP ROUTING PROTOCOL FOR MOBILE AD HOC NETWORKS

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## Abstract:

In lightweight hierarchical routing model, Way Point Routing Protocol (WPRP) nodes taken as the number of intermediate nodes for routing the waypoints and the route is separated into segments by the waypoints. Waypoints, including the source and the destination, run a high-level intersegment routing protocol (DSRP), while the nodes on each segment run a low-level intra segment routing protocol (AODVRP). One discrete advantage of proposed model depends on the mobility of a node in the route may out or fails, so instead of removal the whole actual route and discovering a novel route from the source to the destination, only the two waypoint nodes of the broken section have to find a new segment. In contrast, the ZRP and CGSR maintain hierarchies for existing hierarchical routing protocols for the complete network. We maintain initialization intended for WPRP to use DSRP and AODV. Hence it can view as DSRP over AODVRP that is DOARP routing protocol. The MANNET's are the set of radio enabled nodes in which it communicates with each other through broadcasting. There is a lack of infrastructure to organize and communicate to NWS because the dynamic configurations of MANETs, finds a recite from a source to a destination when might be very difficult. Most of the modern routing protocols works best based on or demand fashion. It includes the Ad hoc On-demand Distance Vector protocol (AODV) and dynamic Source Routing protocols (DSRP) are the two re-knowned on demand routing protocols for MANETs. It is combined into single hierarchical routing protocol and become two special cases of the proposed protocol. Again, one of the methodologies for DOARP is a multi destination route discovery. By using NS-3 tool these protocols were simulated and compared in terms of average control packets, average routing length, average packet delivery ratio and end to end delay.

**Keywords: Routing Protocol; MANETs; NS-3.**

## 1. Introduction

Ad-hoc networks have the ability to maintain networks at anytime, everywhere. MANETs typically a collection of moving nodes which forms a dynamic network temporarily without using existing centralized administration or already available network infrastructure. At this age of research focuses on mobile Ad-hoc networks. The routing protocol does a major role in two hosts or two senders or receivers which we want to send packets, thought it may not able to exchange messages directly. In Ad-hoc networks all the mobile nodes are to be connected dynamically in a random fashion. But all these mobile node of these networks acts as routers and be in a group to identify and maintain the routes for the other ad-hoc nodes in the mobile network. These scenarios become more complex if more mobile nodes are accelerated in the network. The ad-hoc nodes must be routed according to certain protocol and select the best route between the mobile nodes in order to optimize the bandwidth overhead and to enable for providing proper routing, so that it minimize the time required to converge after the topology changes.[1]



# DETERMINATION OF RESOURCE USAGE CHARACTERISTICS FOR HADOOP MAP REDUCE TASKS

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**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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Performance assessment of fuzzy and neuro fuzzy based iterative image fusion of medical images

May 2018 · Journal of Theoretical and Applied Information Technology, 96(10):3061-3074

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Abstract

Medical image fusion is a significant job to regain 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 between conventional image fusion methods; principal component analysis (PCA), discrete wavelet transform (DWT) and the projected fuzzy and neuro fuzzy based iterative image fusion techniques. The proposed method fuses images based on fuzzy inference system (fis) prepared. Experimentations have been finished on two different sets of multimodal medical images of brain. The projected technique is perceivably and significant related with the present approaches. For the assessment of the projected image fusion technique ten diverse measures is prepared and utilized of, namely Image Quality Index (IQI), Mutual Information Measure (MIM), Fusion Factor (FF), Fusion Symmetry(FS), Fusion Index (FI), Root Mean Square Error (RMSE), Peak Signal To Noise Ratio(PSNR), Entropy(E), Correlation Coefficient (CC) and Spatial Frequency (SF). Assessment outcomes demonstrated that the projected image fusion technique mechanisms improved than any of the conventional image fusion techniques.

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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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**INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH  
TECHNOLOGY****SECURED DISTRIBUTED ACCOUNTABILITY FOR DATA SHARING IN CLOUD****Dr Ch. Ramesh Babu<sup>1</sup>, Dr Md. Mastan<sup>2</sup> & Dr B.V Swathi<sup>3</sup>**<sup>1</sup>Professor, Dept of CSE, GCET, Hyderabad, India<sup>2</sup>Assistant Professor, Dept of CS & MIS, OCMT, Barka, Oman<sup>3</sup>Professor, Dept of CSE, GCET, Hyderabad, India

DOI: 10.5281/zenodo.839113

**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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# A Two Step Copyright Protection Scheme for Colour Images

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**Abstract:** A two-step copyright protection technique proposed for color images by makes use of secret sharing and discrete wavelet transform (DWT) methods. The procedure includes two steps: the share image generation step and the watermark retrieval step. In the generation step, the proposed method principally converts the host image into the YCbCr color 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 discrete wavelet transform. Previously, the procedure adventures the traits and the watermark to yield a principal share image. In the recovery stage, an extended watermark is initially reinstated by means of the sorts of the suspicious image and the principal share image. Succeeding, the methodology decreases the added noise to acquire the recuperated watermark, which is then confirmed in contradiction of the original watermark to observe the copyright. Retrieved watermark image is assessed by image quality index (IQI), root mean square error (RMSE), peak signal to noise ratio (PSNR), entropy, accuracy and proved that proposed methodology improves accuracy of the retrieved watermark image.

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

## I. INTRODUCTION

Visual cryptography based method proposed 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 can down to pronounce the possession of the doubtful image by this technique. The watermark design can be any important black/white image that can be cast off to characterise the possessor. Investigational outcomes demonstrated that the watermark design in the marked image has decent clearness and toughness [1]. A vigorous copyright protection method for digital image is projected in which this secret image is registered to certified authority (CA) for added defence. In the stage of watermark drawing out, the watermark can be attained by the stage exclusive-OR (XOR) process between the furtive image and the open image. The investigational outcomes illustrated that the projected method not only can obviously confirm the official document of the digital image, but also is strong to endure quite a lot of image

processing attacks such as JPEG glossy compression, cropping, noise adding, sharpening and blurring attacks [2].

A copyright protection method ground on discrete cosine transforms (DCT) and secret sharing methods. The planned method primarily makes use of the features of a host image, attained by applying the DCT on the host image, to produce a master share. Then, the master share is exploited collectively with a binary watermark to produce a possession share by utilizing the secret sharing method. To confirm the correct ownership of the host image, the concealed watermark can be exposed by means of the master and possession shares. Investigational outcomes exposed that the projected method accomplishes acceptable sturdiness against numerous general image processing attacks [3].

## II. LITERATURE SURVEY

A new watermarking method ground on the shuffled singular value decomposition and the visual cryptography for copyright protection of images. It produces the possession and recognition shares of the image ground on visual cryptography. It decomposes the host image added to low and high frequency sub-bands. The low frequency sub-band is additionally separated into blocks of same size after shuffling it and then the singular value decomposition is practiced to each arbitrarily certain block. Shares are produced by correlating one of the essentials in the primary column of the left orthogonal matrix with its equivalent to constituents in the right orthogonal matrix of the singular value decomposition of the block of the low frequency sub-band. The investigational products demonstrated that the planned method evidently verifies the copyright of the host images, and is vigorous to survive numerous image processing strikes. Assessment with the former connected visual cryptography-based method exhibits that the projected technique produces improved outcome. The planned scheme is particularly pliant touching 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 mining practices. The watermark is mined by calculating the association degrees amid the mask



## Performance assessment of neuro fuzzy based image fusion of satellite images

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### 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

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# AN EFFICIENT TREND DISCOVERY AND EVALUATING TECHNIQUE FOR TEXTUAL CONTENT MINING

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**ABSTRACT:** *As a result of the quick expansion of virtual knowledge and building up the precise knowledge wishes of the customers, the information mining process has a very important position to extract the helpful knowledge from that enormous quantity of knowledge. The extraction of those knowledge can also be accomplished the use of other knowledge mining tactics. The primary purpose of doing trend mining is to enhance wisdom discovery fashions for the efficient make the most of found out trend and follow it in space of textual content mining. In knowledge mining group, so much analysis paintings center of attention on creating an efficient trend finding set of rules which come with method akin to sequential trend mining common merchandise mining and shut sequential mining for mining helpful styles. However there's a large problem to find and replace efficient trend. In efficient trend discovery and use tactics there are primary issues. Those are:*

- *Low frequency and*
- *Trend misinterpretation drawback*

*The overall evaluation of a proposed device is designed to deal with the issues of low frequency and trend misinterpretation of trend discovery approach. The program attempts to unravel the prevailing method issues and examine the outcome generated by way of trend deployment and trend deployment wit trend co-prevalence strategies.*

**KEYWORDS:** *Knowledge Mining, Knowledge Retrieval, Trend Taxonomy Type, Textual content Mining, pattern co-occurrence matrix.*

## I. INTRODUCTION:

Prior to now many years, a few vital knowledge tactics were proposed. Those tactics come with affiliation rule mining, common merchandise set mining, sequential trend mining, closed trend mining and most trend mining,. The use of the ones trend mining tactics isn't enough as a result of successfully the use of and updating a found out trend continues to be an unending analysis factor. The primary function of doing trend mining is to improve wisdom discovery fashions for the efficient make the most of found out trend and follow it in space of textual content mining.

In Knowledge Retrieval there are a few time period primarily based strategies. Those strategies have a just right statically homes, as it helps complex theories for time period weight. On the other hand time period primarily based strategies suffered through synonymy, polysemy and homonym the place polysemy method or extra phrases has the similar that means; and synonymy one phrase has multiple that means. Through the years, word primarily based mining strategies speculation were proposed. Words may just raise extra semantics knowledge than time period as a result of that it's going to carry out upper than the time period primarily based strategies Even words are much less ambiguous and raise greater knowledge than person phrases, like phrases, word has its personal weak spot i.e low frequency. Like that of phrases primarily based strategies, styles revel in just right statistical assets and used as an efficient choice to words. For fixing the issues of word



# Compressed Data Aggregation and Routing in WSN using Optimal Clustering Protocol

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**Abstract:** There is a difference in energy consumption among the nodes in cluster-based wireless sensor networks due to the non-uniform distribution of nodes. Based on this issue, we are proposing an efficient data aggregation tree based on the previous clustering architecture for communication and routing. Here, using fuzzy logic methodology, parameters such as Residual Power, Node Density and Load cluster heads are chosen. The inter-cluster routing algorithm balances the energy consumption between the heads of the cluster by changing energy consumption between clusters. Then data compression is applied using data correlation model to reduce energy consumption.

**Keywords:** wireless sensor network; fuzzy logic; inter-cluster routing algorithm; energy consumption.

## 1. Introduction

### 1.1 Wireless Sensor Networks (WSN)

Wireless Sensor Networks (WSN) consists of intelligent, teensy sensor nodes capable of sensing different types of phenomenon using sensor modules and wirelessly transmitting the specific data to a sink node. WSNs gather and measure all data and provide specific users with different sensing information. Typically, these sensor nodes are installed in huge proportions (from a few to thousands) and in environments where human control is exceedingly difficult. Sensors must therefore be spread randomly and must use limited power storage units such as batteries. Sensor nodes therefore need to work with each other to create a self-organized network, and they need to be fitted with energy-efficient modules and protocols to reduce energy consumption and ensure long life of the network [1].

One of WSN's important tasks is to collect and relay the relevant parameters to the base station. Sensors are typically deployed in a dangerous atmosphere and battery replacement is difficult, making energy usage one of the most important considerations of protocol design. In WSN, sensors share information to each other through wireless signal and all neighbors receive the data transmitted by a sensor, thus the overhead communication is the large energy wastage of the sensor. Data aggregation is among the most effective ways of reducing overhead communication and many schemes for eliminating redundant transmissions have been proposed [2,3].

A sensor network consists of a lot of of sensors with capabilities in computing, communication, and sensing that can spread across a geographical region. Their restricted processing power, range and storage space limits the use of standard data processing algorithms and the amount of intermediate results that can be deposited on the sensor nodes. Thus, well-organized routing in WSNs is needed for the easiest way of compressed data aggregation [4,5].

### 1.2. Aggregation of cluster-based data in WSN

In the wireless sensor region data aggregation is an important technique because data packet reduction can reduce energy consumption, increase network life, and increase the effective data transmission ratio. The principle of clustering can be used to increase the efficiency of data aggregation in a hierarchical network in terms of target monitoring. Static clustering and the other dynamic clustering are the two types of clustering methods.

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# Multi-Otsu's image segmentation for Mammograms using Artificial Bee Colony (ABC) Algorithm

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## Abstract:

Clear-cut image segmentation of mammogram images is indispensable in malignant tumor detection. This paper is attempted to propose a nature-inspired optimized method for mammogram image segmentation by adopting Otsu's multi-level thresholding algorithm as a fitness function into the ABC algorithm. Moreover, in image segmentation, Multi-level thresholding algorithms come across with insufficient exploration and low exploitation on search space. Hence, to solve this problem a Metaheuristic optimized algorithm is leveraged. This is achieved by using the ABC algorithm to explore the population space and exploit the specified population space to select the finest threshold values. Thereafter, the output of ABC is used to segment the mammogram image using the multi thresholding method. In this work, the proposed method is exercised with a total of nine images from the MINI MIAS database. Besides, to assess the performance of the proposed method different threshold levels are used to segment mentioned images. It was witnessed that the performance of the wished-for method is effective and efficient to segment the mammogram images in terms of measures like PSNR, SSI, and computational time.

**Keywords:** Artificial bee colony, Otsu, Multi-level Thresholding, Mammogram, Breast cancer

## 1. Introduction

### 1.1 Medical Image Segmentation

Mammogram images are currently most widely adopted technique in clinical practice to detect the breast cancer as it is easily accessible and cost-effective. For early detection of malignant tumors in mammogram images, many methods have been proposed [12]. Breast cancer mainly affects middle-aged women for different reasons. Over the past twenty years, several methods are demonstrated to segment the medical images like X-ray, CT (computed tomography)-scan, Magnetic Resonance Imaging (MRI) Mammogram, etc. [1]. Homogeneous gray level values of pictorial muscle in preprocessed mammogram images exhibits effective intensity. Cancer detection false positive rate depends on the accuracy of image segmentation [16]. Image segmentation increases the visibility of microcalcification in processed mammogram images. In computer vision algorithms image segmentation plays a significant role [6]. There are six types of image segmentation methods, threshold-based, Artificial Neural Network (ANN) based, edge-based, clustering-based, watershed-based, region-based, and PDE-based methods[8]. Thresholding is the most popular segmentation method in medical image processing. In the bi thresholding method, the grayscale image is divided into two intensities i.e foreground and background. But, multi thresholding divides the images into many homogeneous regions [13].

### 1.2 Otsu's Multi Thresholding

In automatic global threshold case studies, gray level images can be effectively segmented into bimodal (foreground or background) or multi classes using a non-parametric and unsupervised Otsu's thresholding algorithm. It is centered on a very simple idea: exhaustively search for the threshold that reduces the weighted within class variance defined as  $\alpha_w^2$  [22]. The class variances are given by (1) and (2) respectively

$$\alpha_0^2 = \sum_{i=0}^n (i - \mu_0)^2 \Pr(i/C_0) = \sum_{i=0}^n (i - \mu_0)^2 p_i / w_0$$

PalArch's Journal of Archaeology  
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**Ground Water Quality Assessment in Guntur district GIS data  
Using Data Mining Techniques**

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**Mandadi Vasavi , Munugapati Bhavana , S J R K Padminivalli V<sup>3</sup>, Ground Water Quality Assessment in Guntur district GIS data Using Data Mining Techniques , Palarch's Journal Of Archaeology Of Egypt/Egyptology 18 (4). ISSN 1567-214x.**

**Keywords -- Ground Water Quality, prediction, Data Mining, Classification Techniques.**

**Abstract:**

Throughout this article we first attempted to analyse water quality research in the Andhra Pradesh district of Guntur. A thorough study of the consistency of groundwater was undertaken. 31 water samples of various physiochemical parameters, e.g. temperature, pH , electrical conductivity, totally dissolved solids , ammonium nitrates, total hardness, calcium, chloride, magnesium, sulphate, total alkalinity, potassium, total nitrogen, sodium , total phosphorus and dissolved oxygen have been collected and tested. The correlation analysis was also conducted as it is an outstanding method to estimate fair precision of parameter values. This research proposes a new methodological approach in conjunction with an ensemble model for data mining, through the use of the evidence-based confidence function and boosting the BRT regression tree GIS knowledge for groundwater quality visualization in Guntur. Spring areas for training and validation in individual and ensemble methods can be established and subdivided into two groups. Modeling results are drawn up to create potential maps for spring (groundwater). In order to evaluate groundwater content by taking different samples in various towns and cleanly synthesising water parameters that have been applied the diverse Data mining techniques.

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## Code integrity verification using cache memory monitoring

Rajesh Kumar Shrivastava, Varun Natu & Chittaranjan Hota

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# Analyzing and Predicting Cyber Security Violations using Machine Learning Techniques

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**Abstract** — *To deepen our insight into the evolution of a threat situation, study of cyber incident data sources is an essential process. This is a relatively recent subject for science and many experiments still have to be conducted. Throughout this article, we present statistical analysis of the 12-year cyber hacking operation (2005-2017) violation incident data set which includes attacks by malware. We prove that, in comparison to the literary results, breach sizes and inter-arrival times for hacking breaches can be modeled instead of distributions, since they have an auto-correlation. In order to adapt the time of the intercom and the scale of the violation, we suggest complex stochastic process models. We also prove that the inter arrival periods and the violation scale can be estimated from these models. We perform quantitative and qualitative pattern research on the data set to achieve a better understanding of the growth of hacking infringement incidents. We derive a variety of observations into cyber security, including the challenge of cyber hacking in its scale, but not in its severity.*

**Keywords:** *Cyber risk analysis, Hacking breach, breach prediction, data breach cyber threats, trend analysis, cyber security data analytics and time series.*

## Introduction

An information breakdown is the protection for the transfer, transmission, stolen or as any use of important, safe or confidential information by an unapproved person. The breakdown of data is the purposeful or unintended intrusion into a non-trustworthy realm of safe or private/classified data. This



# Three Point Boundary Value Problems Associated with First Order Fuzzy Difference Systems-Existence and Uniqueness via the Best Least Square Solution

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**Abstract:**

This paper presents a criteria for the existence and uniqueness of solutions to first order fuzzy difference system using QR-algorithm. Modified QR-algorithm is presented for fuzzy linear systems using singular value decomposition.

**Keywords:** Fuzzy Difference Systems, Modified QR-algorithm, Fundamental matrix, Decode algorithm.

AMS(MOS) classifications 34B15,93B05,93B15

**1. Introduction:**

Existence and uniqueness of solutions to initial value problems have a long mathematical history going back to Picards. The mere fact that  $f$  is continuous on  $R$  ensures existence of at least one solution to the initial value problem

$$y^1 = f(t, y), \quad y(t_0) = y_0 \tag{1.1}$$

on  $R$ . The situation is different for boundary value problems. Length of interval estimates are necessary to prove existence and uniqueness of ( 1.1). If  $f$  satisfies a lipschitz condition in the second variable, then (1.1) has a unique solution. The situation is different for first – order difference system..

$$y_{n+1} = A(n)y_n + f_n, \quad y(n_0) = y_0, \tag{1.2}$$

where  $A$  is an  $p \times p$  continuous matrix, whose elements  $a_{ij}(n)$  are all real or complex valued functions defined on  $N_{n_0}^+$  and  $y_n \in R^p(C^p)$  with components  $y_1(n), y_2(n), \dots, y_p(n)$ , defined on  $N_{n_0}^+$ . The corresponding homogeneous equation corresponding to (1.2) is

$$y_{n+1} = A(n)y_n, \quad y(n_0) = y_0 \tag{1.3}$$

(1.3) possess a unique solution on  $N_{n_0}^+$  as can easily be seen by induction.

  
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## SMART HOME SECURITY ENVIRONMENT SYSTEM ENVIRONMENT WITH HUMAN FACE RECOGNITION BY USING REMOTE TECHNOLOGY

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**Abstract:** Smart home security system has become indispensable in daily life. Remote monitoring technologies are to be used since the invention of smart home security control system. In this paper, we described home environmental issues to authenticate people by the verification of wireless control system. We proposed verification techniques for the identification of visitors' faces, alert messages of home environment situations. System control issues can be authorized the system through user mobiles by receiving the commands with authentication. The complete system is controlled by using Raspberry Pi and testing the home environment. This new system can be implemented in the home environment to do authentication process. Normally Face recognition algorithms and wireless interfaces are used to identify the visitors and provide an email notification and/or an alert message about the current home environment through network facilities with the help of home owner's mobile phones. This system is more useful for more applications which are not having a physical presence at any time.

**Keywords:** Face detection, Raspberry pi, E-mail, Security.

### 1. INTRODUCTION:

Now a days, Internet of Things (IoT) is an emerging area in an IT field. It is a network connection with physical objects which are accessible through the internet facilities. Yet things assign an IP address and collect the data transfer through network without human beings of participation. It provides different ways to increase efficiency and improving safety and it security [1]. Data analytics, security issues have improved the performance to achieve the best results. An efficient embedded door access control management techniques are used in face recognition process. It plays a crucial role in the security application. In those days implementation of security system was implemented in homes and workplaces [2]. Doors are open/close with the cards, security keys. It has the following advantages.

- Small surveillance capacity.
- Low efficiency in evaluating time.
- Human error in high security system.

Recent days, security gains are real high power of everything in the universe. In this paper, the authors have been focused for producing the comprehensive study, which is related to the many door locks and gate security systems that are mainly implemented [3]. Customer can access the system by utilizing mobile phones [10]. Previously some of the authors are focused on security issues. Krishna Reddy et al have focused on security issues in a cloud environment. [16]. Titupathy Reddy et al gives data sharing process by using secret keys. [17]. Swapna et al described the website security threats [18]. Ravindra Nath et al have been focused on different security issues for data in cloud environment [19, 20, 21]. Jabbertal [22] provide a health care management system of government. Lakshmi Praneetha et al [23] demonstrate the automated leaf disease detection in corn species through image analysis. Mishra et al [24] gives performance analysis on architecture issues. Nagendrama [25] provides the Performance evaluation of wide area network issues. The major contribution of the paper is to provide the guidance to the users for improving door security of personal locations by using face detection and verification [1]. This system can be used to develop



## RESEARCH ARTICLE

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SCIENCE

## Leaf Image Classification with the Aid of Transfer Learning: A Deep Learning Approach

Srinivasa Rao Dammavalam<sup>1,\*</sup>, Ramesh Babu Challagundla<sup>2</sup>, Vangipuram Sravan Kiran<sup>1</sup>, Rajasekhar Nuvvusetty<sup>3</sup>, Lalith Bharadwaj Baru<sup>1</sup>, Rohit Boddeda<sup>4</sup> and Sai Vardhan Kanumolu<sup>1</sup>

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**Abstract: Background:** Crop diseases are a primary hazard to nutrient safety, which proves to be a serious problem in many places in the world due to the unavailability of essential aid. Typically agriculturalists or specialists perceive the plants with a naked eye for detection and identification of an illness. Machine vision models, in specific Convolutional Neural Networks (CNNs) have directed an impact in feature extraction to a greater extent. Since 2015, numerous solicitations for the automatic classification and recognition of crop illnesses have been established.

**Methods:** In this paper, we proposed, analyzed, and assessed various state-of-the-art models proposed over a decade. These models are pre-trained with the finest parameters where we modeled a design-oriented method with numerous leaf-images and classified them into infection and healthy class for each type of leaf independently.

**Results:** Through our examination, we concluded that VGG models stand-alone with many cited prototypes and give on par results. As declared, these VGG models (VGG16 and VGG19) are utilized for feature extraction, and further, we augmented a set of dense layers and train them consequently for classification. The performances of various machine vision prototypes were pictorially perceived and their sophisticated architecture is not only capable of extracting detailed features but also repressed many loop-holes. The performance is assessed and computed for several types of leaf images and the accuracy scores attained were more than 97.5% for VGG16 and 96.72% for VGG19.

**Conclusion:** AUC-ROC curves were portrayed to illustrate its inspiration in defining an accurate classification where VGG16 and VGG19 have at least 96.6% and 95% area under the curve (AUC) which resembles their robustness.

**Keywords:** Leaf classification, deep learning, transfer learning, automated plant diagnosis, CNNs.

## 1. INTRODUCTION

The trick of competent plant disease fortification is carefully connected to the difficulties of supportable cultivation and weather variation. Investigation outcomes designate that weather variation can change phases and amounts of pathogen improvement; it can also change host confrontation, which leads to physiological variations of host-pathogen connections. The condition is more difficult by the fact that today; diseases are increasing globally. New diseases can transpire in places where they were formerly unknown, where there is no native ability to find proper medication.

Cultivation has a huge impact on the production of food, especially with the increasing population. The plant diseases are intimidating the yield of the crop. Plant diseases can have a major impact on decreasing crop production in farming and forestry. Initial discovery and identification of plant diseases oblige to take suitable actions.

There are numerous methods to identify plant pathologies. Some diseases do not have any noticeable indications related, or appear only when it is too late to act. In these circumstances, it is essential to accomplish refined examination, typically by resources of influential microscopes. In some circumstances, the marks can only be perceived in portions of the electromagnetic band that are not obvious to the naked eye.

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# Fuzzy K-means clustering with fast density peak clustering on multivariate kernel estimator with evolutionary multimodal optimization clusters on a large dataset

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## Abstract

Many conventional optimization approaches concentrate more on addressing only one appropriate solution. Thus, these methods were to be utilized often, hence there were no chances of producing the intended solution. Therefore, the issue of multimodal optimization has to be considered. So, to reduce the difficulties by the clustering and further, it followed by the optimization technique. Here, the variety of real-time and artificial techniques are used. Using the FCDP-Fast Clustering with Density Peak, we calculate the density values after determining the center with the help of objective function. Then, the fuzzy clustering is applied to form the clustered groups with the density and center values. Finally, we optimize the data using the CDE-Crowding Differential Evaluation methodology. Performance analysis is then proceeded with some existing methods by using the performance metrics like NMI and ARI. After validation, it concluded that the proposed method was superior to the existing method.

**Keywords** K-means clustering · Multimodal optimization · Crowding differential evaluation · Density value · Center distance

## 1 Introduction

Being the age of internet dominances and rapid technological advancements, we must be safe and sound so that we could escape from the intruders and spammers in the surroundings. So data

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## Sustainable wireless clouds with security assurance

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**Abstract:** The smart technology development being an entailment to have an improved quality of living under clean environment, with enhanced social, economic development, public safety and efficient governing would be made possible by the cloud computing, that pillars the smart planning with enhanced decision making and service provisioning. The smart developments must be well planned with the sustainable wireless cloud and should be supported by evaluating, analysing and synthesising to manage with the enormous data flow from diverse fields. This dataflow management that is subjected to threats causing data loss and data mishandling is efficiently prevented by the preventive measures undertaken in the proposed system of security assurance to regulate continuous data transmission to permitted users with authentication, encryption and decryption. The proposed system is validated in CloudSim with regard to throughput and delay to ensure the systems reliability and timely perfect delivery.

**Keywords:** sustainable wireless clouds; smart planning; decision making; dataflow management; security assurance; throughput; delay.

**Reference** to this paper should be made as follows: Sathish, K. and Kolli, K. (xxxx) 'Sustainable wireless clouds with security assurance', *Int. J. Information and Computer Security*, Vol. X, No. Y, pp.xxx-xxx.

**Biographical notes:** Kuppani Sathish received his Bachelor's and Master's of Technology in Computer Science Engineering and PhD in Computer Science and Engineering from the Sri Venkateshwara University, College of Engineering, Tirupati. He is working as a Professor in the Department of Computer Science and Engineering, Tirumala Engineering College, Narasaraopet, Guntur (dt), which is affiliated to Jawaharlal Nehru Technological University, Kakinada. He is having 16 years of experience in teaching and research and taught for Bachelor's and Master's courses. He has also delivered several guest lectures in the educational institutions. His area of interest includes grid and cloud computing, bio inspired networks, software engineering and communication systems. He made significant contributions in the area of networking in Rayalaseema region to provide internet access to common man. He attended many conferences and workshops and communicated papers to reputed national and international journals.



# UnderTracker: Generating Robust Binaries Using Execution Flow Traces

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## Abstract

Programs are developed in a manner so that they execute and fulfill their intended purpose. In doing so, programmers trust the language to help them achieve their goals. Binary hardening is one such concept that prevents program behavior deviation and conveys the programmer's intention. Therefore, to maintain the integrity of the program, measures need to be taken to avoid code-tampering. The proposed approach enforces code verification from instruction-to-instruction by using the programmer's intended control flow. *UnderTracker* implements execution flow at the instruction cache by utilizing the read-only data-cache available in the program. The key idea is to place a control transfer code in data-cache and call it from instruction cache via labels. *UnderTracker* injects labels into the binary without affecting the semantics of the program. After the code execution starts, it verifies every control point's legality before passing the control to the next instruction, by passively monitoring the execution flow. We proposed a cache-based monitoring method to verify code integrity. In this, we used side-channel information to monitor the program's execution state. This monitoring system uses a sliding window scheme to detect the violation of code integrity with high reliability. This paper proposes an efficient technique, called *UnderTracker* to strengthen the binary integrity of an I/O intensive running program, with the nominal overhead of only 5-6% on top of the normal execution.

**Keywords** Superblock · Execution flow verification · Systems security · Cache-based monitoring

## 1 Introduction

An adversary can tamper code via a malicious form of the binary (executable file) hosted by a third-party. An adversary can also install malicious binary by applying phishing attacks. There are some possible scenarios when code tampering exploits happen listed as follows:

1. An adversary can directly change the application binary through a phishing attack.
2. An adversary can exploit the resource within an application.

3. An adversary can exploit code to inject malicious payload.

The code tampering method leaves an impact on both ways, technical and business. The technological implications of code modification include password leaking, theft of identification, unauthorized modification of code. On the other hand, the firm is also gets affected by revenue loss and damage to reputation.

There are various application programs available over the internet, which contains a malicious payload. For example, games are the most popular in this category. If a user doesn't want to pay for the game, they use some short-tricks to achieve extra power or life. This bypass allows them to enjoy the game without pay. The adversary has also injected spyware to steal user's information in this type of game bypass technique. They can steal your important data like banking id and password.

One of the most lucrative attack vectors present in a binary is the code reuse attack, and therefore it becomes paramount to protect it. Existing protection methods such as stack canaries (Marco-Gisbert and Ripoll 2013), Data Execution Prevention (DEP) and Address Space

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# Performance Analysis of a Gaussian Mixture based Feature Selection Algorithm

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**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

\*\*\*\*\*

## 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 dataset 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).