

**Paper 1**

**A Matrix Based Maximal Frequent Itemset Mining Algorithm with Subset Creation**

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**Abstract :** Frequent pattern mining is the most important step in association rule mining. Many algorithms have been proposed for this, but most of these algorithms have two main problems, namely a large number of database scan and generating large candidate itemsets. This process is time consuming because; these algorithms first mine the minimal frequent itemsets and then generate maximal frequent itemsets from minimal frequent itemsets. The present paper proposes a new top down approach based on compressed matrix for mining maximal frequent itemsets directly with the help of the subset. The proposed algorithm performs better than Apriori and Maximal Frequent Itemset First (MFIF) algorithms with datasets of different size and on different threshold.

**Paper 2**

**A Novel Transformed Based Image Steganographic Technique for Embedded System with Imperceptible Distortion**

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**Abstract:** Steganography is used to transmit secret messages without the knowledge of message communication to eavesdroppers or unintended recipients. The technique used for Steganography should be such that it hides maximum possible messages into a cover object, without distorting it. In this work a novel scheme is used to hide the secret messages into image as a cover object, which acts as a secret message carrier. The messages are hidden into image in transform domain, where lifting based Integer Wavelet Transform (IWT) is used to transform the image. The message is hidden in such a way that only the intended recipient can extract it. The aim of this paper is to propose a high-capacity image Steganography technique that depends on the size of image. Embedding is done with acceptable levels of imperceptibility and distortion in the cover image and high level of overall security by introducing double confusion. The experimental results show that the proposed scheme achieves high embedding capacity without any noticeable distortion, with acceptably high Peak Signal to Noise Ratio (PSNR) of 54.24 dB.

**Paper 3**

**Image Encryption using One-dimensional Chaotic Logistic Map**

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**Abstract:** Images are widely used in many applications and have become integral part of our lives. In the digital era of computing, various image capturing and processing facilities are easily available. Due to advanced gadgets like

mobile phones, tablets and laptops, it has become easy to capture an image and transmit to the near and dear ones. Additionally, reasonable storage facilities available at cloud platforms have made it more convenient to capture images without worrying about storage space. However, transmission and storage of personal images raise privacy concern for users. In this paper, we propose a novel scheme for image encryption such that user images can be transmitted and stored over public networks. One-dimensional chaotic logistic map is employed with 128-bit secret key. Experimental results and security analysis show that the proposed approach possesses adequate properties to resist various attacks.

#### Paper 4

### Prediction of Liver Disease at Early Stage Using Hybrid Approaches of Data Mining Algorithm in Bioinformatics

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**Abstract:** Bioinformatics is most widely used to predict various diseases and cancer. The present study is focused on the usage of classification techniques in field of medical science and bioinformatics. The human liver is one of the major organs in body and liver disease can cause many problems in human life. Fast and accurate prediction of liver disease allows early and effective treatments. The work here deals with detection of liver disease using various physiological attributes. The results show a good performance of proposed techniques. Two Hybrid approaches are used: First approach boosted C5.0 algorithm with Neural network provides 78.57% accuracy and Elapsed time 5.56 sec and Second approach weight naïve bayes+ genetic algorithm with neural network provides 92.86 % accuracy and Elapsed time 1.82 sec.. The paper provides the ability of both algorithms to predict liver disease at early stage and both the algorithms handle large volume of data efficiently.

#### Paper 5

### Glaucoma Image Analysis Using Discrete Wavelet Transform

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**Abstract:** The image analysis is a very important part of the image processing. Glaucoma is a cluster of eye disease and has become one the leading causes of blindness. In this paper, an innovative idea for glaucoma image analysis using discrete wavelet transform has been proposed. Noise is added to the input image then it is pre-processed. In pre-processing step the noisy image is converted, resized, and rescaled. The pre-processed image is subjected to two dimensional discrete wavelet transform (2D DWT). Image is reconstructed by applying inverse 2D DWT. The PSNR have been calculated from the reconstructed image and noisy image. Glaucoma image is analyzed based on PSNR values for three types of noises. The results obtained put forward that the calculated PSNR by the discrete wavelet transform are better for proposed method.

#### Paper 6

### Framework for Quality of Service Analysis in LTE Networks

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**Abstract:** In this paper, a framework for measuring quality of service in terms of fairness parameter is designed. This framework analyzes performance of fourth generation Long Term Evolution (LTE) networks. The proposed framework measures both inter-class and intra-class fairness. Simulation of the proposed model has been performed on Matlab® and the results have been presented for different modes of operation of the framework in order to improve the analysis. The simplicity and clarity of the obtained results leads to efficient performance analysis. Relevance of the proposed framework is justified by the outputs being in accordance with the general trends shown by selected network performance parameters.

## Paper 7

### An Approach to Mitigate DDoS Attack in Software Defined Network (SDN)

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**Abstract:** Nowadays controlling and managing of the existing network become highly complex and a hard task. Software Defined Network (SDN) comes as a promising technology to change the existing network world. By decoupling the control logic from the closed and proprietary implementations of traditional network devices, it enables researchers and practitioners to design new innovative network functions/protocols in a much more flexible, powerful, and easier way. The features provided by SDN can help enhance network security and information security process. However, the controller is targeted by many of attacks. Among those attacks, DoS and DDoS are prominent. Flooding attack with TCP SYN, ICMP echo etc., in SDN, make data to control plane saturation attack leading to DoS attack. Floodguard was proposed to mitigate such attacks. We are adding an application above Floodguard to detect DDoS attacks and propose effective remedies to mitigate such attacks. The proposed method will be added as an application on SDN controller without any modifications. Combining the application and FloodGuard, we can effectively mitigate DDoS attack in the network.

## Paper 8

### Content Based Image Retrieval using Texture Histogram

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**Abstract:** Content based image retrieval (CBIR) system is used to search the images from the dataset on the basis of their visual features, such as color, texture and shape according to the query image. Thus the images similar to the query image can be retrieved by using similarity measures of features. There are many ways in CBIR to navigate the similar images, for instance query by example, query by text, query by sketch, query by image and so forth. CBIR can be applied to both labeled (pre-classified dataset) and unlabeled dataset. This paper discusses a CBIR system using feature histogram of local texture features on unlabeled dataset. The proposed method has been compared with state-of-art approaches and has been found to be better with 90.

## Paper 9

### **A Suggestive Technique for the Reduction of End to End Delay During Data Dissemination in Vehicular Adhoc Networks**

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**Abstract:** Data dissemination in Vehicular Adhoc Networks (VANETs) is very prevalent but is very challenging due to the dynamic topology formed by vehicles. When time sensitive multimedia data is to be transmitted among the vehicles, the delay experienced becomes vital, as frames that reach late become useless though they travel a long way towards their destination. In this work, the environment in which the video trace is transmitted is varied with respect to the source, destination, packet size, transmitted video trace file size etc., The environment setup is done based on the above parameters supplied dynamically; The two popular techniques – Fountain coding implementing RaptorQ codes and Network coding are applied in sequence for the transmission of the given file. This paper proposes a suggestive technique among the two which suggests the one that best suits the environment with respect to end to end delay. This can be used to select the technique that can be applied before the actual transmission in real time applications.

## Paper 10

### **Hybrid Power Optimization Task Scheduling Strategy with Quality Improvement in Clustered Cloud**

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**Abstract:** An emerging technological growth in human society necessitates the maintenance of surplus of applications and data by enterprises and businesses, accessed by millions of customers all over the world. In such an environment, maintaining individual infrastructure and handling excessive internet traffic is a huge task. These call for service model “Cloud computing”, where users can take all resources on rent basis from the service providers. Customers pay for the service, in return they expect quality service from the provider. Satisfying and retaining customers by providing quality service is a challenging issue for the service providers. Also, increase in usage of cloud services has led to tremendous workload to be serviced in the data centers, hence need to run the servers all the time in data centers. Due to the power dissipation, huge amount of heat is released from servers. This heat may cause system failure and also large amount of CO<sub>2</sub> gases are released which leads to increase in carbon emission rate that is polluting our natural environment. Thus, reducing power consumption and providing a green computing is another major challenge to be addressed. Hence this paper presented framework “Agreement Based and Power Optimization” at two stages that ensures both quality service and reduced power consumption in servicing tremendous workload at the data centers. Quality service has been achieved by reducing the response time, Service Level Agreement (SLA) violation rate. Experimental results show that the proposed framework provides better response time, reduced SLA violation rate, and optimized power consumption at the data center.

## Paper 11

### A Hybrid Approach to Address IP Traceback Problem Using Nature Inspired Algorithms

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**Abstract:** Internet has always been vulnerable to security threats. With the growth in usage of Internet, rate of cyber crime has also increased tremendously. Out of number of possible attacks, the most precarious is Denial of Service (DoS) attack. It provides the attacker, an opportunity to use the vulnerabilities of a large number of compromised hosts in a network and create attack networks or Botnets. These compromised systems usually disguise their identity by falsifying the source address in Internet Protocol (IP) header known as address spoofing. Further the stateless nature of IP makes the situation perilous. The best possible way to deal with DoS attacks is to find the source of attack. IP traceback is a proactive and effective approach to detect the origin of the DoS attack and mitigating it with the co-operation of ISP's. This approach helps in restoring routine network traffic, prevents any chances of future attacks and brings the attacker responsible for attack in front of law. The origin once detected can be blocked for further attacks and the traceback information collected helps in mitigation process. The process of backtracking for finding an anonymous attacker on a vast network is a quite complex and challenging problem. In this paper, we have proposed a hybrid IP traceback approach. Instead of processing large volume of data generated for traceback or modifying the network components, the proposed approach is based on utilizing flow level information to detect source of DoS attack. The proposed hybrid approach is based on two nature inspired algorithms, Ant Colony Optimization (ACO) and Particle Swarm Optimization (PSO), which have proved to be the most effective approaches in solving combinatorial optimization problems. The main focus of this work is to improve the convergence rate and reduce the computational complexity of Ant Colony Optimization algorithm, which performs search operation on the basis of distance by combining it with particle velocity based technique called Particle Swarm Optimization algorithm. The objective behind is to avoid premature convergence and obtain fast convergence with lesser number of ants in solving IP traceback problem. The proposed method is evaluated through simulating it on Network Simulator 2 and the results show that the method can successfully and efficiently detects the DoS attack path with reduced convergence time and computational complexity.

## Paper 12

### Image Deblurring and Enhancement Using Wiener Filter and Fuzzy Logic to Extract the License Plate of blurred and Noisy Vehicle Image

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**Abstract:** License Plate Extraction is an essential stage in intelligent traffic systems. The use of vehicles has been increasing because of population growth and human needs in recent years. Therefore, control of vehicles is becoming a big problem and much more difficult to manage. The License Plate Extraction system applies image processing to identify vehicles by their license plates. License plate extraction in traffic surveillance system suffers from many problems like blur image and low-quality image so in a vehicle license plate extraction system, image deblurring and image enhancement is the key step before the final extraction. In this paper a preprocessing technique including image deblurring and image enhancement is proposed to remove the blur and enhance the image quality for license plate extraction system. In this paper the wiener filter is used for deblurring of vehicle image and fuzzy logic is used for image enhancement to extract the license plate