

# Multi Label Deep Learning classification approach for False Data Injection Attacks in Smart Grid

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## Abstract

The smart grid replaces the traditional power structure with information inventiveness that contributes to a new physical structure. In such a field, malicious information injection can potentially lead to extreme results. Incorrect, FDI attacks will never be identified by typical residual techniques for false data identification. Most of the work on the detection of FDI attacks is based on the linearized power system model DC and does not detect attacks from the AC model. Also, the overwhelming majority of current FDIA recognition approaches focus on FDIA, whilst significant injection location data cannot be achieved. Building on the continuous developments in deep learning, we propose a Deep Learning based Locational Detection technique to continuously recognize the specific areas of FDIA. In the development area solver gap happiness is a False Data Detector (FDD) that incorporates a Convolutional Neural Network (CNN). The FDD is established enough to catch the fake information. As a multi-label classifier, the following CNN is utilized to evaluate the irregularity and cooccurrence dependency of power flow calculations due to the possible attacks. There are no earlier statistical assumptions in the architecture proposed, as they are "model-free." It is also "cost-accommodating" since it does not alter the current FDD framework and it is only several microseconds on a household computer during the identification procedure. We have shown that ANN-MLP, SVM-RBF, and CNN can conduct locational detection under different noise and attack circumstances through broad experience in IEEE 14, 30, 57, and

# On To A Centralized Sponsorship of Blockchain Based IoT Operational Infrastructure

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**Abstract.** With the rapidly developed IT technology, large-scale networks can be designed to link many heterogeneous devices into the Internet. The majority of current infrastructures are clustered, easier to maintain, but cannot efficiently provide immutable and verifiable service between multiple parties. For large-scale infrastructures like decentralization, reliability, trackability, and immutability, Blockchain technology offers several desirable functions. This article introduces an infrastructure based on blockchain that facilitates unchanging and controllable services. However, the need for storage capacity presents a threat to resource-controlled architecture when adding blockchain technologies to the infrastructure. The paper attempts to tackle the storage dilemma with a centralized storage side chain. In fact, the proposed architecture has a distributed storage structure where most of the blockchain is kept at the cloud, although these current blocks are kept in the real network integration node. The framework architecture allows the local, blockchain and server infrastructures to be conveniently merged to create a distributed blockchain storage between two connectors, the database and the blockchain. The extended version blockchain connection builds block of the network info, and addresses network/cloud overlay sync problems in blockchain. In a practical case of professional IoT, we also have a test case to demonstrate the reliability of the general architecture processing blockchain.

**Keywords:** blockchain, infrastructure, framework, storage dilemma.

## 1. Introduction

The Internet of Things (IoT) is a model of interconnecting heterogeneous physical items through connected or decentralized technologies also providing a seamless link to the Internet wherever and whenever connectivity is provided [1]. In recent times we have seen a large use including construction, home automation, transportation and health care, of IoT technologies across different industries [2]. In other respects. Today individuals have built, deployed and operated most current big manufacturing IoT infrastructures. They are generally cloud-based and depend upon unified communications models [3], which define, authenticate and link all devices via cloud servers with plenty of processing and storage capabilities.



# Analysis on Sports Data Match Result Prediction Using Machine Learning Libraries

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**Abstract.** Sports research and betting have been powered by quick exposure to the Internet and machine learning popularity. Football is considered the most popular game in 200 countries and contrasts to other sports. It is considered much more diverse and complicated, making soccer an enticing area to do research. A variety of methodologies and methods are used for the production of prediction systems. We expect the outcome of a match between the Premier League and a home side. The projections are based on numerous significant evidences from the Premier League's previous seasons. These essential characteristics would possibly decide the result of a match. We use three different algorithms to predict the machine learning techniques and then choose from those three the best algorithm for predicting the label.

**Keywords:** Football, Premier league, Machine learning, prediction and countries

## 1. Introduction

The transcendent world of technology from Internet technology has introduced and generated the human brain's intriguing modern philosophy to the very height. Also, there has been an intriguing trend concerning the global strategy, as the key areas in consumer goods are a prime example. In terms of the revolution of time, some of the most unmistakable transcendence recognized in the history of the Internet often ranked in the status where the work was carried out faithfully and acted as the basis for progress. Sports show its ability. The Internet can transition from football to Football to baseball to linking points regardless of sport. This infiltration among sports contributed to its very presence as the "Internet of sport." The Internet will transition to many different fields of play.

One of the main transformations of the "Sports Internet" has placed the numerous professional athletes' financial performance in the codex. The business has progressed along the way towards grandiose growth. Activities and issues of concern such as the comparative calculation of athletes were scarcely carried out in the old age in an orderly and timely fashion. The regular review of these





# Energy Efficient Congestion Aware Resource Allocation and Routing Protocol for IoT Network using Hybrid Optimization Techniques

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## Abstract

The idea of Smart City incorporates a few ideas being technology, economy, governance, people, management, and infrastructure. This implies a Smart City can have distinctive communication needs. Wireless technologies, for example, WiFi, Zig Bee, Bluetooth, WiMax, 4G or LTE have introduced themselves as a solution for the communication in Smart City activities. Nonetheless, as the majority of them utilize unlicensed interference, coexistence and bands issues are increasing. So to solve the problem IoT is used in smart cities. This paper addresses the issues of both resource allocation and routing to propose an energy efficient, congestion aware resource allocation and routing protocol (ECRR) for IoT network based on hybrid optimization techniques. The first contribution of proposed ECRR technique is to employ the data clustering and metaheuristic algorithm for allocate the large-scale devices and gateways of IoT to reduce the total congestion between them. The second contribution is to propose a queue based swarm optimization algorithm for select a better route for future route based on multiple constraints, which improves the route discovering mechanism. The proposed ECRR technique is implemented in Network Simulator (NS-2) tool and the simulation results are compared with the existing state-of-art techniques in terms of energy consumption, node lifetime, throughput, end-to-end delay, packet delivery ratio and packet overheads.

**Keywords** Internet of things · Smart cities · Ant algorithm · Bee algorithm

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## Deep Learning Based Intelligent and Sustainable Smart Healthcare Application in Cloud-Centric IoT

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**Abstract:** Recent developments in information technology can be attributed to the development of smart cities which act as a key enabler for next-generation intelligent systems to improve security, reliability, and efficiency. The healthcare sector becomes advantageous and offers different ways to manage patient information in order to improve healthcare service quality. The futuristic sustainable computing solutions in e-healthcare applications depend upon Internet of Things (IoT) in cloud computing environment. The energy consumed during data communication from IoT devices to cloud server is significantly high and it needs to be reduced with the help of clustering techniques. The current research article presents a new Oppositional Glowworm Swarm Optimization (OGSO) algorithm-based clustering with Deep Neural Network (DNN) called OGSO-DNN model for distributed healthcare systems. The OGSO algorithm was applied in this study to select the Cluster Heads (CHs) from the available IoT devices. The selected CHs transmit the data to cloud server, which then executes DNN-based classification process for healthcare diagnosis. An extensive simulation analysis was carried out utilizing a student perspective healthcare data generated from UCI repository and IoT devices to forecast the severity level of the disease among students. The proposed OGSO-DNN model outperformed previous methods by attaining the maximum average sensitivity of 96.956%, specificity of 95.076%, the accuracy of 95.764% and F-score value of 96.888%.


**Keywords:** IoT devices; healthcare; deep learning; energy efficiency; glowworm swarm optimization



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# A novel recommendation system enabled by adaptive fuzzy aided sentiment classification for E-commerce sector using black hole-based grey wolf optimization

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**Abstract.** Sentiment analysis is the most frequently adopted technique and is also termed as opinion mining. A numerous data is generated by the E-Commerce portals. These data will assist the online retailers for knowing the expectation of customers. From the numerous sources, sentiment analysis can process huge amount of online opinions. This paper develops a novel sentiment classification approach, named BH-GWO-Fuzzy, in E-commerce application for framing an efficient recommendation system. The proposed model undergoes five processing steps, such as (a) Data acquisition, (b) Pre-processing, (c) Feature extraction, (d) Weighted feature extraction, and (e) Classification. The pre-processing is done by three steps, namely stop word removal, stemming, and blank space removal. Further, the feature extraction is performed by measuring the joint similarity score and cross similarity score for the positive, negative and neutral keywords from the tweets. From the resultant features, the weighted feature extraction is carried out, in which the weight is multiplied with the features to attain the better scalable feature suitable for classification. Here, the weight is tuned or optimized by the hybrid Black Hole-based Grey Wolf Optimization (BH-GWO). The BH-GWO is developed by integrating BH and GWO algorithms. After that, the extracted features are subjected to Adaptive Fuzzy Classifier, in which the membership function is optimized by the same hybrid BH-GWO algorithm. Finally, the sentiment classification for recommendation system will be empirically evaluated against the gathered benchmark dataset using diverse machine learning algorithms. The accuracy of the BH-GWO-Fuzzy is 11.7% better than Fuzzy, 28.3% better than K-Nearest Neighbor (KNN), 20.2% better than Support Vector Machine (SVM), and 18.75% better than Neural Network (NN) at learning percentage 45 for dataset 1.

**Keywords.** Sentiment analysis; E-commerce sector; Recommendation system; Optimized weighted feature extraction; Adaptive fuzzy classifier; Black hole-based grey wolf optimization; Performance analysis.

## 1. Introduction

In the current world, online shopping has turned out to be the most famous as it is fast, good in quality, more discounts, and fast logistic system, and incredibly comfortable shopping [1, 2]. Hence, the comments from the users have become more significant for judging what people are thinking about the product, which in turn provides benefits to the concerned organizations for enhancing the quality of the products. As per the survey prepared by diverse researchers, it is come to know that the conventional models are involved with a bundle of reviews and opinions. With the continuous progression of computer world technology, the customer is utilizing social media for giving

their reviews and opinions in an unorganized form. In social media, the opinions given by the person is classified for defining all the types of reviews such as “positive, negative and neutral” for the posted tweet. Recently, the attention towards sentiment analysis has been raised. The classification of sentiment is employed for examining the comments on the products for extracting the reviews from it [3, 4]. Moreover, sentiment analysis is one type of text classification using machine learning algorithms on the basis of sentimental orientation of the opinion they consist of. In order to evaluate the reviews and opinions, the sentiment analysis where the machines analyze and classify the feelings, and opinions of the human. The reviews on products are represented by star rating, emoji, and textual form [5].

By using different approaches of sentiment analysis, it is probable for analyzing more amount of accessible

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**RESEARCH ARTICLE**

# Trust-Based Energy Efficient Secure Multipath Routing in MANET Using LF-SSO and SH2E

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**Abstract –** Multipath Routing (MR) technique is much common in Mobile Ad-hoc Networks (MANET) as they overcome single-path routing’s particular limitations. However, by reason of the deficiency of trusted centralized authority and also inadequate resources, attaining energy-effective secure MR is a significant challenge in MANET. Aimed at overcoming these challenges, this work proposes a trust-centred energy-efficient MR scheme for MANET. In this research, primarily, the direct and indirect trust of nodes and paths are examined and centred on these trust values, the secure multipath is selected and also the victim nodes are identified and isolated. Next, the data packets (DPs) are encrypted using the Secret key-centred Hybrid Honey Encryption (SH2E) algorithm to secure the DPs against data transmission (DT) attacks. Next, the Levy Flight centred Shuffled Shepherd Optimization (LF-SSO) Algorithm is applied to discover an optimal path as of the multipath selected. This algorithm improves the network’s lifetime by discovering a path based on path trust, residual node energy, and also the path’s distance. And then, the encrypted DPs are forwarded as of the source node (SN) onto the destination node (DN) over the discovered optimal path, and finally, transmitted to the base station (BS). This work not only considers the energy-efficient secure routing but also considers the route maintenance. The experiential outcomes are given to exhibit the proposed system’s efficacy.

**Index Terms –** Encryption, Energy, Multipath Routing, Mobile Ad Hoc Networks, Optimization, Routing.

## 1. INTRODUCTION

Recently, MANET has progressed as one amidst the fastest-developing fields of research and more common technology in the wireless network (WN) as a consequence of the incremented wireless devices’ adoption [1]. A MANET is defined as an assembly of wireless devices traveling in apparently arbitrary directions and communicating with each other with no assistance from a developed infrastructure [2]. Communicating nodes prevalent in a MANET generally pursue other intermediate nodes’ aid aimed at developing communication channels [3]. MANET routing protocols

function as a fundamental element in ubiquitous devices’ potential future [4]. Routing protocols are generally categorized as on-demand, table-driven (proactive), and also hybrid. As for frequent network change, an on-demand approach is preferred for many MR in MANET [5].

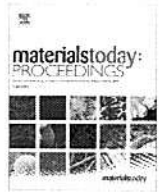
Recently, on-demand MR approaches have become important research in MANET. The MR approaches provide numerous routes betwixt a source-destination pair. Multipath techniques comprise numerous advantages, like higher bandwidth utilization, higher network life, lesser end-to-end delay, higher throughput, et cetera [6]. It decreases network congestion and protection against route failures [7, 8]. The foremost challenging task to offer an on-demand MR scheme aimed at mobile ad-hoc networks is to attain a secure protocol by maintaining the trust and also energy efficacy simultaneously.

NOMENCLATURE			
MR	Multipath Routing	AOMDV	Ad-hoc On-Demand multipath Distance Vector
MANET	Mobile Ad-hoc Networks	AODV	Ad-hoc On-Demand Distance Vector
DPs	Data Packets	EA-MPDSR	Energy-Aware Multi-Path Dynamic Source Routing
SH2E	Secret key-centred Hybrid Honey Encryption	EMRP	Energy-aware MR Protocol
LF-SSO	Levy Flight centred	RSA	Rivest–Shamir–Adleman



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# An efficient approach to the map-reduce framework and genetic algorithm based whale optimization algorithm for task scheduling in cloud computing environment

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## ABSTRACT

In the digital era, cloud computing has emerged a significant service in the IT sector. It ensures pooling of resources and provided services on-demand over the web. The scheduling of appropriate tasks is an important aspect in cloud computing in which many researches are carried out. The users demand for resources are volatile in nature and hence when a large count of resources is requested, the computational overhead in cloud is supposed to effectively allocate resources and also to complete these tasks. The research issue includes as how a VM can schedule these tasks in an effective manner. This paper proposes an efficient approach using the MAP reducing framework and GA-WOA for efficient scheduling of tasks in the given cloud. Initially, the task features are extracted from the client's task. Then, the features are reduced by using the MRQFLDA algorithm. After that, the large tasks are separated into sub-tasks using a map-reduce framework. Finally, the tasks are efficiently scheduled by using the GA-WOA algorithm. The experimental simulations are carried out using the cloudsims environment. The results show that the proposed method GA-WOA outperforms the other methods in terms of various metrics used for the evaluation.

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## 1. Introduction

Cloud computing are a sub type of distributed computation which offers various computational resources namely the CPU, storage, services and other web based applications. The services are offered on-demand basis and more and more web applications are presently being launched in cloud [1,2]. Owing to the dramatic popularity of the cloud platforms, many applications are presently being moved to cloud which reduces the computational overhead and heavy infrastructure on the client side [3]. Although the cloud offers various services, there are many issues to be addressed and one such is the process of scheduling tasks in an optimal manner by effective handling of various constraints [4].

Scheduling tasks is the process where the arrangements of the resource requests are performed in a specific manner for an optimal use of the resources. The requests are submitted online as

the services are offered over the internet [5]. Couple of scheduling policies is largely used. The schedulers that shares the space and the one which shares time. Numerous scheduling algorithms have been proposed in the literature [6] which includes, centralized and decentralized methods, immediate and batch processing, Heuristic and meta-heuristic [7]. In addition to these, when there is a constant raise in the count and complexity of resources being requested by the clients, The task becomes more tedious [8].

In the recent times, Random search oriented schedulers [9] are largely adopted in cloud task scheduling owing to its robustness. However, these are more sophisticated for implementation and hence incur more cost and complexity and also could not adopt with the dynamic requests from the users making it almost impossible to be adopted [10]. Several parameters have to be considered before using a task scheduler [11,12] like the time complexity, makespan, load balancers and tolerance ratio and QoS [13].

Meta-Heuristic techniques are currently used in large scenarios for obtaining a near-optimal solution for large and complex issues. The various meta-heuristic algorithms are presented in [14–17].

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## Cryptographic Provenance Data Protection in IoT and Multi-hop Wireless Sensor Networks

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**Abstract---** Data in IoT and wireless sensor network environments are produced and processed by various intermediary sensor nodes until it reaches the base station (BS). The varied character of data also focuses on its associated security issues. It is extremely important to evaluate factualness and dependability of data to ensure that only trustworthy information is used in the decision making process. Provenance is the effective strategy to evaluate the factualness and dependability of data as provenance is considered as a complete record of the ownership of data and operations performed on data. In this paper, we present a ranking model to assess the trustworthiness of data as well as the data publishing sensor nodes based on the provenance information. Concerning providing secure and dependable IoT and WSN systems provenance data needs to be protected against interference and access without having official permission. In this research article, we propose a new architecture for securing provenance using cryptographic techniques and access control based on confidentiality schemes.

**Keywords---** Inter-Packet Delay, Provenance, Secure Provenance, Sensor Nodes, Trustworthiness.

### I. Introduction

Recent advancements and research in IoT (Internet of Things) has developed rapidly, which resulted in the association of IoT in many industries. The Internet of Things has been continuously shaping the way we interact with the world around us in all aspects of our life, at home, workplace, public places and on the move. The continual use of IoT in several industrial perspectives, in recent years, industrial products were reported to be one of the major users of IoT accounting to a surprise and its rapid development over a very short period of time has been very noticeable in many recent statistics to put it in share of more than 47 percent. Wireless Sensor Networks (WSN) have great influence on assessment of decision making and streaming applications, such as battlefield monitoring systems, home appliances, financial scrutiny systems, environmental monitoring, supervisory control and data acquisition system, scientific workflows systems, real-time transactions logs, automated systems controlling, and healthcare[1].

Data in sensor networks are generated at the deployed sensor node and processed by many intermediate sensor nodes until it reaches the BS. To evaluate the reliability of changing sensor data, provenance plays an important role in wireless sensor networks[2]. Reliable information is used in the decision making process at the base station to take further decision steps. Data provenance is an adequate technique to determine the dependability of data, since it examines history and ownership of sensor data and operations performed on these data. The streaming environment of WSN restricted a number of challenges on data provenance schemes. Therefore, every data provenance scheme for the streaming environment must fulfill the following challenges [9].

- a) Processing and throughput in provenance Infrastructure must be high.
- b) Consumption of bandwidth must be low.
- c) The size of provenance should be managed efficiently.
- d) Provenance transmission should be secured.
- e) Provenance management systems must detect the malicious attacks and quickly respond to these attacks.

One other limitation of sensor networks is security of sensor nodes, as sensors nodes are often deployed in unreliable environments where they might face different types of attacks [5]. Confidentiality, integrity, and reliability of data provenance are the basic security requirements that must be fulfilled by every data provenance scheme [3].

### Provenance Model

The provenance model defines the collection of data from data-points (DP). Data-point are constituted of any device with a sensor for collecting data like camera, smartphones etc. DPs are uniquely identifiable and addressable value in the context of the IoT system. A DP is characteristically different from initial analysis. The collected provenance data portray the circumstances of the creation and adjustment of DPs, together with details about the deployed tools and instruments consisting of wireless sensors, processing modules, locale data in the IoT environment.

Sl No	Requirement for secure provenance in IoT and WSN framework
1	The architecture should adjust to meet resource constrained sensor-nodes in different environments.
2	Attackers should not interfere or counterfeit provenance data or inject defensible provenance data to another DP
3	High availability of provenance data should be guaranteed.
4	Framework has to grant the requirement of schemes that define the users to access the provenance data
5	A close-grained secretiveness and provenance data security with limiting the access to users with proper authorization.

## Computation Performance Optimization Technique of Shortest Path Routing Algorithm in Networks Using Out-degree

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### Abstract

**Objective:** This paper presents a novel technique in Dijkstra's routing algorithm by considering the concept of out degree which will decrease the computational cost and increase the speed of execution.

**Methods:** In this proposed method the time taken by this algorithm that runs as a combination of the input distance is calculated. Conversely, a computation time complexity measures how efficient it is. accuracy of this method. The Shortest Path Problem is the problem of finding a path in a digraph between two vertices or nodes to minimize the sum of the weights of the edges of its constituent. In the existing approach it specifies a number of nodes as the plot unfolds and calculates the quickest route between it and most other nodes. which will complex the speed of execution.

**Findings:** The proposed out degree approach will resolve that drawback by computing two minimum distance from initial table and this operates from the source node and determines the shortest path over the network as a whole. It also guarantees to find a globally optimal solution path with accurate results.

**Novelty:** The algorithm's description and comparison are presented in graphical ways to determine the algorithm's features. The analysis shows that the best route from source to destination will be established which provides the shortest distance. The optimal pathways discovered as a result of the analysis which reduce the distance traveled by the company in shipping products and reduce the time and cost of delivery.

**Key-words:** Dijkstra's Algorithm, Out Degree, Shortest Path, Optimal Solution, All-Pairs Shortest Path.



## Forecast of Air Quality Using Supervised Machine Learning Approach

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### Abstract:

For the most part, Air tainting insinuates the appearance of poisons into the air that are blocking human prosperity and the planet overall. It tends to be portrayed as perhaps the most risky danger that the humankind at any point confronted. It harms creatures, crops, backwoods thus on. To prevent this issue in transport locales need to expect the quality of air from contaminations by using man-made knowledge techniques. Henceforth air quality evaluation and conjecture has become a huge investigation domain. In this paper, we are investigating machine learning based techniques for air quality forecasting by prediction of results in best accuracy. The analysis of dataset by Supervised Machine Learning Technique(SMLT) to capture several information's like, variable identification, uni-variate analysis, bi- variate and multi-variate analysis, missing value treatments and analyze the data validation, data cleaning/preparing and data visualization will be done on the entire given dataset. Our analysis provides a comprehensive guide to sensitivity analysis of model parameters with regard to performance in prediction of air quality pollution by accuracy calculation. The proposed method accurately predicts the Air Quality Index value by prediction of results in the form of best accuracy from comparing supervised classification machine learning algorithms. Additionally, we compared and discussed the performance of various machine learning algorithms from the given transport traffic department dataset with evaluation of GUI based user interface air quality prediction by attributes.

**Key words:** Machine Learning, Air Quality, Air Pollutant, Decision Tree

### 1. INTRODUCTION

Simulated intelligence is to expect the future from past data. Computer based intelligence (ML) is such a man-made intellectual prowess (man-made intelligence) that outfits laptops with the ability to learn without being unequivocally changed. There are multiple sorts of algorithms or learning techniques to be more specific in the case of making a machine learn, they are supervised learning and unsupervised learning in some sense. In the case of supervised learning we actually feed in a ton of labeled data to the machine and make it learn from the data. Here the labeled data corresponds to any sort of pre-categorized data which is available already. From these data the machine learns the trend or the relation by some means of vectorized calculations in most of the cases. Based on the model we use the output is determined by minimizing some sort of loss function which determines the accuracy of its prediction. Looking at the case of unsupervised learning, we feed in only unlabelled data and the machine learns from the actions after processing the input. In this case we don't feed in mapped data to the machine so as to make some sort of predictions or trends. The case of applying unsupervised learning is utilized in the cases where the method of preparing a dataset is difficult or to be more specific the data is dynamically changing from time to time. Supervised learning is commonly applied in many applications where the process of creating a dataset for the readings of the application is easy. So in our case of air quality prediction, we mostly tend to be using the technique of supervise learning for the existing dataset we have.

Air pollution insinuates the appearance of toxic substances into the air that are thwarting human prosperity and the planet generally. It tends to be portrayed as perhaps the most perilous dangers that the humankind at any point confronted. It makes harm creatures, harvests and woods. It moreover adds to the fatigue of the ozone layer, which

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Abstract: Nowadays in the field of covert communication image steganographic algorithms had become one of the most common methodology and these algorithms are used to hide the secret information such as audio, video and image files in rich textured regions to decrease the chance of being identified. In Recent times i.e., from the year 2014 the generative adversarial networks i.e., GAN's had become the most well-known architectures in the area of image steganography. However, this Generative Adversarial based image steganographic algorithms will directly hide the secret information on the entire images taken, that means here the secret information is hidden on both foreground and background part of an image, so by doing this it will not consider the regional texture complexity into account, and also this may lead to compromise with the antidetection capability also. So, to solve this problem, this research work proposes a new image steganographic technique on the generated foreground region of an image with more textures. More specifically, it can be said that by using this generative adversarial method, the foreground region of an image is generated on the given cover image at the exact position and also the secret information is embedded into the foreground region of an

# Multi Label Deep Learning classification approach for False Data Injection Attacks in Smart Grid

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## Abstract

The smart grid replaces the traditional power structure with information inventiveness that contributes to a new physical structure. In such a field, malicious information injection can potentially lead to extreme results. Incorrect, FDI attacks will never be identified by typical residual techniques for false data identification. Most of the work on the detection of FDI attacks is based on the linearized power system model DC and does not detect attacks from the AC model. Also, the overwhelming majority of current FDIA recognition approaches focus on FDIA, whilst significant injection location data cannot be achieved. Building on the continuous developments in deep learning, we propose a Deep Learning based Locational Detection technique to continuously recognize the specific areas of FDIA. In the development area solver gap happiness is a False Data Detector (FDD) that incorporates a Convolutional Neural Network (CNN). The FDD is established enough to catch the fake information. As a multi-label classifier, the following CNN is utilized to evaluate the irregularity and cooccurrence dependency of power flow calculations due to the possible attacks. There are no earlier statistical assumptions in the architecture proposed, as they are "model-free." It is also "cost-accommodating" since it does not alter the current FDD framework and it is only several microseconds on a household computer during the identification procedure. We have shown that ANN-MLP, SVM-RBF, and CNN can conduct locational detection under different noise and attack circumstances through broad experience in IEEE 14, 30, 57, and



# Disease prediction based retinal segmentation using bi-directional ConvLSTMU-Net

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## Abstract

Deep learning (DL) technology has been the best way to execute class over the most recent couple of years. These techniques were extended more specifically to retinal blood vessel segmentation, classifications, and predictions. One of the most significant technologies has been a deep learning technique, U-Net. During this research, we suggested improving the segmentation of retinal images in U-Net, bi-directional ConvLSTM U-Net (BiDCU-Net) with fully connected convolutional layers, like absolute U-Net, bi-directionally Convolutional LSTM (BiConvLSTM) preferences as well as the fully connected layers method. Rather than a basic link in the skip connection of U-Net, we utilize BiConvLSTM to join the feature maps extricated from the comparing encoding way and the past decoding up-convolutional layer in a straightforward manner. For enhancing the distribution and empowerment of highlighting, we use fully connected convolutional layers during the last encoding layer. Consequently, by using batch normalization (BN), we can speed up the configuration of this proposed network. Three recognized datasets were evaluated on the proposed technique: DRIVE, STARE and CHASE DB1 data sets. The visual as well as the quantitative findings show the strength of the approach suggested. This proposed methodology was carried out with the appropriate detailed measurements, accuracy, F1 score, sensitivity, and specificity in DRIVE, 0.9732, 0.8385, 0.8256, and 0.9868 in CHASE, 0.9744, 0.8194, 0.8392 and 0.9845 in STARE, 0.9733, 0.823, 0.8212 and 0.9857, respectively. Furthermore, we state that the approach is better than three similar techniques.

**Keywords** Retinal imaging · Image segmentation · Blood vessel segmentation · Deep neural networks · U-Net · ConvLSTM

## 1 Introduction

Deep learning is currently offering implementation for image segmentation, classification, captioning, and prediction. In 2010, a few versions of the deep convolutional neural network (DCNN), such as VGG, AlexNet, DenseNet, Residual Net, and CapsuleNet have been moved forward (Khan et al. 2020; Litjens et al. 2017). For certain purposes, a DL-based (CNN in particular) approach offers cutting edge execution for order and split assignments. At first, enactment capability will overcome the problems of DL models. Second, the dropout of the networks regularizes. Third, certain methods of enhancement in the development of CNN models are essential (Alom et al. 2019a, b). Most of the time, models for enormous data sets like ImageNet where the yields of or probability values classification tasks are single labels are examined and evaluated using arrangements. Additionally, for semantic image segmenting operations, small architectural version models are used (Shin et al. 2016).

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# Network Virtualization Incorporation and Projection System Technologies Using Block Chaining

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**Abstract.** With the proposed time-lock encryption method, mutually untrustworthy users will create a shared public key for the implementation in a completely distributed and asynchratic setting like internet or blockchain networks with time-critical privacy conservation applications such as e-voting or online auction. A "putting puzzles inside another puzzle" construction mechanism was proposed to resolve the probabilistic characteristics of the predicted key crack time. Experimental findings indicate that the solution proposed will deliver a more precise main break time, which would make it faster and more exact to reach the expected time limit. As described above, we can further estimate computing power by combining our scheme and the blockchain, to decode time-sensitive message. Miners are ready to supply under the updated PoW scheme.

**Keywords:** Blockchain networks, Online auction, IoT, Merkle proofs and data privacy

## 1. Introduction

In daily situations at a global level, internet of things (IoT) serves individuals. These IoT systems rely on numerous data collected by their sensors to allow intelligent decision-making. This system does not interact with end users in particular. Rather, it transmits signals inside itself [1].

If IoT devices work on a single mission, the hardware is supplied to complete the task. IoT instruments have very limited access by contrast to a great many materials, and can thus only execute the desired functional complications. Therefore, IoT relies primarily on cloud services that streamline the transmitted data and transfer results to the next PC in the underlying IoT programme process chain.

Not all IoT devices can link to cloud services directly via hardware. Intermediaries or couriers may help to fill this gap by municipal services, not necessarily networks of contacts. A fog computing layer can be built with the assembled virtualized broking nodes. This middleware is distributed because fog nodes have to be physically next to the customers linked [2]. In tandem with the fog computing paradigm, the Internet of Things provides even more grounds for new, increasingly evolving possibilities for the application of blockchain technologies.





# Learning Based Download of Health Care Confidentiality Apps Iot with Power Storage

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**Abstract.** Remote cloud computing aims to provide a decent standard of computer-intensive experience for the healthcare of Internet of Things (IoT) users through the use of electricity. We suggest a privacy-aware download framework for strengthening learning (RL) to help IoT devices secure consumer privacy and privacy habits. In particular, this scheme allows an IoT system to choose a rate of discharge to maximise the measurement efficiency, protect the privacy of users and save the liveliness of the IoT device, deprived of understanding the confidentiality leak, IoT power requirements besides advanced machine model. In this software, transfer learning is used to minimise random experimentation during the initial education process besides a Dyna architecture is applied that offers virtual download experience to speed up the learning process. The recognised channel state model is used to further boost download quality in a state-learning system following decision. In the sense of the degree of anonymity, energy use and computing latency, we deliver the efficiency bound for three standard IoT offload scenarios. This scheme will reduce the delay of measurements, conserve energy usage and increase the level of privacy of an IoT healthcare device relative to the benchmarking scheme.

**Keywords:** Healthcare, data confidentiality, IOT, cloud storage, privacy standard

## 1. Introduction

In medical applications, IoT technologies such as digital health surveillance, exercise services, chronic ailments and assessment of elderly people are analysing and evaluating health information such as blood pressure, body infection, electrocardiogram and users' oxygen capacity for health intelligences besides warnings [1]. Healthcare IoT systems may put on the technologies of energy recycling for environmental energy, such as the atmospheric radiofrequency (RF) also form activity to prolong battery life [2]. The utilisation of the noticed healthcare information on edge platforms such as base positions operated, access point (AP) besides laptops that have improved processing besides energy resources [3] conserves fuel for remote Healthcare equipment.

For e.g., an IoT system may allow the cardiac measurement to be measured and the healthcare diagnosis made. EH IoT healthcare devices must avoid eavesdroppers analysing sensing information





# Solid State Technology

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## Deep Learning Driven Image Segmentation in Medical Science - An Intense Learning

**Dr.V.P.Gladis Pushparathi, Dr.S.Thanga ramya, Dr.P.Rangarajan**

### Abstract

Segmentation of medical images is a required mechanism for assessment, preparation, treatment, etc. to achieve and localize malignancy or clear structural anomalies in medical images. For a body part or lesion area, a wide variety of automated medical image segmentation techniques, such as vessel and skin cancer, have been proposed. Deep learning can learn motive in computer vision to anticipate groups of objects that form an image for robust segmentation. The primary in-depth learning architecture used in image processing is a Convolutionary Neural Network (CNN) or special CNN systems such as AlexNet, VGG, Inception and ResNet. Deep computer vision models are typically taught and conducted to shorten the time required to handle graphics units (GPUs).A huge effort is made in this paper to discuss various image segmentation approaches and explains how images are segmented by deep learning power.

**Keywords-***Artificial intelligence, Clinical practice, Healthcare, Machine learning, Medical science.*

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Section

Articles

## IoT Based an Efficient Image Processing Algorithm for Capture Image in Museum using Localization Service for User Involvement

A.S. Vibith<sup>1</sup>, Dr.S. Thanga Ramya<sup>2</sup>, C.M. Nalayini<sup>3</sup>, A.R. Sathyabama<sup>4</sup>, P.V. Rajasuganya<sup>5</sup>

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### Abstract

*The emergence of new technologies makes everything in today's world to be smarter. The innovation focused toward IoT leads to the enhancement of the domestic environment. The smart environment provides advanced services to the user by allowing the environment address to user and user address to the world. The Museum is a place where work of art, scientific specimens or other object kept permanent and displayed. This paper, to design a smart museum that brings comfort to visitors through wearable device, interacting with IoT based smart environment to act as a museum guide. The localization service is provided by the Beacon device which is installed in the museum. The user has the wearable device, which capture the image of user interested artwork and the image processing algorithm analysis the captured image. Once the image is recognized, then the result is forwarded to the proceeding center along with this localization information. The proceeding center retrieves this content from outside world of the cloud and sent them to the user mobile devices. This system improves the experience of user by delivering the content to the user three times faster than the system not using localization service.*

**Key-words:** Internet of Things, Localization Service, Beacon Device and Smart Museum.

### 1. Introduction

The internet of things will interface object around us to give constant communication and contextual services provided by them. It also depicts a future where consistently physical object connected with the web and furthermore ready to recognize themselves to others devices. It provides

# Iot-Driven Model For Collaboration Based On Learning Paradigms

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**Abstract:** *In the area of smart digital education, artificial intelligence (AI) has recently gained growing interest. CI and MTT methodologies have been used for the creation of a Smart tutoring system (STS) for researchers. In the other hand, the AI, computer science and Internet of Things (IoT) integration facilitates growth of next century for all educational and learning activities in web-based smart systems. It addresses the CI and the paradigms of technology engineering for the development of intelligent education and learning systems. The two common CI paradigms are explored and evaluated in this review, namely case-based reasoning and ontological engineering. Aim of analysis is to define and analyze the advantages and benefits of certain smart paradigms in order to improve productivity and efficacy of smart tutoring programmers. In addition, the paper explores the obstacles for the creation and operation of these applications confronting program developers and information engineers.*

**Keywords:** *Engineering and control of science, artificial intelligence in school, intelligent tutoring programmers, computer technology, machine learning.*

## 1. INTRODUCTION

The widespread digitization of all fields of economic life is presently evident not only in the mass implementation of ICT into a number of areas of human activity, but also in convergence and technical and physical integration with use of smart digital solutions [1]. Digital economy has an essential reserve for enhancing lives of people in different countries worldwide. However, on the grounds that enough people are qualified to build and implement those technologies, the use of the potential of the intelligent innovations of the modern era is feasible. The first development of new educational areas in universities to educate highly trained workers for ICT industry. Secondly, the incorporation of the ICT experts in all fields of training aims at extending the expertise in the use of intelligent technology in all areas of

## **Smart Supermarket Billing Automation System Based On Barcode Recognition Using Canny Edge Detection**

**Dr.D.Praveena , Dr.S.Thanga Ramya, V.Shanmathi, S.Ramya,Tj.Ramyaa, R.Shrishika,**

Department Of Information Technology,  
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### **Abstract:**

The Idea Of This Paper Is To Create A Supermarket Automation System For Billing System Using Customer's Mobile By Scanning The Barcode Or Qr Code Pasted In The Products' Wrappers. Canny Edge Detection Algorithm Has Been Used To Decode The Barcode And Then Data Will Be Fetched From The Stock Management System Of The Supermarket Server Which Is Integrated Already And It Will Be Taken To The Payment Steps. Payment Can Be Done Using The Payment Gateway To Support Various Types Of Payment Modes Like Debit Card, Credit Card, Upi Etc. The Objective Of This Is To Reduce The Waiting Time In The Billing Counter And Customers Can Make Their Payment Just After They Complete Their Purchase.

### **Introduction:**

In This Modern Era, Shopping Has Been Completely Turned Into E-Shopping, But Even Today, People Love To Do Physical Mode Of Shopping. But The Weird Part Of The Shopping Is The Waiting Time In The Billing Counter For Long Time. That Too Will Be Very High During Holidays. If A Customer Takes A Minimum Of 3 Minutes For Billing And If We Stand In A Queue Of 20 Members, We Need To Wait For Atleast One Hour For Completing Our Billing Process. So This Project Is Coming Up With An Idea To Enable The Customers To Scan Their Products They Are Adding In Their Cart With The Help Of Smartphones And They Can Even Complete The Payment Part In Their Smartphones Itself. This Will Considerably Reduce The Waiting Time And Only Verification Step At

The Exit Point May Take A Maximum Of 1 Minute.

### **Existing System:**

Currently, Most Of The Supermarkets Are Trying To Avoid The Waiting Time, And So They Are Keeping Multiple Billing Counters To Reduce The Waiting Time. Though, They Cannot Able To Control This Waiting Time Completely During Peak Times. Lot Of Theories Has Been Provided For Avoiding This And One Among Them Is, To Attach An Rfid Scanner Inside The Shopping Cart Which Can Scan The Products Which Are Being Added In The Cart. Customers Can Able To Scan The Products In The Attached Rfid Scanner In The Cart Before Putting The Product Inside. The Shopping Carts Will Be Attached To The Supermarket's Server With The Cart Id, And During Checkout, It Will Be Fetching The Total Amount To Be Paid, And The Customer Will Complete The Payment Part In The Billing Desk Before Checkout. Through This Process, We May Reduce A Small Amount Of Waiting Time.

### **Disadvantages Of Existing System:**

The Major Disadvantage Of The Existing System Is, The Implementation Cost Will Be Considerably High As All The Shopping Carts Need To Be Connected To The Network

## Enhanced Features based Private Virtual Card

**Dr. S.Thanga Ramya , Dr.D.Praveena, Dr.B.Kalpna, B.Nithish Kumar, P.Muralidharan,**

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**ABSTRACT:** In past years, utilization of credit or check cards was expanded tremendously. Notwithstanding, in spite of their notoriety and significance they are utilized for numerous reasons and in various spots, the present showcasing frameworks don't represent consistence with administrative, authoritative, or legally binding information taking care of necessities by plan. Since enactment progressively reacts to rising information security and protection concerns, agreeing with information taking care of necessities turns into a vital property for banking frameworks. Presenting Virtual Card, a pragmatic way to deal with represent consistence with information taking care of prerequisites in making an impermanent card or virtual card. To accomplish security for the customer's real charge or Visa, Virtual Card presents a straight forward information taking care of layer, which engages customers to demand explicit information taking care of necessities and empowers administrators of banking frameworks to agree with them. Executing Virtual Card on top of real Credit or Debit cards and assessment shows that agreeing with information taking care of prerequisites in financial frameworks is useful in genuine world.

**Keywords:** MVC Architecture, Spring Boot, Microservices, Bootstrap, HTML, CSS.

**I. INTRODUCTION:** A virtual Visa is a transitory charge card number that you can utilize while shopping on the web. These expendable card numbers are intended to shield your genuine record number from falling into some unacceptable hands. Virtual Visas can shield you from having your Visa data taken in an information break or through an unstable association. As virtual installment cards aren't actual things, this makes them for all intents and purposes difficult to be cloned. There's no actual thing to be taken. They can even be set as single-use cards, so they terminate straightforwardly after they're utilized, and there's no issue with future deceitful installments from your card. In any case, while the online idea of these installments has helped their Security, it's critical to treat virtual card installments with a similar degree of thoroughness as an actual card installment. Albeit the virtual versus actual card can feel impressively extraordinary, it is still genuine ash, thus the fitting safety efforts ought to be taken similarly as though it was an actual installment.

## II. LITERATURE SURVEY

A writing audit is a collection of text that means to survey the basic places of current information on as well as methodological ways to deal with a specific point. It is auxiliary sources and talks about distributed data in a specific branch of knowledge and here and there data in a specific branch of knowledge inside a specific time-frame. Its definitive objective is to carry the per user in the know regarding flow writing at a point and structures the reason for another objective, for example, future exploration that might be required around there and goes before an examination proposition and might be only a basic synopsis of sources.

**Title:** Payday Loans and Credit Cards, New Liquidity and Credit Scoring Puzzles

**Authors:** Agarwal, Sumit, Paige Marta Skiba, and Jeremy Tobacman.

**Year:** 2009



# Multi Label Deep Learning classification approach for False Data Injection Attacks in Smart Grid

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## Abstract

The smart grid replaces the traditional power structure with information inventiveness that contributes to a new physical structure. In such a field, malicious information injection can potentially lead to extreme results. Incorrect, FDI attacks will never be identified by typical residual techniques for false data identification. Most of the work on the detection of FDI attacks is based on the linearized power system model DC and does not detect attacks from the AC model. Also, the overwhelming majority of current FDIA recognition approaches focus on FDIA, whilst significant injection location data cannot be achieved. Building on the continuous developments in deep learning, we propose a Deep Learning based Locational Detection technique to continuously recognize the specific areas of FDIA. In the development area solver gap happiness is a False Data Detector (FDD) that incorporates a Convolutional Neural Network (CNN). The FDD is established enough to catch the fake information. As a multi-label classifier, the following CNN is utilized to evaluate the irregularity and cooccurrence dependency of power flow calculations due to the possible attacks. There are no earlier statistical assumptions in the architecture proposed, as they are "model-free." It is also "cost-accommodating" since it does not alter the current FDD framework and it is only several microseconds on a household computer during the identification procedure. We have shown that ANN-MLP, SVM-RBF, and CNN can conduct locational detection under different noise and attack circumstances through broad experience in IEEE 14, 30, 57, and



# Power Route Selection for Spatial Modulation and Multi-Hop Wireless Networks With Minimal Energy Supplies

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**Abstract.** Concurrent wireless and data transmission information and power transmits cellular nodes information and power with almost the same radio transmitter. The lifespan of the energy-reducing mobile networks can be increased. The focus on a single and double hop cellular network is currently being focused on. This essay simultaneously discusses and routing selection in order to check the efficiency of the energy-controlled wireless network in multi-hop operators, in which the energy received through the recipient node can be used to counteract energy transfer. We initially articulate the data also energy distribution problem in a possible through the development which depends on the following node; also overcome it through an iterative aspect algorithm, in order to reduce demand for energy. The power usage of the links distributed with or without a current routing metric evaluates. The energy conscious routing algorithm assigns knowledge and energy to the access control mechanism during the step of trajectory finding. This is the first approach to our understanding that takes care of the routing process. Our efficiency studies indicate that our existing methodology can efficiently harness node capital whose energy is inadequate and reduce energy consumption considerably.

**Keywords:** Vehicular network, coding conscious connectivity, data privacy, sensor networks, TSCAR

## 1. Introduction

Simultaneous wireless intelligence and electricity transfer [1], as the latest wireless networking technology, makes good use of the wireless infrastructure available and represents an appealing approach that expands the life cycle of energy-restricted wireless nodes and wireless networks with storage, such as sensor network systems and internet practice of analyzing.

It benefits from wireless power conversion technologies for radio frequency, which enables the recipient to catch and transform ambient RF signals via complex rectennas circuits into a direct current voltage [2]. As the RF signal transmits energy and can simultaneously act as communication carrier, it transmits the information and can efficiently relay RF signals to wireless nodes. The required information signals in can also be obtained by the receiver relative to the RF-based wireless power transmission in addition to the ambient interfering signal.



# Blockchain Confidence Protection and Cloud Chain Management Support

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**Abstract.** Verification and completeness are main challenges for today's ever more diverse supply chains. Even with the ability to counter blockchain technologies by offering a trail of manipulation-resistant audit It does not address the confidence issue associated with the source chain activities also information related to a produce life cycle Information itself. Reputation mechanisms are a promising solution for this faith problem. Yet existing structures of credibility are Not ideal for supply chain applications based on blockchain as centred on restricted findings, lack of granularity and their overhead was not discussed and automation. We recommend the system as a three-layer faith in this job. Management platform is using a blockchain consortium tracking relationships between actors in the supply chain and Assign trust and prestige dynamically dependent on these interactions. Its novelty is based on a Model for credibility assessing product quality and the trust of individuals based on many observations funding for credibility qualities in supply chain incidents separating the member in the supply chain from the goods, enables brand credibility to be reserved for smart contracts for straightforward use by the same participant, Effective, secure, and automatic credibility scoring measurement, and the latency and throughput minimum overhead as compared to a straightforward supply chain model based on blockchain.

**Keywords:** Blockchain, Confidence protection, food chain supply, Cloud, Privacy

## 1. Introduction

Blockchain (BC) is a collection of unchanging documents that boost modern supply chains Traceability, sources, proprietorship also anti-falsification records. Actions such as exchange, property also position information are hazarded besides associated with BC contacts of supply chains rooted in BC [1]. These transactions are clustered into blocks which are connected and rendered permanent through cryptographic hazards. In food supply chain chains, where the origin of goods is to be traced or a point of bribery such as the stallion core disgrace [6] or the cause of an epidemic like the salmonella disease in papayas can be specifically identified, the importance of uncommitted source chain confirmation can be realised. The authors showed in [3] that a BC consortium should provide all approved members with siloed Supply Chain data to improve the robustness and time-efficiency of its



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# FARMBOOK-Portal for Connecting Buyers and Sellers

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**Abstract-** Agriculture a huge role in the economy of India, where more half of its rural households still depend on agriculture for their livelihood. More than 75% of farmers being small and marginal. Even though agriculture is the major block in the Indian economy. But the farmers who are the back bone of this are not benefited due to the lack of good prices for the crop, lack of new techniques, and lack of technologies, and methods to see profits. The growth of the mobile communication technology is creating more opportunities learn and make huge innovations in the developing countries, where bringing information technology in the field of agriculture give best of it as well. The introduction of the mobile phones leads to new services and applications, in agriculture sector this is used to know the information about the new technique, climate, soil, marketing etc. It is one of the areas where it makes a huge impact on the agriculture and the rural development. Information technology in the agriculture opens the gates to the huge productions and profits which leads to increase in economy and profits to farmers. Giving importance to the agriculture leads to growth of our nation. Where information technology with agriculture provides good ability and awareness to the future generation. As per the concern of the farmers this combination of technology leads to the huge change in trends.

**Keywords-** XML, android (javacode), Php, Html, Css, Mysql.

## I. INTRODUCTION

Agriculture is one of the major traditions in India. Agriculture refers to the cultivation of crops and growing of animals. Which is occupying most of the economy in India. This opens the door for the food, medical, and the other products which are used to sustain and enhance our life.

Farmers also provide food to nook and corner of the country. Farmers do agriculture not only for their survival they also feed the whole country. But majority of the farmers are from the economically poor category due to several reasons. some of the main reasons are fraud agents buying the goods for the low cost. Hence to overcome this situation. We develop an application to for farmers to sell their products. It helps the farmers to provide the current scenario of the product prices. This shows the detailed information of the product.

The main problem is the intermediate cost where farmers paying most of their profits to the intermediates for selling of their crop. This leads to loss to the farmers. To reduce the cost our application providing a direct contact to the buyer and the seller. No need of the intermediate cost, which leads to the profits of their crop. The existing strategies that are present in agriculture marketing are huge losses to the farmers.

## II. PROPOSED SYSTEM

Direct contact between the villagers and retail dealers or wholesalers can reduce the number of middlemen involved in the marketing chain.

A mobile based Application and website that can facilitate the direct contact between producer and buyer may reduce this wide price gap or a real time interactive system for communication between producer and consumer. In this application and website provides the vehicle booking option for consumers. Hence the main goal is to increase the economy of rural areas.

## III. SCOPE OF THE PROJECT

The problems existing in the current marketing system are, no updated markets information to the farmers about the daily price of the product. More involvement of the third-party vendors in deciding the prices of the product. No proper supervision on the agriculture products by the government, no right access.

### 1. More user's Friendly:

The app which we developed is user friendly because the retrieval and storing of data about the product prices and best marketing places data is maintained efficiently. Moreover, the graphical user interface is provided in the proposed system, which provides users to deal with the system very easily.

## Enhanced Features based Private Virtual Card

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**ABSTRACT:** In past years, utilization of credit or check cards was expanded tremendously. Notwithstanding, in spite of their notoriety and significance they are utilized for numerous reasons and in various spots, the present showcasing frameworks don't represent consistence with administrative, authoritative, or legally binding information taking care of necessities by plan. Since enactment progressively reacts to rising information security and protection concerns, agreeing with information taking care of necessities turns into a vital property for banking frameworks. Presenting Virtual Card, a pragmatic way to deal with represent consistence with information taking care of prerequisites in making an impermanent card or virtual card. To accomplish security for the customer's real charge or Visa, Virtual Card presents a straight forward information taking care of layer, which engages customers to demand explicit information taking care of necessities and empowers administrators of banking frameworks to agree with them. Executing Virtual Card on top of real Credit or Debit cards and assessment shows that agreeing with information taking care of prerequisites in financial frameworks is useful in genuine world.

**Keywords:** MVC Architecture, Spring Boot, Microservices, Bootstrap, HTML, CSS.

**I. INTRODUCTION:** A virtual Visa is a transitory charge card number that you can utilize while shopping on the web. These expendable card numbers are intended to shield your genuine record number from falling into some unacceptable hands. Virtual Visas can shield you from having your Visa data taken in an information break or through an unstable association. As virtual installment cards aren't actual things, this makes them for all intents and purposes difficult to be cloned. There's no actual thing to be taken. They can even be set as single-use cards, so they terminate straightforwardly after they're utilized, and there's no issue with future deceitful installments from your card. In any case, while the online idea of these installments has helped their Security, it's critical to treat virtual card installments with a similar degree of thoroughness as an actual card installment. Albeit the virtual versus actual card can feel impressively extraordinary, it is still genuine ash, thus the fitting safety efforts ought to be taken similarly as though it was an actual installment.

## II. LITERATURE SURVEY

A writing audit is a collection of text that means to survey the basic places of current information on as well as methodological ways to deal with a specific point. It is auxiliary sources and talks about distributed data in a specific branch of knowledge and here and there data in a specific branch of knowledge inside a specific time-frame. Its definitive objective is to carry the per user in the know regarding flow writing at a point and structures the reason for another objective, for example, future exploration that might be required around there and goes before an examination proposition and might be only a basic synopsis of sources.

**Title:** Payday Loans and Credit Cards, New Liquidity and Credit Scoring Puzzles

**Authors:** Agarwal, Sumit, Paige Marta Skiba, and Jeremy Tobacman.

**Year:** 2009



## **Smart Supermarket Billing Automation System Based On Barcode Recognition Using Canny Edge Detection**

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### **Abstract:**

The Idea Of This Paper Is To Create A Supermarket Automation System For Billing System Using Customer's Mobile By Scanning The Barcode Or Qr Code Pasted In The Products' Wrappers. Canny Edge Detection Algorithm Has Been Used To Decode The Barcode And Then Data Will Be Fetched From The Stock Management System Of The Supermarket Server Which Is Integrated Already And It Will Be Taken To The Payment Steps. Payment Can Be Done Using The Payment Gateway To Support Various Types Of Payment Modes Like Debit Card, Credit Card, Upi Etc. The Objective Of This Is To Reduce The Waiting Time In The Billing Counter And Customers Can Make Their Payment Just After They Complete Their Purchase.

### **Introduction:**

In This Modern Era, Shopping Has Been Completely Turned Into E-Shopping, But Even Today, People Love To Do Physical Mode Of Shopping. But The Weird Part Of The Shopping Is The Waiting Time In The Billing Counter For Long Time. That Too Will Be Very High During Holidays. If A Customer Takes A Minimum Of 3 Minutes For Billing And If We Stand In A Queue Of 20 Members, We Need To Wait For Atleast One Hour For Completing Our Billing Process. So This Project Is Coming Up With An Idea To Enable The Customers To Scan Their Products They Are Adding In Their Cart With The Help Of Smartphones And They Can Even Complete The Payment Part In Their Smartphones Itself. This Will Considerably Reduce The Waiting Time And Only Verification Step At

The Exit Point May Take A Maximum Of 1 Minute.

### **Existing System:**

Currently, Most Of The Supermarkets Are Trying To Avoid The Waiting Time, And So They Are Keeping Multiple Billing Counters To Reduce The Waiting Time. Though, They Cannot Able To Control This Waiting Time Completely During Peak Times. Lot Of Theories Has Been Provided For Avoiding This And One Among Them Is, To Attach An Rfid Scanner Inside The Shopping Cart Which Can Scan The Products Which Are Being Added In The Cart. Customers Can Able To Scan The Products In The Attached Rfid Scanner In The Cart Before Putting The Product Inside. The Shopping Carts Will Be Attached To The Supermarket's Server With The Cart Id, And During Checkout, It Will Be Fetching The Total Amount To Be Paid, And The Customer Will Complete The Payment Part In The Billing Desk Before Checkout. Through This Process, We May Reduce A Small Amount Of Waiting Time.

### **Disadvantages Of Existing System:**

The Major Disadvantage Of The Existing System Is, The Implementation Cost Will Be Considerably High As All The Shopping Carts Need To Be Connected To The Network

## Enhanced Features based Private Virtual Card

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**ABSTRACT:** In past years, utilization of credit or check cards was expanded tremendously. Notwithstanding, in spite of their notoriety and significance they are utilized for numerous reasons and in various spots, the present showcasing frameworks don't represent consistence with administrative, authoritative, or legally binding information taking care of necessities by plan. Since enactment progressively reacts to rising information security and protection concerns, agreeing with information taking care of necessities turns into a vital property for banking frameworks. Presenting Virtual Card, a pragmatic way to deal with represent consistence with information taking care of prerequisites in making an impermanent card or virtual card. To accomplish security for the customer's real charge or Visa, Virtual Card presents a straight forward information taking care of layer, which engages customers to demand explicit information taking care of necessities and empowers administrators of banking frameworks to agree with them. Executing Virtual Card on top of real Credit or Debit cards and assessment shows that agreeing with information taking care of prerequisites in financial frameworks is useful in genuine world.

**Keywords:** MVC Architecture, Spring Boot, Microservices, Bootstrap, HTML, CSS.

**I. INTRODUCTION:** A virtual Visa is a transitory charge card number that you can utilize while shopping on the web. These expendable card numbers are intended to shield your genuine record number from falling into some unacceptable hands. Virtual Visas can shield you from having your Visa data taken in an information break or through an unstable association. As virtual installment cards aren't actual things, this makes them for all intents and purposes difficult to be cloned. There's no actual thing to be taken. They can even be set as single-use cards, so they terminate straightforwardly after they're utilized, and there's no issue with future deceitful installments from your card. In any case, while the online idea of these installments has helped their Security, it's critical to treat virtual card installments with a similar degree of thoroughness as an actual card installment. Albeit the virtual versus actual card can feel impressively extraordinary, it is still genuine ash, thus the fitting safety efforts ought to be taken similarly as though it was an actual installment.

## II. LITERATURE SURVEY

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**Title:** Payday Loans and Credit Cards, New Liquidity and Credit Scoring Puzzles

**Authors:** Agarwal, Sumit, Paige Marta Skiba, and Jeremy Tobacman.

**Year:** 2009





# Cross Layer Controlling Algorithm to Overcome Congestion in Underwater Wireless Sensor Network

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## Abstract

Underwater Wireless sensor network posses several factors, which causes congestion, issues in the network, like mutual interference, many to one communication, and dynamic changes in the topology of the network. These factors make the network more vulnerable to the occurrence of congestion in the network. Congestion in underwater wireless sensor network leads to the possibility of occurrence of packet loss, over utilisation of node energy and drop in throughput of the network. In order to overcome these issues a cross layer congestion control scheme is introduced over the contention based MAC protocol. The channel information passed by the MAC layer was added with the details about ratio of buffer occupancy and congestion level in the local nodes. The cross layer protocol dynamically adjust the priority of accessing the channel in MAC layer and controls the data transmission rate to control the occurrence of congestion in the network. The performance of the cross layer network is compared with the hierarchical based and cluster based methods by simulating in NS2 simulator and hardware model is developed to analyse the real time constrains in hardware environment.

**Keywords** Underwater wireless sensor network · Cross layer · Congestion control · Channel priority

## 1 Introduction

Underwater communication is a method of transmitting and receiving information below water. There are many techniques of implementing under water communication, but the mostly used technique is the hydrophone. Underwater communication is complex due to several factors such as multi-path propagation, channel's time varying nature, lesser bandwidth, signal attenuation is more. Underwater communication has low data rates. Some

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# A low power and high speed approximate adder for image processing applications

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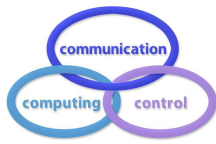
## ABSTRACT

Low power is an essential requirement for suitable multimedia devices, image compression techniques utilizing several signal processing architectures and algorithms. In numerous multimedia applications, human beings are able to congregate practical information from somewhat erroneous outputs. Therefore, exact outputs are not necessary to produce. In digital signal processing system, adders play a vital role as an arithmetic module in fixing the power and area utilization of the system. The trade-off parameters such as area, time and power utilization and also the fault tolerance environment of few applications have been employed as a base for the adverse development and use of approximate adders. In this paper, various types of existing adders and approximate adders are analyzed based on the area, delay and power consumption. Also, an approximate, high speed and power efficient adder is proposed, which yields better performance than that of the existing adders. It can be used in various image processing applications and data mining, where the accurate outputs are not needed. The existing and proposed approximate adders are simulated by using Xilinx ISE for time and area utilization. Power simulation has been done by using Microwind Software.

**Keywords:** Approximate adder; Area consumption; CMOS; High speed; Image processing; Power efficient.

## INTRODUCTION

In inexact computing, approximate adders are the essential building block for the arithmetic circuits. Approximate adders have inaccurate outputs for carry and sum with some combinations of inputs, which have incorrect outputs for sum and carry. So, the hardware requirement of the system gets reduced for inexact computing. As a result, approximate computing yields high speed and low power consumption for the design. However, approximate computing is a suitable choice for DSP applications like video, image, and audio processing, where accurate results are not essential. Adders are implemented by using various digital CMOS technologies (Ashim et al., 2016; Chip-Hong et al., 2005) such as Transmission Gate Adder (TGA), Complementary Pass Transistor Logic (CPL), and (Uming et al., 1995) Double Pass Transistor Logic (DPL) in order to reduce the power consumption of the design. High Performance Error Tolerant Adders and Multiplexer based arithmetic full adders (MBAFA) are proposed (R. Jothin et al., 2018) to reduce the design parameters such as



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# A Unique Multi-Agent-Based Approach for Enhanced QoS Resource Allocation in Multi Cloud Environment while Maintaining Minimized Energy and Maximize Revenue

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## Abstract

The use of the multi-cloud data storage in one heterogeneous service is a polynimbus cloud strategy. Cloud computing uses a pay-as-you-go model to deliver services to a variety of end users. Customers can outsource daunting tasks to cloud data centres for processing and producing results, thanks to cloud computing. Cloud computing becomes the popular IT brand that provides various on-demand services over the internet. This technology is devoted to distributing computer and software resources. The proven usefulness of workflows to enforce relevant scientific achievements is the availability of data from advanced scientific tools. Scheduling algorithms are essential in order to automate these strenuous workflows efficiently. A number of new heuristics based on a Cloud resource model have been developed. The majority of these heuristic - based address QoS issues in one or two dimensions. The cloud computing technology offers a decentralised pool of services and resources with various models that are provided to the customers across the Internet in an on-demand, continuously distributed, and pay-per-use model. The key challenge we address in this paper is to maximise revenue while maintaining a minimum consumption of energy with an enhanced QoS for resource allocation. The obtained results from proposed method when compared with the existing state of art methods observed to be novel and better.

**Keywords:** Artificial Bee Colony (ABC), Best Fit Decreasing (BFD), Distributed Energy Resources (DER), Economic Dispatch (ED), Genetic Algorithm (GA), Multi Agent System (MAS), Priority based Resource Allocation (PRA), Service-Level Agreement (SLA), Vickrey –Clarke–Groves (VCG), Virtual Machine (VM).

## Preserving Data Confidentiality in Association Rule Mining Using Data Share Allocator Algorithm

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**Abstract:** These days, investigations of information are becoming essential for various associations all over the globe. By and large, different associations need to perform information examinations on their joined data sets. Privacy and security have become a relentless concern wherein business experts do not desire to contribute their classified transaction data. Therefore, there is a requirement to build a proficient methodology that can process the broad mixture of data and convert those data into meaningful knowledge to the user without forfeiting the security and privacy of individuals' crude information. We devised two unique protocols for frequent mining itemsets in horizontally partitioned datasets while maintaining privacy. In such a scenario, data possessors outwork mining tasks on their multiparty data by preserving privacy. The proposed framework model encompasses two or more data possessors who encrypt their information and dispense their encrypted data to two or more clouds by a data share allocator algorithm. This methodology protects the data possessor's raw data from other data possessors and the other clouds. To guarantee data privacy, we plan a proficient enhanced homomorphic encryption. Our approach ensures privacy during communication and accumulation of data and guarantees no information or data adversity and no incidental consequences for data utility. Therefore, the advantages of data mining have remained redesigned. To approve the exhibition of our protocols, we implemented the protocols through broad experiments, where the assessment outcome showed that the mined results obtained by our protocols are reliable to those obtained by a traditional sole-machine approach. Meanwhile, the findings of our performance assessment have shown that our methodology is very efficient, with reasonably reduced communication time and computation costs.

**Keywords:** Association rule mining (ARM); privacy-preserving data mining (PPDM); cloud-aided frequent itemset mining; data share allocator (DSA); enhanced homomorphic encryption



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# Protection of data privacy from vulnerability using two-fish technique with Apriori algorithm in data mining

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## Abstract

The confidential data is mainly managed by creating passwords, tokens, and unique identifiers in an authorized manner. These records must be kept in a safe location away from the reach of unauthorized third parties. Both the client and server sides must be encrypted using the two-fish algorithm, which secures the distinction of private data. By gaining access to the user's information, a data miner may be able to steal it. To avoid such situations, both the data miner and the server must be encrypted. Further, the previous techniques faced several shortcomings in case of higher computational overhead, poor resource utilization, prone to single point failure, lower accuracy, noise, poor security, higher distortion, etc. In this study, both the client and server sides are encrypted using a two-fish algorithm to avoid information loss while transferring data to overcome these problems. The way the state-of-art techniques handled the privacy preservation issue often leads to privacy violations. This paper focuses on mining frequent itemsets present in the medical data by also ensuring privacy. Frequent itemset mining mainly aims to extract highly correlated items from the database and to achieve this novel fruitfly whale optimization algorithm (FWOA) combined with the Apriori algorithm. The Apriori heuristic and bio-inspired algorithms are integrated to solve the frequent itemset problem by reducing the low runtime performance when handling large datasets and also offering high-quality solutions. The adaptive  $k$ -anonymity approach is used for preserving data privacy by transforming the original data into an encrypted mode and offering privacy to the top- $k$  frequent itemsets mining. The main advantage of the adaptive  $k$ -anonymity approach is that the confidential information disclosed by an individual user cannot be identified from at least  $k - 1$  individuals. We ensure that the proposed methodology can offer data privacy in real time by the experiments conducted in a medical dataset. The experimental results obtained highlight the robustness of this scheme.

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Extended author information available on the last page of the article

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## An Imbalanced Dataset and Class Overlapping Classification Model for Big Data

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**Abstract:** Most modern technologies, such as social media, smart cities, and the internet of things (IoT), rely on big data. When big data is used in the real-world applications, two data challenges such as class overlap and class imbalance arises. When dealing with large datasets, most traditional classifiers are stuck in the local optimum problem. As a result, it's necessary to look into new methods for dealing with large data collections. Several solutions have been proposed for overcoming this issue. The rapid growth of the available data threatens to limit the usefulness of many traditional methods. Methods such as oversampling and undersampling have shown great promises in addressing the issues of class imbalance. Among all of these techniques, Synthetic Minority Oversampling Technique (SMOTE) has produced the best results by generating synthetic samples for the minority class in creating a balanced dataset. The issue is that their practical applicability is restricted to problems involving tens of thousands or lower instances of each. In this paper, we have proposed a parallel mode method using SMOTE and MapReduce strategy, this distributes the operation of the algorithm among a group of computational nodes for addressing the aforementioned problem. Our proposed solution has been divided into three stages. The first stage involves the process of splitting the data into different blocks using a mapping function, followed by a pre-processing step for each mapping block that employs a hybrid SMOTE algorithm for solving the class imbalanced problem. On each map block, a decision tree model would be constructed. Finally, the decision tree blocks would be combined for creating a classification model. We have used numerous datasets with up to 4 million instances in our experiments for testing the proposed scheme's capabilities. As a result, the Hybrid SMOTE appears to have good scalability within the framework proposed, and it also cuts down the processing time.

**Keywords:** Imbalanced dataset; class overlapping; SMOTE; MapReduce; parallel programming; oversampling



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# A Novel Approach to Design Distribution Preserving Framework for Big Data

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**Abstract:** In several fields like financial dealing, industry, business, medicine, *et cetera*, Big Data (BD) has been utilized extensively, which is nothing but a collection of a huge amount of data. However, it is highly complicated along with time-consuming to process a massive amount of data. Thus, to design the Distribution Preserving Framework for BD, a novel methodology has been proposed utilizing Manhattan Distance (MD)-centered Partition Around Medoid (MD-PAM) along with Conjugate Gradient Artificial Neural Network (CG-ANN), which undergoes various steps to reduce the complications of BD. Firstly, the data are processed in the pre-processing phase by mitigating the data repetition utilizing the map-reduce function; subsequently, the missing data are handled by substituting or by ignoring the missed values. After that, the data are transmuted into a normalized form. Next, to enhance the classification performance, the data's dimensionalities are minimized by employing Gaussian Kernel (GK)-Fisher Discriminant Analysis (GK-FDA). Afterwards, the processed data is submitted to the partitioning phase after transmuting it into a structured format. In the partition phase, by utilizing the MD-PAM, the data are partitioned along with grouped into a cluster. Lastly, by employing CG-ANN, the data are classified in the classification phase so that the needed data can be effortlessly retrieved by the user. To analogize the outcomes of the CG-ANN with the prevailing methodologies, the NSL-KDD openly accessible datasets are utilized. The experiential outcomes displayed that an efficient result along with a reduced computation cost was shown by the proposed CG-ANN. The proposed work outperforms well in terms of accuracy, sensitivity and specificity than the existing systems.

**Keywords:** Big data; artificial neural network; fisher discriminant analysis; distribution preserving framework; manhattan distance

## 1 Introduction

Big Data (BD) is a massive collection of data [1], which is being used in a variety of application domains such as financial trading, business, education, medical, and so on [2]. Big Data is also referred to as "big data analytics." This BD is extremely beneficial to both individuals and businesses; nevertheless, the exploitation of this BD is a difficult task since the investigation, evaluation, and data retrieval are quite complex, require a



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Original Article

# Mining Privacy-Preserving Association Rules based on Parallel Processing in Cloud Computing

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**Abstract** - With the onset of the Information Era and the rapid growth of information technology, ample space for processing and extracting data has opened up. However, privacy concerns may stifle expansion throughout this area. The challenge of reliable mining techniques when transactions disperse across sources is addressed in this study. This work looks at the prospect of creating a new set of three algorithms that can obtain maximum privacy, data utility, and time savings while doing so. This paper proposes a unique double encryption and Transaction Splitter approach to alter the database to optimize the data utility and confidentiality tradeoff in the preparation phase. This paper presents a customized apriori approach for the mining process, which does not examine the entire database to estimate the support for each attribute. Existing distributed data solutions have a high encryption complexity and an insufficient specification of many participants' properties. Proposed solutions provide increased privacy protection against a variety of attack models. Furthermore, in terms of communication cycles and processing complexity, it is much simpler and quicker. Proposed work tests on top of a real-world transaction database demonstrate that the aim of the proposed method is realistic.

**Keywords** — Privacy, Association Rule Mining (ARM), Cloud, Apriori algorithm, Distributed system.

## I. INTRODUCTION

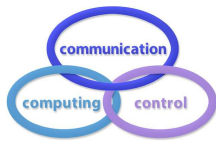
The processing of enormous volumes of data into valuable patterns and rules is known as data mining. The data mining technique has been increasingly explored and utilized in numerous scientific and commercial fields because it extracts meaningful knowledge from vast amounts of data. The development of data mining techniques has significantly impacted a wide range of applications. ARM is an integral approach to identify the underlying association among items through massive data, exposing latent association patterns, and subsequently aiding in economic operations and management information systems. In high transaction databases, frequent itemset mining and ARM are

two extensively utilized data processing approaches for uncovering often co-occurring collected data and intriguing association links among datasets, correspondingly [1]. These ARM methods have historically been performed over a compressed format, while all information collected into a centralized location and techniques run against specific data. Since there is no completely trustworthy third party, privacy risks arise. Service providers are frequently honest and inquisitive, wanting to learn more about users and hence open to misuse. To solve this difficulty, recommend a quasi third party. The most important focal point of this paper is the extraction of frequent patterns in dispersed collections using a semi-trusted intermediary service. Neither server nor the participants have access to the private transactions of other parties. Unofficially, the aim denotes a secure multi-party computational issue [2].

The concerns posed by the ARMS technique have lately been analyzed in security and privacy considerations. As a result, people's privacy is violated. Frequent itemset mining (FIM) can reveal prevalent itemsets and associated possibly relevant relationships from a transaction dataset [3]. After obtaining a large number of itemsets, mining association rules get easy. However, transferring the unprocessed data straight to the cloud service provider (CSP) is risky because CSP may be interested in sensitive transactions. When extracting private information, the security level must always be carefully evaluated. The exploitation of this technology has the potential to expose the data owner's perceptive information toward others.

The purpose of the ARM is to reveal frequent itemsets that frequently appear in transactional data. Before centralized mining, there was much concentration. The issue has a highest exceedingly terrible uncertainty of significant worst-case complexity, a characteristic that drives businesses to outsource mining to a cloud that has developed effective, profitable, and customized solutions. In addition to the mining cost reduction, the data owner intends to outsource the data mining task. First and foremost, it necessitates





## Video Saliency Detection by using an Enhance Methodology Involving a Combination of 3DCNN with Histograms

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### **Abstract**

When watching pictures or videos, the Human Visual System has the potential to concentrate on important locations. Saliency detection is a tool for detecting the abnormality and randomness of images or videos by replicating the human visual system. Video saliency detection has received a lot of attention in recent decades, but due to challenging temporal abstraction and fusion for spatial saliency, computational modelling of spatial perception for video sequences is still limited. Unlike methods for detection of salient objects in still images, one of the most difficult aspects of video saliency detection is figuring out how to isolate and integrate spatial and temporal features. Saliency detection, which is basically a tool to recognize areas in images and videos that catch the attention of the human visual system, may benefit multimedia applications such as video or image retrieval, copy detection, and so on. As the two crucial steps in trajectory-based video classification methods are feature point identification and local feature extraction. We suggest a new spatio-temporal saliency detection using an enhanced 3D Conventional neural network with an inclusion of histogram for optical and orient gradient in this paper.

**Keywords:** Histogram of optical flow (HoF), Histogram of oriented gradient (HoG), Human Visual System (HVS), Saliency detection, salient object detection, salient region detection.

# An Analysis of Routing Algorithm for Remote Patient Monitoring System Based on Manet Process

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**Abstract:** Ad-hoc wireless networks are becoming a major platform for decentralized time-critical apps, thanks to technological improvements. Because the topology of mobile ad hoc networks (MANETs) is so variable, it's difficult to meet users' demands for greater and more consistent Quality of Service (QoS) providing for multimedia real-time apps. Because of the architecture, sharing, bandwidth, and resource shortages in wireless nodes, providing QoS for navigation in a MANET is a huge difficulty. Security is an important part of distributing QoS, as rogue nodes can pose a range of dangers to MANETs. Although many MANET defense mechanisms have been proposed, most are either effective against a specific type of attack or offer privacy at the expense of QoS. This study analyzes a model of a wireless patient surveillance system for cardiac condition control and evaluated its implications in an ad hoc network setting. This is because maintaining wireless mobile connection in rural areas and hilly landscapes may not always be practicable, and these areas frequently lack great doctors and sufficient medical services to cure different disorders. This work proposes a trust-based, reliable QoS routing strategy that incorporates social and QoS trust. The suggested scheme's main solution focuses on reducing the number of nodes that exhibit various packet forwarding violations and determining how to assure safe interaction through the authentication mechanism. The results are compared using QoS factors such as channel condition, remaining energy, signal strength, and so on.

**Keywords:** Mobile Ad hoc networks, bandwidth, Quality of Service, clustering, routing protocol, multimedia.



## Research Article

# Classification of Electrocardiography Hybrid Convolutional Neural Network-Long Short Term Memory with Fully Connected Layer

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Electrocardiography (ECG) is a technique for observing and recording the electrical activity of the human heart. The usage of an ECG signal is common among clinical professionals in the collection of time data for the examination of any rhythmic conditions associated with a subject. The investigation was carried out in order to computerize the assignment by exhibiting the issue using encoder-decoder techniques, creating the information that was simply typical of it, and utilising misfortune appropriation to anticipate standard or anomalous information. On a broad variety of applications such as voice recognition and prediction, the long short-term memory (LSTM) fully connected layer (FCL) and the two convolutional neural networks (CNNs) have shown superior performance over deep learning networks (DLNs). DNNs are suitable for making high points for a more divisible region and CNNs are suitable for reducing recurrence types, LSTMs are appropriate for temporary displays, in the same way as CNNs are appropriate for reducing recurrence types. The CNN, LSTM, and DNN algorithms are acceptable for viewing. The complementarity of DNNs, CNNs, and LSTMs was investigated in this research by bringing them all together under the single architectural company. The researchers got the ECG data from the MIT-BIH arrhythmia database as a result of the investigation. Our results demonstrate that the approach proposed may expressively describe ECG series and identify abnormalities via scores that outperform existing supervised and unsupervised methods in both the short term and long term. The LSTM network and FCL additionally demonstrated that the unbalanced datasets associated with the ECG beat detection problem could be consistently resolved and that they were not susceptible to the accuracy of ECG signals. It is recommended that cardiologists employ the unique technique to aid them in performing reliable and impartial interpretation of ECG data in telemedicine settings.

## 1. Introduction

Electrocardiography (ECG) provides a significant amount of information about cardiovascular health and architecture, and it is the principal tool for diagnosing cardiac

illness [1]. Arrhythmia is a highly frequent cardiac ailment that is well researched and understood by specialists in the field. Throughout the course of clinical practice, mistakes in diagnosis and inaccurate outcomes may occur due to the gap in expertise between experts and the absence of a

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# Traffic monitoring for emergency vehicle using RFID

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**Abstract**---In developing countries like India population is significantly growing. As the population grows, the numbers of vehicles on the roads are also exponentially increasing, which results in increase in road accidents and traffic jam. Specifically, when an emergency vehicle such as Ambulance or Fire engine gets stuck in traffic jam, saving the human life becomes difficult. Under such circumstances, a promising system which can clear the traffic congestions especially in peak hours and thereby providing a safe path for emergency vehicles is very much essential. In the existing literature, less focus is given towards the problem of providing a clear path for emergency vehicles during traffic congestions. To solve these issues, a RFID-based system is proposed, which manages and regulates the traffic signals at junctions when the emergency vehicle approaches, by allowing the easy passage out of the traffic congestions. The proposed framework is modelled by means of an experimental setup using ARDUINO and LED displays which simulates a real time traffic scenario. The simulation results illustrate the better performance of the proposed framework in terms of detection as well as management of emergency vehicle by providing passage out of traffic congestions during peak hours.

**Keywords**---RFID, congestion, dataset.

## ORIGINAL RESEARCH

# Optimal design of supply chain inventory information forecasting and control system in cloud environment for biomedical instruments

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## Abstract

With the rapid development of Internet technology, the network information data is exploding, and society has entered the era of cloud data. Cloud data provides a lot of data support for people's life and work, but because of its large number, multifarious types and huge value, there are some problems such as private data leakage and abuse of sensitive information. Stocking of biomedical material at one place only, can cause delay in sending important lifesaving material to needy patients. On the one hand, it is an important content of engineering scheduling theory and method; On the other hand, in medical field, a lot of materials are usually consumed to protect the life of patients. Biomedical informatics and computer vision techniques have been combined in a variety of inter-multidisciplinary disciplines during the past few decades. We are all aware that inadequate or insufficient cloud access management and controls can expose a corporation to a range of issues. The work that follows offers intelligent supply chain, an upgraded service management control telephone network architecture. If we can acquire according to the patient demands and retain the ideal inventory such that the patient requirement and interest can be safe, the overall cost will be lowered greatly. The experimental results show that R1 orders 31 times, and the total cost is 1,259,520 CNY. R2 ordered 24 times, with a total cost of 982,034 CNY; R3 orders 22 times, and the total cost is 990,146 CNY. Finally, the optimal solution of the total cost after schedule optimization is 3,231,700 CNY. It is proved that the optimal cost finally obtained by forecasting supply chain inventory information based on cloud data environment is also more practical for engineering practice.

## 1 | INTRODUCTION

The intelligent network information management system realizes the information sharing function. Users can set up organizations in the system, and the information of the same organization can be managed freely, realizing data sharing, avoiding the problems such as disunity of information platform, repeated data collection, incomplete database, information islands and so on [1]. Supply chain management is a major issue in many industries, as companies recognise the need of creating integrated connections with their suppliers and customers.

Supply chain management is defined by the Global Supply Chain Forum (GSFC) as “the integration of critical business processes from end user to original suppliers that deliver products, services, and information that produce value for customers and other stakeholders” [2, 3]. With the advent of the cloud data era, the intelligent network information management system has new requirements. In recent years, with the occurrence of network information security incidents such as webpage tampering, skylight opening, network impersonation, and massive denial of service on websites, the awareness of network users' information security is constantly increasing. Cloud data can gather all

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# Prediction of COVID 19 using marching learning techniques

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**Abstract**---Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. However, some will become seriously ill and require medical attention. Older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease, or cancer are more likely to develop serious illness. Supervised machine learning models for COVID-19 infection were developed in this work with learning algorithms which include support vector machine, naive Bayes, random Forest, GNB using epidemiology labeled dataset for positive and negative COVID-19 cases of Mexico. The correlation coefficient analysis between various dependent and independent features was carried out to determine a strength relationship between each dependent feature and independent feature of the dataset prior to developing the models. The 80% of the training dataset were used for training the models while the remaining 20% were used for testing the models. The result of the performance evaluation of the models showed that GNB prediction model has the highest accuracy of 98% compared to other existing ML techniques.

**Keywords**---COVID, SARS, artificial neural network (ann), dataset.

# Trading App Analyzer Using Implanted Sensing Technique In Iot Via Block Chain-Based Networks

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**Abstract** - The low-bandwidth trade method is built upon portable devices integrating smart devices for information gathering and remote monitoring. For instance, this information may be connected to dioxide emissions and impurities, but it may be used to evaluate adherence to regulatory requirements. The current approach to IoT data trading, which is ineffective and unsafe, relies on a centralized third-party institution that mediates disputes among information providers and consumers. The decentralised solution based on block chain technology, on the other hand, allows data exchange while guaranteeing integrity, confidentiality, and anonymity. Due to the seller's and buyers' ignorance of such improved performance, there is a large disparity when gauging the IoT data trade processes. With the Internet of Things and block chain technology, we provide a paradigm of IoT-based data trade that is intended to facilitate major environmental monitoring motivated by a gap in knowledge. We can assess the feasibility of communications across three fundamental IoT data trade schemes in terms of either delay or power consumption. These protocol models and analysis serve as a baseline for IoT data exchange solutions.

**Keywords:** Data Trading, Internet-Of-Things, Block chain, Performance Efficiency.

## I. INTRODUCTION

Traditional trading systems have a central failure point, a less confidence, integrity, and motivation for trading data, all of which restrict data suppliers from making digital data available to clients. Distributed ledger technology like block chains, on the other hand, enable irreversible and transparent information dissemination across untrustworthy parties. Irrespective of being used within payment information, block chain-based paper records are viewed as a critical facilitator for professional and trusted decentralised system monitoring. The authentication procedure for distributed ledgers is based on network consensus across many nodes. Sensor data or monitor control packets may be included in the operations of block chain-based IoT networks. This information and

communications are distributed and synced among the parties involved. Miners or peers are the terms used to describe these participants.

Furthermore, smart contracts allow for the storage of all operations in irrevocable copies, with each document distributed among several parties. Confidentiality is, however, provided by the decentralised nature of DLTs, powerful public-key verification, and cryptographic hashing. The following are some advantages of incorporating block chain networks into IoT data trading platforms. To protect anonym zed direct exposure and the implant of bogus information from those stockholders, IoT information trade networks are being used. Authenticity and integrity for environmental sensors. The prerequisite for 3rd parties is eliminated. In a previous

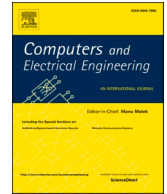




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journal homepage: [www.elsevier.com/locate/compeleceng](http://www.elsevier.com/locate/compeleceng)Autonomous service for managing real time notification in detection of COVID-19 virus<sup>☆</sup>

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## ARTICLE INFO

## Keywords:

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COVID-19, Fog computing  
Internet of Things  
Temporal RNN, Virus

## ABSTRACT

In today's world, the most prominent public issue in the field of medicine is the rapid spread of viral sickness. The seriousness of the disease lies in its fast spreading nature. The main aim of the study is the proposal of a framework for the earlier detection and forecasting of the COVID-19 virus infection amongst the people to avoid the spread of the disease across the world by undertaking the precautionary measures. According to this framework, there are four stages for the proposed work. This includes the collection of necessary data followed by the classification of the collected information which is then taken in the process of mining and extraction and eventually ending with the process of decision modelling. Since the frequency of the infection is very often a prescient one, the probabilistic examination is measured as a degree of membership characterised by the fever measure related to the same. The predictions are thereby realised using the temporal RNN. The model finally provides effective outcomes in the efficiency of classification, reliability, the prediction viability etc.

## 1. Introduction

The innovations in the healthcare industry are reaching heights which have never ever been assumed by the professionals a century ago. The innovations in the field have taken the medical industry to a higher level with a great significance in day to day life [1]. The most important administrations of the concerned department is the gathering of information for gaining access to the problem and

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