



ಬಿ.ಎಂ.ಎಸ್. ತಾಂತ್ರಿಕ ಮತ್ತು ನಿರ್ವಾಹಣಾ ಮಹಾವಿದ್ಯಾಲಯ
(ವಿ.ಟಿ.ಯು. ಅಡಿಯಲ್ಲಿನ ಸ್ವಾಯತ್ತ ಸಂಸ್ಥೆ)

BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT
(Autonomous Under VTU)

RESEARCH COMPENDIUM 2022



DEPARTMENT OF INFORMATION
SCIENCE & ENGINEERING

Department of Information science and Engineering(2022)

VISION

Emerge as centre of learning in the field of information science & engineering with technical competency to serve the society.

MISSION

To provide excellent learning environment through balanced curriculum, best teaching methods, mentoring and industry institute interaction.

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About Institution

In view of the growing demand for technical education and with the goal of establishing a premier technical education on par with international standards, a technical institution by name 'BMS Institute of Technology and Management' was established in 2002. Currently, BMSIT&M offers nine UG, four PG programs and Ten programs have been recognized as research centers under VTU. All our eligible programmes are NBA accredited and NAAC accredited with 'A' grade. BMSIT&M considers research and consultancy to be of equal importance as academics for the betterment of the institution. This culture has been embraced well by the faculty members at BMSIT&M through quality publications. In this report, we present a brief review about the publications of Information Science and Engineering, BMSIT&M.

Vision

"To emerge as one of the nation's finest technical institutions of higher learning to develop engineering professionals who are technically competent, ethical and environment friendly for betterment of the society."

Mission

"Accomplish stimulating learning environment through high quality academic instruction, innovation and industry - institute interface."

Department of Information Science and Engineering

The Department of Information Science and Engineering started in the Year 2010 with an approved intake of 60 and enhanced to 120 from the academic year 2018-19, 180 from the academic year 2019-20 and 240 in the year 2023-24. The Department has qualified and dedicated faculty members who practice Outcome Based Education (OBE) in the academic deliverables. The faculties have published research articles in various National, International, IEEE Conferences, and Journals which are indexed in SCOPUS, Web of Science, and other prestigious indexing research databases.

The department has modern laboratories to serve the teaching and research needs of the students as well as faculty members. The department has been proactively organizing conferences, workshops, expert lectures, and student-centric activities to encourage students and faculty to instil lifelong learning. Some of our students are working on consultancy projects along with faculty members. The staff are encouraged to attend the 10 days internship to bridge the gap between the academics and industry. The department has an admirable research ambiance.

The Department has adopted learner centric approach to groom the students in the right direction. It has more than 200+ research articles published in various national/international conferences and Journals. Our Students have consistently demonstrated the excellent placement track record of above 90 percent. They have demonstrated a high level of success at pursuing post graduate studies at top universities of the world as per QS World University Rankings. Few of our Students have turned into successful entrepreneurs and running their successful business in the areas of Software Services and allied areas.

From HOD's Desk

It is my pleasure to present the forth edition of Research Compendium of the Department of Information Science & Engineering. The main objective of the research compendium is to collate all the research contributions by our faculty members and students. It is evident that the Department is in-line with the on-going activities by the faculty members to cater the needs of industry to fill the gap between Industry and Institute. I hope this compendium continues its service to help the student community & faculty fraternity and attract more readers and provide an illuminating platform for the research community. I appreciate the efforts endorsed by all the faculty members and students of the department for their contribution towards the fourth edition of Department Research Compendium. I wish all the research community mmebers for their active participation and keep continuing.

Dr. Pushpa S. K

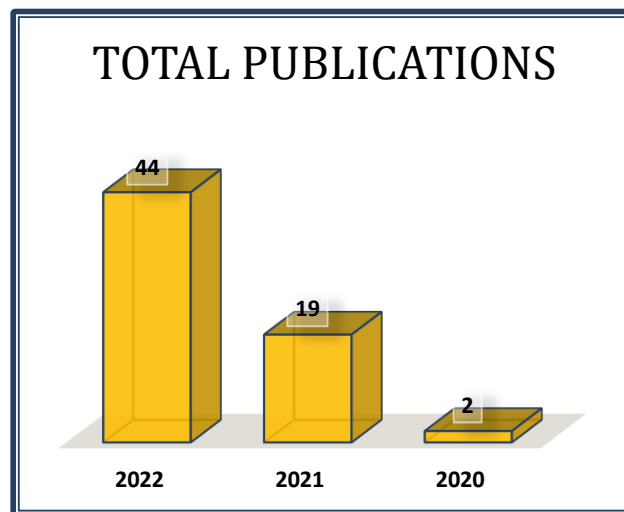
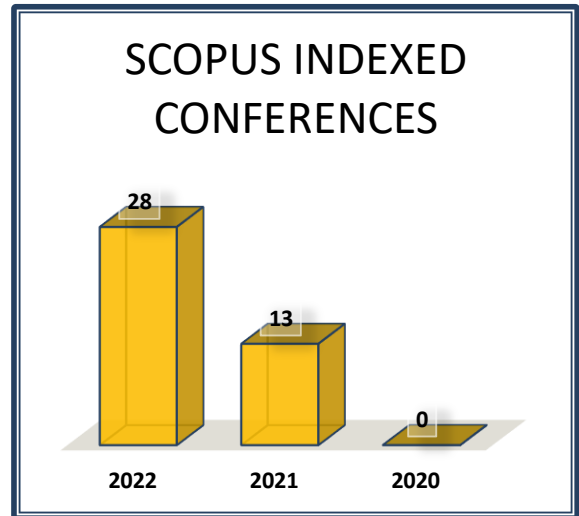
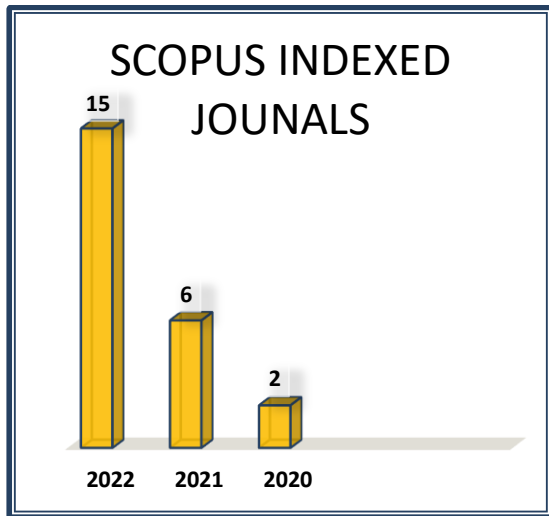
Editorial Statement

It's my pleaseure to be part of Editorial team for this Research Compendium 2022, published by the Department of Information Science & Engineering. The main objective of this research compendium is to motivate all the stakeholders and the research community to get themselves actively involved in research. It comprises of publication summary for past four years, citation details of faculty, and publications in Scientific Journals/Conferences for the academic year 2022. I whole heartedly thank all the faculty members for their contribution towards research compendium 2022.

Dr.Shoba M
Research Coordinator

1. Research Publications Summary

Sl. No.	Name of the Faculty Member	2022			2021			2020			TOTAL
		JOURNAL	CONFERENCE	BOOK CHAPTER	JOURNAL	CONFERENCE	BOOK CHAPTER	JOURNAL	CONFERENCE	BOOK CHAPTER	
1	Dr Manjunath T N	1	3		1	1					6
2	Dr. Pushpa S K					1					1
3	Dr. Sudhamani M V										
4	Dr. Usha B A										
5	Dr. Anjan Krishnamurthy	1	2	1							4
6	Dr. Sheela Kathavate		2								2
7	Dr. Surekha K B		1								1
8	Dr. Geeta Amol Patil					1					1
9	Dr. Rakesh N		3								3
10	Dr. Veena N		1			1		1			3
11	Dr. Shoba M										
12	Dr. Prakash GL	1									1
13	Prof. Chetana. C										
14	Dr. Drakshaveni G	1									1
15	Prof. Mahalakshmi S	2	2		2						6
16	Dr. Shanthi D L	1			1	3					5
17	Dr. Chandrashekar K T	1									1
18	Dr. P Sudarsanam		3								3
19	Dr. GireeshBabu C N	1			1	1					3
20	Prof. Ambika R S		1								1
21	Dr. Swetha M S	1	4		1	2		1			9
22	Dr. Vinutha K	1				2					3
23	Dr. Ravikumar B N	1									1
24	Dr. Narasimhamurthy M S										
25	Dr. Mohan BA		2								2
26	Dr. Anil Kumar		1								1
27	Dr. Savitha S		1								1
28	Dr. Basavaraj GN	1									1
29	Dr. Karthik SA	1	1								2
30	Dr. Kshama SB	1	1								2
31	Dr. Kantharaju V										
32	Dr. Kalaivani Y S										
33	Dr. Harishkumar N										1
34	Dr. Srinivas B V										
35	Prof. Bhavya G.					1					1
	TOTAL	15	28	1	6	13	0	2	0	0	



2. Citation Details of faculty

SL. No	Name of the Faculty	Citations 2022	Citations 2021
1	Dr Manjunatha T N	42	29
2	Dr Pushpa S. K	11	5
3	Dr Sudhamani M V	13	10
4	Dr Usha B A	10	7
5	Dr Anjan Krishnamurthy	9	8
6	Dr Sheela Kathavate	1	1
7	Dr Surekha K B	1	1
8	Dr Geeta Amol Patil	5	6
9	Dr Rakesh N	31	5
10	Dr Veena N	7	1
11	Dr Shoba M	1	3
12	Dr Prakash G L	9	4
13	Dr Drakshaveni G	1	1
14	Prof. Chethana C	21	2
15	Prof. Mahalakshmi S	5	1
16	Dr. Shanthi D L	10	3
17	Dr Chandrashekhara K T	1	2
18	Dr P. Sudarsanam	3	2
19	Dr Gireesh Babu C N	1	2
20	Prof. Ambika Rani Subhash	1	1
21	Dr Swetha M S	12	18
22	Prof. Vinutha K	3	1
23	Prof. Ravi Kumar B N	1	1
24	Dr. Narasimha Murthy M S	1	1
25	Dr. Mohan B.A	8	2
26	Dr. Anil Kumar	1	1
27	Dr. Savitha S	1	4
28	Dr. Basavaraj G N	6	1
29	Dr. Karthik S A	6	3
30	Dr. Kshama S B	2	1
31	Dr. Kantharaju V	3	1
32	Dr. Kalaivani Yenamandram Sathyanarayana	3	2
33	Dr. Harish Kumar N	6	7
34	Prof. Srinivas B V	1	1
35	Prof. Bhavya G	1	1
	TOTAL	237	138

Department of Information science and Engineering

RESEARCH PUBLICATIONS FOR THE YEAR 2022

Dr. Manjunath T.N , HOD, Professor , BMSIT&M
Scopus Id 57205117286

INTERNATIONAL JOURNALS with Scopus Indexed

Manjunath Thimmasandra Narayanappa, Deepa Yogish, S. Mahalakshmi, H.K. Yogish
Published a paper title "Design and development of anonymous location based routing for mobile ad-hoc network." International Journal of Electrical and Computer Engineering, 2022, 12(3), pp. 2743-2755

International Journal of Electrical and Computer Engineering (IJECE)

Vol. 12, No. 3, June 2022, pp. 2743-2755

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□ 2743

Design and development of anonymous location based routing for mobile ad-hoc network

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Article Info

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Keywords:

Anonymous location-aided routing in suspicious MANET
Anonymous location-based efficient routing protocol
Authenticated anonymous secure routing
Optimal decided trust inference
Optimal tug of war partition
Strong secure anonymous location based routing

ABSTRACT

Mobile ad-hoc network (MANET) consists of wireless nodes interacting with each other impulsively over the air. MANET network is dynamic in nature because of which there is high risk in security. In MANET keeping node and routing secure is main task. Many proposed methods have tried to clear this issue but unable to fully resolve. The proposed method has strong secure anonymous location based routing (S2ALBR) method for MANET using optimal partitioning and trust inference model. Here initially partitions of network is done into sectors by using optimal tug of war (OTW) algorithm and compute the trustiness of every node by parameters received signal strength, mobility, path loss and co-operation rate. The process of trust computation is optimized by the optimal decided trust inference (ODTI) model, which provides the trustiness of each node, highest trust owned node is done in each sector and intermediate nodes used for transmission. The proposed method is focusing towards optimization with respect to parameter such as energy, delay, network lifetime, and throughput also above parameter is compared with the existing methods like anonymous location-based efficient routing protocol (ALERT), anonymous location-aided routing in suspicious MANET (ALARM) and authenticated anonymous secure routing (AASR).

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1. INTRODUCTION

Mobile ad-hoc network (MANET) are mobile nodes that interact with each other impulsively over the air. MANET network keeps changing frequently because of the itinerant nature of its nodes. Due to this changing nature and nodes configuring by itself there is high risk in its security as shown in Figure 1 [1]. In MANET biggest problem is keeping the node secure which cannot be identified easily while routing. A main criterion of MANET is to provide unknown route for nodes [2]. Designing defeating protocols for such argumentative environments is a challenging task in MANETs due to misbehaving of nodes [3], [4] we need a fault tolerant and secure routing protocols to identify and to find routing in aggressive system, especially in the system where there is lot of duplication of nodes [5], [6].

In MANETs, most important part is hiding the nodes during communication. This can be achieved when nodes satisfy two conditions i) unidentifiability wherein source nodes and destination node should not exposes itself other nodes and ii) unlinkability wherein the motility and path of nodes from its start to end should be unable to be linked [7], [8]. Security is a very important in argumentative environments. As nodes

Journal homepage: <http://ijece.iaescore.com>

INTERNATIONAL CONFERENCE with Scopus Indexed

Dr. Manjunath T N Published a paper title "Development of Security Performance and Comparative Analyses Process for Big Data in Cloud" Lecture Notes in Electrical Engineering, 2022

[Home](#) > [Emerging Research in Computing, Information, Communication and Applications](#) > [Conference paper](#)

Development of Security Performance and Comparative Analyses Process for Big Data in Cloud

[M. R. Shrihari](#), [T. N. Manjunath](#), [R. A. Archana](#) & [Ravindra S. Hegadi](#)

Conference paper | [First Online: 16 November 2021](#)

353 Accesses | **3** Citations

Part of the [Lecture Notes in Electrical Engineering](#) book series (LNEE, volume 789)

Abstract

1. Big data is accumulate and development with the facilitate of disseminated encoding structures like Hadoop which handles the new encoding prototype. Big data can handle huge quantity of information with thousands of computers in clusters. Through the condition of compute of different possessions in public cloud, people and institute are clever to outsource their statistics storage and services. Conversely, the information owners are disturbed with security of their outsourced statistics. The Cloud Security Alliance has recognized and announced different security confronts with reverence to big data security and safe estimation in disseminated encoding structure veracity and immediate security. There are important investigate assistance establish in the survey. Conversely, a complete approach that provides to the security wants of the cloud-big data environment to stimulate of the different afore reveals dispute is lost. Consequently the plan of this proposal is to examine, design, and execute method for safe computation, big data privacy, big data security, and efficient

https://link.springer.com/chapter/10.1007/978-981-16-1338-8_13

2. Dr. Manjunath T N , Hiremath A, Niranjanamurthy M, ...Shrihari, M.R., Pushpa Sothenahalli Krishnaraju Published a paper title “A Survey on Machine Learning Techniques Using Quantum Computing” International Conference on Emerging Research in Electronics, Computer Science and Technology, ICERECT 2022, 26-27 December 2022, DOI: 10.1109/ICERECT56837.2022.10059764

2022 Fourth International Conference on Emerging Research in Electronics, Computer Science and Technology (ICERECT)

A Survey on Machine Learning Techniques Using Quantum Computing

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Abstract - Over the course of the last seven decades the world of computing has taken revolutionary reformations in the scope of classical computing. Classical computers manipulate ones and zeroes to crunch through operations given to them by users. An innovative strategy known as quantum computing leverages the concepts of quantum physics to solve issues that are too complex for conventional computers to handle. Two of the domains of science that are now progressing the fastest are theoretical machine learning and quantum computing theory. In recent years, researchers have begun examining how classic machine learning techniques may be improved by quantum computing. Hybrid techniques that integrate conventional and quantum algorithms are part of quantum machine learning. Instead of using standard data, quantum techniques may be utilized to examine quantum states. However, quantum algorithms have the potential to greatly expand current data science techniques. In this paper we review the contribution carried out by various researchers in the field of Quantum Machine Learning and later we look at certain techniques associated with it for its use.

Keywords - Quantum Machine Learning, Hybrid Algorithms, Quantum Techniques, QML Applications

I. INTRODUCTION

Quantum Machine Learning, is the use of algorithms of quantum computed to machine learning programmes. The phrase quantum-enhanced machine learning, in the basic sense, is the inculcation of machine learning algorithms to operate on classical data on a quantum computer. Both ideas of machine learning and quantum computing are still in the developmental stages since they first appeared in the recent past. Machine learning comprises the study of computer algorithms that get better on their own over time by using data and experience. Utilizing collective quantum state characteristics, such as superposition and entanglement, to carry out computations which is known to be called quantum computing. Quantum machine learning makes use of the concepts of qubits, quantum processes, and specialized quantum systems to enhance processing and storage of data while machine learning techniques are utilized to handle enormous volumes of data. This is inclusive of hybrid strategies that make a blend of both classical and quantum computing and use a quantum device to handle computationally difficult subroutines[1][2]. The way quantum computers operate allows them to examine exponentially more data than conventional computers as

opposed to merely 1s or 0s, they do computations based on the likelihood of an object's state before it is measured. The precise position of a physical state is used by traditional computers to carry out logical processes. Instead, actions in quantum computing create a qubit by using the quantum state of an object. Instead of using traditional data, there is the use of quantum algorithms for the sake of analysing quantum states. Beyond quantum computing, "quantum machine learning" refers to traditional machine learning techniques which are used on data produced by experiments conducted. The study of methodological and structural similarities between certain physical systems and learning systems, in particular neural networks, is known as quantum machine learning. For instance, classical deep learning may leverage some mathematical and numerical techniques from quantum physics, and vice versa. There are several machine learning and data processing techniques accessible. Data storage is a key factor in why we chose quantum computing is shown in Fig. 1.

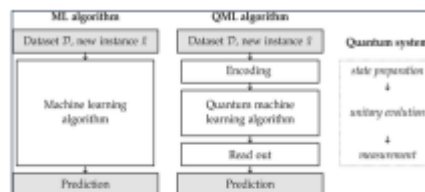


Fig 1. Workflow of ML Vs QML algorithms [1]

II. LITERATURE SURVEY

Maria Schuld et al[9][10] In recent years, scientists have started investigating how quantum computing can enhance conventional machine learning methods. The paper is divided into seven sections, each of which introduces a well-known machine learning method (such as support vector machines, k-means clustering, neural networks, decision trees, Bayesian theory, and hidden Markov models) and various interpretations of how each method relates to quantum physics. Although Bayesian theory and hidden Markov models have an analogue in open quantum systems, the developers of k-nearest neighbour methods, support

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Shrihari M.R.;Manjunath T.N.;Archana R.A.;Hegadi R.S. Published a paper title “Enhanced Efficient and Security in Big Data Using TDES And Machine Learning Technique” IEEE International Conference on Distributed Computing and Electrical Circuits and Electronics, ICDCECE 2022, Year 2022

DOI:10.1109/ICDCECE53908.2022.9792642

2022 IEEE International Conference on Distributed Computing and Electrical Circuits and Electronics (ICDCECE)

Enhanced Efficient and Security in Big Data Using TDES And Machine Learning Technique

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Abstract—Big Data Analytics (BDA) is an important technology used in many industries, including banking and investments, finance, news and entertainment, transport, education, production, energy and utilities, and medical health care. Big Data in medical healthcare is described as a collection of exceptionally big and complicated sets of electronic healthcare data. Because of the huge amount and complexity of the data, it is impossible to maintain it using traditional software for practical application. The term "Bigdata," created in 1990, refers to the study of huge and complicated datasets. Bigdata problems include data storage, data capture, data processing, data querying, data visualisation, and data transmission. It can only perform wonders if the most crucial information is gathered by it. Predictive analytics, user behaviour analytics, and other Bigdata analytics are being used to extract meaningful information from the massive volume of Bigdata. Bigdata may be used to prevent sickness, identify crime, and aid in commerce, financial institutions, and other fields by studying new patterns and associations. Machine Learning is an area of computer science which is used to find hidden patterns in massive amounts of complicated data. Machine learning is a technique in which a model is taught to learn from data, and it is therefore widely utilised in practically every sector in order to uncover a valuable pattern in Bigdata. This approach produces results without the need for human intervention. Businesses now understand that Bigdata is only helpful if meaningful information is extracted from it using an effective machine learning method. Furthermore, Triple Data Encryption Standard is employed for encryption to improve speed. Attribute Based Access Control is used to offer authentication and to give allowed access. TDES method is compared to current ways such as Data Encryption Standard and Advanced Encryption Standard in terms of file size and time as basis for performance evaluation. In addition, the classification method MKSVM is evaluated to Support Vector Machine and Neural Network in terms of quality, specific, and reliability. These phase evaluates the performance of Attribute Based Access Control. When compared to current approaches, the comparative study demonstrated that the suggested TDES encryption methodology achieved the shortest execution time with the most secure data.

Keywords—Big data, Security, Machine learning, TripleDES.

I. INTRODUCTION

Data are blind and deaf in the middle of the highway without Big Data. “Our mission is to convert data into useful information, and knowledge into insight.” The adage above exemplifies how essential knowledge and analysis are and

how they should be protected and kept. This chapter provides security and privacy preservation approaches for Big Data utilizing the Triple Encryption Standard and Multi Kernel Support Vector Machine algorithms to improve Big Data security and privacy. Furthermore, at the final stage, authentication and Attribute Based Access Control Mechanism are utilised to validate user identities. Big Data and cloud computing have emerged as key technology over the years. However, in order to ensure the security of information holders, data is recurrently encrypted and stored in the cloud. Encrypted data, in any event, introduces additional obstacles for cloud data compression. This happen to critical for huge data storage and dispensation in the cloud, as well as access control. The study has been categorized as medical big data security using encryption and security systems. The Map-Reduce framework using Optimal Fuzzy C means (OFCM) reduces large databases to clustered statistics, which is then aggregated on the cloud. Furthermore, specific and non-information are identified in the cloud for encryption using a categorization technique. The above security process Triple Data Encryption Standard (TDES) is to encrypt and store in the cloud, as well as recommend convenient optimization methods that additional improve the scheme's performance, at the end of the authentication process with attribute-based access control for data authorization in the cloud. Cloud computing raises several security concerns, and data protection is critical. Furthermore, it is a concern to the privacy of customers. It's also a good way to improve the efficiency of test dataset for big data features by transferring the expensive procedures to the cloud. Clusters is an unconfirmed strategy for categorizing large datasets into correlated groups. Clusters must have fast connectivity technology to provide high data transmission efficiency and good latency between mainframe connections between clusters [1].

II. RELATED WORK

A. Machine Learning Techniques

Machine Learning is a scientific application that generates reasoning from data by changing it into knowledge. Many strong algorithms are used in machine learning to understand patterns, gain insight, and anticipate outcomes. Artificial Intelligence (AI) arose as a discipline for the creation of self-learning algorithms for insight. In today's fast-paced world, the availability of endless data deprives us of knowledge. In

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3.

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3.	Muneshwara, M.S., Swetha, M.S., Anand, R., Pushpa, S.K., Manjunath, T.N. Published a paper title "IOT-Based Smart Street Light Control Application for Smart Cities" Lecture Notes in Networks and Systems, 2022, 311, pp. 321-333
1.	Shaymrao, S.M., Krishnaraju, P.S., Mahalingappa, T., Narayanappa, M.T. Published a paper entitled "Design and development of anonymous location based routing for mobile ad-hoc network" International Journal of Electrical and Computer Engineering, 2022, 12(3), pp. 2743-2755
Dr. Pushpa S K, Professor , BMSIT&M Scopus Id 57200869940	
INTERNATIONAL CONFERENCE with Scopus Indexed	
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2.	Muneshwara, M.S., Swetha, M.S., Anand, R., Pushpa, S.K., Manjunath, T.N. Published a paper title "IOT-Based Smart Street Light Control Application for Smart Cities" Lecture Notes in Networks and Systems, 2022, 311, pp. 321-333
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□ 3820

A typical analysis of hybrid covert channel using constructive entropy analytics

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ABSTRACT

A covert timing channel is based on modulation of the timing information in the network packets in a secured communication. The delicacy of this channel is primarily viewed as single coherent channel thwart the detection from any third-party entity or network admin. The timing covert channel is strenuous to detect under many scenarios due to the intricate complexity of the channel. The exploration of timing covert channel shed light on intrinsic design aspects which elevate understanding to an advanced level. This will effectively bring out elite literature aspects of the timing covert channel for seamless implementation. Supraliminal channels are innocuous message-based channel introduced as a trapdoor in the communication system either intentional or as vulnerability of the system. A hybrid covert channel is the existence of homogeneous or heterogeneous network covert channel variants either at same instant or at different instant of time. For instance, one of possible hybrid covert channel is the co-existence of timing covert channel in transmission control protocol (TCP) and supraliminal channel in voice over internet protocol (VoIP). This paper introduces this variant of the hybrid covert channel and their significance in network communication. The paper also refers to standard measures-entropy, covertness index to understand hybrid covert channel.

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1. INTRODUCTION

The computer network of this era is an inter-connection of compound devices with diverse capabilities. It comprises of simple computing to a very large complex computing which may have electro-mechanical parts in it. The diversity has brought about the era of internet-of-things (IoT) where everything is connected to network and controls a larger target application like smart grid, and smart traffic. The system must be driven by legitimate and formal processes to lead to a meaningful operation and outcome. The loss or malfunction of such systems leads to catastrophic effect on the eco-system or on the economy. Hence it is really very important to safeguard these systems from any malefic operations from any unknown sources. It has been seen in many cases of cyber warfare that such systems are compromised leading to attacks for ill use of systems leading to significant market loss may be worth in billions. Such attacks are implemented on any network systems through hidden messaging schemes in cryptographic methods to avoid any sort of detection by the administrative agent. The perennial use of the internet for mundane activities has imperative impact on society. Netizens may post sensitive and confidential messages without being aware of consequences. This leads to intrigued plans of victimization and non-desirable impact

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Book Chapter

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Machine Learning-Based Security Authentication for Wireless Multimedia Network

[S. K. Gautham](#) & [Anjan K. Koundinya](#) 

Conference paper | [First Online: 27 July 2021](#)

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Part of the [Lecture Notes in Networks and Systems](#) book series (LNNS, volume 191)

Abstract

1. For supporting various services in wireless multimedia networks, security is one of the major concerns. The traditional upper-layer authentication system and conventional security solution lack efficiency and does not solve the emerging security problems and ignores physical layer protection. To overcome these challenges, this paper presents a lightweight physical layer authentication system developed by understanding certain physical layer attributes in the wireless multimedia network through supervised machine learning algorithm. Support vector classifier (SVC) is used for classification. Classification can also be performed by other supervised algorithm and select based on each detection rate. Experimental analysis proved that the proposed system could protect wireless multimedia networks.

Keywords

Security Machine learning Supervised algorithm

Wireless multimedia networks

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Anjan Krishnamurthy Koundinya Published a paper title “Water Animosity Detection and Tainting Emulsion Remover for Lakes” 4th International Conference on Cognitive Computing and Information Processing, CCIP 2022

Water Animosity Detection and Tainting Emulsion Remover for Lakes

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Abstract— Unwanted and toxic chemicals in water are increasing rapidly which not only makes the aquatic life suffer but also the Animalia on the plains. The froth formed due to the toxic disposals on those lakes is harmful as well as inflammable which is prone to result in wildfires. The paper proposes a robot structure that would sail on the water surface collecting solid waste. A part of the robot structure would reside inside the water body which will treat water chemically. An autonomous system that can traverse over the water body and cleans the water body both physically and chemically.

Key Words— diseases, froth, inflammable, Pollution

INTRODUCTION

Based on chemical research, A method in which we have metallic rods having a coating of AgNP nanoparticle and Graphine which will help us decontaminate the lake. In the prototype aspect, a CAED model is prepared and also tried simulation for the same in Gazebo. A calculated the required factors such as motor torque, buoyancy, etc. The system used YOLO v3 architecture used for real-time waste detection which will help us plan the shortest using the Contour Area Method and find the most efficient way to collect all the waste in the water body.

Sustainable and clean water has need in ever section of society. The wellness index and provision for sanitization [1] is major paradigm in many governments across globe. Clean water is challenge due to the policy framework, economics, lack of waste-water management, geographical conditions and many more. Sustainable Development Goals (SDG) Index report [2] mention many countries fall behind in the race to provide clean water by 2030 due to lack of persistent effort. SDG 6 give proper framework for water management and effective usage goals. Due to increased urbanization, there is massive demand for burgeoning population resulting in scarcity of clean water for important sector like agriculture. It is important to understand equitable distribution of water

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across many sectors. Water pollution is another menace which is proliferating the biosphere of the water and adversely affecting the human and animal ecosystems. Sustainable process for the cleaning water from all affluent is challenge and still at infancy even with latest technology as it is expensive.

RELATED WORK

Water quality model [3] develops a persistent effort to evaluate water quality against key parameter comprising of Pressure, Flow, and Chlorine. Model evolved is through as series of model building simulation EPANET enlisted under hydraulic modeling tools. This will test for the values from the field and with that of the model reaction. Model indicates the conformity for chlorine model and require standard suitable for the water portability, trade and usage.

A technique [4] to remove nitrate from the contaminated drinking water using bubble less gas-permeable membrane of H₂. The method uses membrane named membrane biofilm reactor (MBfR) using novel polyvinyl chloride hollow fiber. The system showed significant results with reduced nitrate concentrate of 20 mg/l (NO₃) and flux of 1.38 mg for over period of 103 days. Effluent nitrate is treated to reach the permissible levels prescribed for drinking water.

Drinking water from any source is susceptible for any contamination due to low viscosity. Portability and usability for drinking purpose is a paramount importance for any government. Many analytical techniques simulation is carried to understand the variants component contamination in water may be caused due to animosity determining the quantity and quality of pollutants in the contaminated water. Cadmium and Lead are major heavy metal affluent observed in inorganic water. This is untreated water from many industries including oil refining, pesticide manufacturing, and fertilizer industry. A nature inspired paradigm [5] is proposed along with artificial neural networks for quantitative measurement for inorganic pollutants in water through multivariate analytical model from various captured data samples. Root Mean Square Error is used for predication for measuring the

Anjan Krishnamurthy Koundinya Published a paper title “Characteristic Overview of Digital Image Forensics Tools” Lecture Notes in Networks and Systems, 2022

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Characteristic Overview of Digital Image Forensics Tools

[Anjan K. Koundinya](#), [Sunanda Dixit](#), [G. Mahesh](#) & [S. Sneha](#)

Conference paper | [First Online: 10 January 2022](#)

620 Accesses

Part of the [Lecture Notes in Networks and Systems](#) book series (LNNS,volume 237)

Abstract

2. With the increase in the development of technology also there is increase in using the technology for performing crimes. There is increase in misusing the Digital Information and performing crime using digital information. Digital forensics is used to investigate the crime performed using the digital device. There are many tools used to perform digital forensics. Digital image forensics is a branch of digital forensics. Digital images are losing their originality due to various tools and techniques that are available online to modify the original image. These modified images are misused by the criminals. Digital image forensics deals with identifying the digital image forensics. There are many digital forensics tool that can be applied to analyze the digital image and find out the image forgeries. In this paper, a brief explanation on digital forensics, digital image forensics and tools used for digital forensics are presented.

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1. **Dr. Sheela Kathavate** Published a paper title “Diabetic Retinopathy Detection using MobileNetV2 Architecture” 1st IEEE International Conference on Smart Technologies and Systems for Next Generation Computing, ICSTSN 2022

Diabetic Retinopathy Detection using MobileNetV2 Architecture

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Abstract—The disease Diabetic Retinopathy (DR) is a microvascular diabetic condition that affects the eyes. It is attributed to the impairment of the retinal blood vessels. The later it is detected, the greater the likelihood that the patient will lose sight. This paper proposes two Convolutional Neural Network (CNN) models, one of them a binary classification to detect retinopathy and another multinomial classification model to further classify retinopathy into five distinct and widely used stages - None, Mild, Moderate, Severe and Proliferative DR. Using Gaussian filtered fundus images enhances the recognition of subtle features such as edges or spots used for diagnosis. Transfer learning on a pre-trained MobileNetV2 model further enhances the accuracy to 78% for a multinomial classification and up to 97% for binomial classification.

Keywords—Convolutional Neural Networks (CNN), Diabetic Retinopathy (DR), Deep Learning, MobileNetV2 Architecture, Gaussian, Dataset

I. INTRODUCTION

The world diabetes pervasiveness in 2019 is reckoned to affect an approximate of 463 million people, hike to 578 million people by 2030 and 700 million by 2045. There are an estimated 72.9 million cases of diabetes in the adult population of India. It is expected that approximately two-thirds of type 2 diabetics and almost all type 1 diabetics will develop Diabetic Retinopathy (DR) over time [1]. In the diabetic population, the prevalence of DR is about 16.9% in India [2]. Most medical practitioners suggest yearly screening tests for those who have no DR or mild DR. The screening is repeated after 4-6 months for those with moderate DR and referred to an optometric physician for treatment assessment in a few weeks for proliferate or severe DR or the existence of traceable Diabetic Macular Edema (DME) [3]. However, manual screening methods such as Fundus Photography, Optical Coherence Tomography (OCT), and Fluorescein Angiography (FA) used for DR detection are known to be time-consuming. A variety of diabetic patients visit retinal specialists solely with symptoms of vision loss, once their effects get irreversible and largely advanced, because of

inadequate access to proper eye-care services and trained eye-care professionals [4].

Ophthalmologists generally deal with cases where there is a partial vision loss or when the disease gets advanced owing to the lack of knowledge among the majority of the population. This makes it necessary to build a coherent system for the timely prognosis of this disease.

An automated model using fundus images is a clinically significant solution adept at exclusively predicting DR accurately at the initial stage but as well as rating it. Deep learning is a technique in Machine Learning, when considering a sizable data set of images with tagged samples, it will first hand learn the most predictive features of those images. To specify how much a system will perform its internal parameters and to anticipate the expected output present in the image, an optimization algorithm called back-propagation is used. The CNN input is taken as an image with a defined weight matrix, which is used in the extraction of many specified image features without any loss in visual-spatial arrangement information.

At the start of this paper, different neural network architectures were estimated by determining the best performance in CNN for the multinomial classification. Then MobileNetV2 architecture was trained and tested through various methods which included batch normalization, dropout, and learning rate policies. The model uses the publicly available Kaggle dataset of 3,662 Gaussian filtered retinal images with five class labels(No DR, Mild, Moderate, Severe, and Proliferative DR). The study emphasizes on providing more functional ways to detect all five stages for clinical benefits.

II. RELATED WORK

The different methods and techniques used in the classification of Diabetic Retinopathy (DR) have been studied. Dutta *et al.* [5] used three deep learning models (CNN, Backpropagation Neural Network, and Deep Neural Network (DNN)). The training accuracy of 72.5% was obtained using DNN by the VGGnet model. S. Qummar *et al.* [6] used five CNN models (Xception, Dense121,

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2. Dr. Sheela Kathavate Published a paper title “An Overview on Mobile Edge Cloud System” Smart Innovation, Systems and Technologies, 2022



IOT with Smart Systems pp 719–727

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An Overview on Mobile Edge Cloud System

[Sunanda Dixit](#) , [Sheela Kathavate](#) & [S. K. Gautham](#)

Conference paper | [First Online: 05 January 2022](#)

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Part of the [Smart Innovation, Systems and Technologies](#) book series (SIST, volume 251)

Abstract

A model that allows the clients or users to access a collection of resources used for computing such as storage, services provided by peer devices, server and applications which is available to all the mobile users as it presents at the edge of the wireless network is called as mobile edge cloud system. It provides wireless network information and local context awareness along with low latency and bandwidth conservation, so it is much better than traditional central cloud. This paper represents the characteristics, application, model services, architecture and open challenges of mobile edge cloud system; the application is also classified into different criteria. It also gives an idea of MEC for

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INTERNATIONAL CONFERENCE with Scopus Indexed

1. **Surekha K B , Geeta Patil, Mohan B.A, Anil Kumar** Published a paper title “Arbitrage: Stock Market Comparative Analysis” 4th International Conference on Circuits, Control, Communication and Computing(14C – 2022) , 21 – 22 December 2022

Arbitrage: Stock Market Comparative Analysis

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Abstract—The stock market has long drawn investors’ attention. Stock trend forecasting tools are in great demand since they aid in the direct transfer of gains. The more accurate the results, the greater the likelihood of profit. Politics, economics, and society all influence stock market patterns. Fundamental or technical analysis can be used to evaluate stock trends. Stock market forecasting has entered a technologically upgraded era with the rise of technical marvels like global digitalization, reworking the conventional trading approach. To predict stock price movements and help investors make wise choices, several tools and methods have been created. The suggested approach aims to illustrate the optimal trading range that investors should take into consideration by graphically representing the upper bound and lower bound of the expected stock prices. The proposed technique employs supervised machine learning and a dataset obtained from Yahoo Finance. The bid prices for the stock fluctuate at different periods with almost straight names. ARIMA and LSTM algorithms are applied separately for this hypothesis.

Index Terms—Deep Learning, LSTM, Recurrent Neural Networks, ARIMA, Artificial Neural Networks, Stock Market.

I. INTRODUCTION

A share market is a facility where shares are issued and exchanged in the open. An exchangeable document known as a share certifies your ownership of a company. Buyers and sellers exchange these documents on the stock exchange [1], [2], [3]. A legitimate marketplace for investors to purchase and sell their shares has been formed to ease public exchange. Finance and investment are expected to develop exponentially in the next period as consumption, materialism, and capitalism ideology rise globally. Investors have grown increasingly wary about their investments, expecting large returns in a short period of time.

Investor attention has switched to financial markets as traditional investment programmes struggle to deliver notable returns in a short amount of time. Stock market forecasting has entered a technologically upgraded era with the rise of technical marvels like global digitalization, reworking the conventional trading approach. As market capitalization has continued to increase, stock trading has become a popular area for financial investors to invest. The retail investor mostly invests in stocks since trading in options and futures requires extensive knowledge and expertise owing to their complexity and danger. Because of the stock market’s extreme volatility, ordinary investors have a considerable risk of losing money due to price uncertainty in the future.

The closing price of the stock is one of the most important elements because it shows how successfully the company’s trading performed during the day. Predicting the stock value is a significant undertaking since there are many variables involved in it. Stock forecasting is crucial because it gives investors a broad picture of how the stock of a specific firm could do in the future. The profitability gains and forecast accuracy are directly linked to one another. Many tools and approaches have been developed to forecast stock price changes and assist investors in making sound decisions [4], [5], [6]. The next level of development would be to integrate the data and deploy the best prediction model to boost efficiency while also considering the many elements of the moderator.

This paper presents an innovative take on the traditionally persistent and legacy old models which have lower accuracy and restricted to prediction of stock prices daily. The proposed system deploys prediction services for stock prices ranging for a week using highly advanced deep learning methods such as RNN and its successors. The suggested approach employs supervised machine learning on data obtained from Yahoo Finance. The five variables in this dataset are open, close, low, high, and volume. The open, close, low, and high bid prices for the stock fluctuate throughout time with almost direct names. For this hypothesis, ARIMA and LSTM models are used individually.

II. LITERATURE SURVEY

Many researchers have worked on predicting the stock prices, Some of the literature is given below.

Using Machine Learning Algorithms for Predicting Stock Market Trends [7], the authors compared 9 machine learning models(Decision Tress, Random Forests, Adaboost, XGBoost, SVC, Nave Bayes, KNN, Logistic Regression, and ANNs) and 2 deep learning methods (RNN and LSTM) were used as a way to predict stock market movement. Despite the algorithms’ good performance with continuous values (up to 67% accuracy), their performance with binary data is much higher (up to 83% accuracy). Based on this improvement, we can interpret as follows: the second approach compares each current continuous value using an extra layer.

There have been studies [8] that looked at four datasets (NASDAQ, NYSE, NIKKEL, and FTSE) and seven classifiers (Random Forest, Bagging, AdaBoost, Decision Trees, SVM, K-NN, and ANN) for stock market prediction based on these

- Anil Kumar , Mohan B.A , Geeta Patil, Surekha K B Published a paper title “Machine Learning based framework to predict the Network Usage in Smart Parking Applications” 4th International Conference on Circuits, Control, Communication and Computing(14C - 2022) , 21 - 22 December 2022 , Pages. 432-435

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1.	Surekha K B , Geeta Patil, Mohan B.A, Anil Kumar Published a paper title “Arbitrage: Stock Market Comparative Analysis” 4th International Conference on Circuits, Control, Communication and Computing(14C - 2022) , 21 - 22 December 2022
2.	Anil Kumar , Mohan B.A , Geeta Patil, Surekha K B Published a paper title “Machine Learning based framework to predict the Network Usage in Smart Parking Applications” 4th International Conference on Circuits, Control, Communication and Computing(14C - 2022) , 21 - 22 December 2022 , Pages. 432-435
Dr Veena N, Associate Professor , BMSIT&M Scopus Id 57203956596	
INTERNATIONAL JOURNALS with Scopus Indexed	
1.	Mahalakshmi, S., Ragunthar T., Veena N., Sumukha S., Deshkulkarni P.R. Published a paper title “Adaptive ambulance monitoring system using IOT” Measurement: Sensors, 2022, 24, 100555
2.	Veena N Published a paper title “Framework to Predict Epileptic Seizure Using EEG Signals” 2022/7/14, International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies, Vol 13, Issue 10, Pages 1- 10, Publisher TuEngr.

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Framework to Predict Epileptic Seizure Using EEG Signals

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Keywords:

Electroencephalographic signals (EEG); Random Forest; Epilepsy; Seizure prediction; KNN; SVM; Hybrid algorithm; Detection accuracy of epileptic seizures.

Abstract

Epileptic seizures are neurological disorders seen in many people across the world. There are nearly 10 lakh cases recorded globally every year for this disease. People who are suffering from this disease may cry out, fall, shake or jerk, and become unaware of what is going on around them. Preventing such conditions is very important. We use soft computing methods to predict epileptic seizures from Electroencephalograms (EEG) signals, so that appropriate medication can be suggested. This paper deals with a software tool through which this condition can be predicted and identified, the software tool basically provides an interface for doctors to pass the EEG Signals in the overall seizure prediction process. This paper also deals with a comparative analysis of various algorithms such as Random Forest, KNN (K Nearest Neighbors), SVM (Support Vector Machine) to train the model.

Discipline: Brain Science & Neuroengineering (Electroencephalography).

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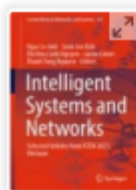
Veena, N., Mahalakshmi, S., Abhijith, B E., Sadanand, A. S. (2022). Framework to Predict Epileptic Seizure Using EEG Signals. *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies*, 13(10), 13A10G, 1-10. <http://TUENGR.COM/V13/13A10G.pdf> DOI: 10.14456/ITJEMAST.2022.196

1 Introduction

Epilepsy is a brain disease that causes uncommon and erratic behavior in the human body (Yuan *et. al.*, 2010). It occurs due to the change that occurs in the brain. Since the brain is the most important organ of our body that controls the entire human activity, any small change that occurs in the brain might cause a severe effect on our body. Each and every cell conducts some value of electric charge that moves around passing messages. Any irregularity can end up causing one or more deterioration in the condition of the human.

INTERNATIONAL CONFERENCE with Scopus Indexed

1. Veena N, Prof. S. Mahalakshmi, , Prof. Ambika Rani Subash & Prof. K. Vinutha Published a paper title “Heart Disease Prediction Using Soft Computing Methods” Intelligent Systems and Networks, 2022



Intelligent Systems and Networks pp 660–668

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Heart Disease Prediction Using Soft Computing Methods

[N. Veena](#), [S. Mahalakshmi](#) , [T. Ragunthar](#), [Ambika Rani Subash](#) & [K. Vinutha](#)

Conference paper | [First Online: 05 July 2022](#)

246 Accesses | 1 Citations

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Abstract

According to WHO reports, heart related problems are the major disease because of humans' food habits and stressful living condition. Health is one of the important aspects of human life. The healthcare system indicates the physical and psychological health of the populace in clinical services and physician expertise, and also the development in drug and medicine administration. As well, it contains several considerable confronts as a consequence of enormous expenditure constraint. In this paper, we premeditated a cloud related Remote Diagnosis and Treatment System by the aid of Artificial Neural Network. According to the patient's verbally composed indication and the Brain waves, the anticipated ANN is used to discover the type and phase of disease. Additionally, we premeditated a cost-effective cloud related treatment system to generate suitable prescription based on the disease.

2. **Prof. S. Mahalakshmi, Dr. Veena N** Published a paper title "Condition Monitoring of a Sprinkler System Using Feedback Mechanism" Lecture Notes in Networks and Systems, 2022

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INTERNATIONAL CONFERENCE

Dr Rakesh N, Associate Professor , BMSIT&M

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Dr. N Rakesh Published a paper title “Covid-19 Social Distancing Detector using Internet of Things” 2022 IEEE International Conference for Women in Innovation, Technology and Entrepreneurship, ICWITE 2022 – Proceedings

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Covid-19 Social Distancing Detector using Internet of Things

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Abstract — The core idea available is IoT, which can be integrated into a traditional communication network to solve many problems. This paper deals with the development of a Social Distance Detector for safety purpose in this COVID-19 pandemic. To keep us safe from maintaining a social distance from people. A detector system is developed to make an alarm while the social distancing is not maintained properly. The detector system is developed by using Tinker cad IoT Simulation software. It is a Circuit design Arduino Simulator created by Soft logic to simulate and assemble. The sensors and tools make the circuit working by embedding Arduino-UNO-R3, ultrasonic sensor, breadboard and Piezo Buzzer.

Keywords– Social Distance, Covid-19, ARDUINO-UNO- R3, Ultrasonic Sensor, Breadboard and. Piezo Buzzer.

I. INTRODUCTION

The Innovation of a Social Distancing Detector using an IoT technique with an Ultrasonic sensor is of made use to develop an alarm while social distancing is not maintained properly. To keep us safe from maintaining a social distance from people in this Covid-19 pandemic. Here, the ultrasonic sensors are designed to detect objects without any physical contact [1] [7].

These sensors are used for many functions, from monitoring the water level to detecting proximity to objects. Ultrasonic sensors have become the basis for the spread of IoT and are widely used to create intelligent and embedded products [2].

In public health, social dissociation, also known as physical dissociation, is a set of activities that prevent the spread of an infectious disease by maintaining physical separation between persons who are in close contact with each other. [12]. During the period of COVID-19 pandemic, the World Health Organization (WHO) recommended maintaining the social distance over the fact that social exclusion prevents infection [3][13]. To slow the spread of the disease and avoid the provision of overweight medical services, especially during epidemics, a number of social isolation measures have been used, including school and work closures, isolation, isolation Restrictions on movement and cancellation of public gatherings. Although the term social isolation was introduced in the 21st century [4][9]



Fig 1. Maintaining a Social Distance

1.

Dr. N Rakesh Published a paper title "A Proposed Academic Chatbot System using NLP Techniques" 2022 6th International Conference on Trends in Electronics and Informatics (ICOEI)

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A Proposed Academic Chatbot System using NLP Techniques

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Abstract - A chatbot is a computer program that can converse through a textual or auditory user interface. A chatbot is capable of answering academic and non-academic queries of a user visiting a college's website. A chatbot eases the work of university staff. A chatbot is capable of answering the queries generated instantaneously anytime without any involvement of human activity. A user can gain access to required relevant information efficiently with the help of a chatbot. It's almost not possible for the user to differ between a chatbot and a user.

Keywords - converses, appropriate answers, ease the work, available any time, immediate response.

I INTRODUCTION

A chatbot is a computer program that can converse through a textual or auditory user interface. A chatbot is a quicker and more interactive way to navigate and get the required information. The chatbot eases the work of the University staff. A chatbot will not have time constraints like a real human being physically present at the university. Most of the time, using a chatbot is quicker than navigating and finding what the user requires. If the user is accessing the website for the first time, it'll be difficult to navigate through the website and find relevant information properly. The solution is to create a chatbot that can navigate the University website quickly, and accurately to the user. A chatbot can act as an effective medium to answer queries generated by website users.

II OBSERVATION

A chatbot is a program that has the ability to converse with humans through the auditory or textual user interface. It is a small program that can communicate using human language. It is like conversing with another human. The reason chatbots were made was to recreate talking to a human but through a computer program [1]. To converse with a chatbot one may use various user interfaces like menu-driven, graphical user interface (GUI), form-based, command line, natural language, etc. but the most common ones are web-based chatbots and

GUI-based chatbots. Though those are the commonly used means, a need for alternatives does arise. A chatbot is a computer program that can have the purpose of chatting with a human being. The user can use GUI to interact with them or use widgets. Users do prefer widgets. Usually, chatbots do succeed at what they aim for [2]. A chatbot can be used to do various tasks like having conversations, giving a suitable answer for the query, and giving and giving employee details. They can also provide links to the query asked, raise tickets, answer frequently asked questions (FAQs), calculate university fees, and provide location and contact details. [3]. It is not very easy to implement a chatbot as various problems arise with it. One of the major reasons is cost. Many free-to-use chatbots are available for a short duration but then they charge the user. Another very important challenge is the security of the user. Any user giving their personal information to a chatbot will expect a certain level of privacy with their data [4]. Apart from the textual user interface, the use of conversing through dialogues is becoming more common in recent days. Using it now has become easier and more efficient. This is because of the use of NLP and AI [5]. The main aim of a Chatbot is to reduce the search time of users. They also make websites more user-friendly and reduce the time which might be important when the user is in a hurry [6]. Some individuals might need facilities like text-to-speech as they are facing issues seeing. These interactions rely on how fluently the device is able to speak the output [7]. Anyone should be able to use a chatbot on a university website. With the use of Artificial Intelligence, the process becomes much easier. The user can ask any query he so desires, and his input is applied to an algorithm. This input is then processed. Depending on the calculation, an output is generated for the user. The interface created is user-friendly and anyone familiar with a mobile application will be able to use it [8].

2.

3. Dr. N Rakesh Published a paper title “A Novel Approach in Credit Card Fraud Detection System Using Machine Learning Techniques” 2022 6th International Conference on Trends in Electronics and Informatics (ICOEI)

A Novel Approach in Credit Card Fraud Detection System Using Machine Learning Techniques

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- I. Introduction
- II. Observation
- III. Proposed Methodology
- IV. Results
- V. Conclusion
- Authors
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- References
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- Keywords
- Metrics

Abstract:
With the rapid expansion of daily life, the use of credit cards for online purchases is steadily increasing and credit card fraud is on the rise. Nowadays, in the social distancing environment, due to covid-19, online shopping has become important. Credit card credentials are used to make online payments, and then deduct money which does not involve any contact and makes people's life difficult. Because of this, finding the most effective method of detecting scams in online systems is essential. To prevent customers from being charged for goods they have not purchased, credit card companies must be able to identify fraudulent credit card transactions. Therefore, there are several theories either completed or proceeding to detect these kinds of frauds. This study is an approach to identify non-legitimate transactions using semi-supervised machine learning models by explaining how to deal with imbalanced datasets, using a wide variety of models to better understand which ones work better.

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Date of Conference: 21-22 December 2021 **DOI:** 10.1109/FABS52071.2021.9702672
Date Added to IEEE Xplore: 09 February 2022 **Publisher:** IEEE
► ISBN Information: **Conference Location:** Bengaluru, India

SECTION I. Introduction

Recently, online purchases using credit cards have increased drastically, people are not generally aware of a probable fraudulent transaction that could happen to them. Credit card security is determined by the card's physical characteristics and the privacy of the card number. As a result of globalization and the growth of Internet-based commerce, worldwide credit card purchases have increased. In addition to the rapid increase in credit card purchases, another important factor contributing to the increase in fraud is credit card fraud. The term credit card fraud is a broad term to refer to theft and fraud committed as a source of fraudulent funding in a particular interaction using a credit card. Theft and fraud are committed in a given transaction using a payment card as a fraudulent source of funds. A vast range of methods to conduct theft are used by Credit Card Fraudsters. To successfully combat credit card fraud, it is important to have a basic understanding of the process of detecting credit card fraud. Due to numerous credit card fraud monitoring and avoidance mechanisms, credit card fraud has stabilized a lot over the years. However, cardholders use fake transactions to scam bank cash. External card fraud, on the other hand, is primarily expressed in the use of stolen fraudulent, stolen credit cards to consume or obtain cash in concealed ways, such as buying valuable, limited amounts of products or items that are easy to sell in cash. This project will specifically explore & analyze the development of a machine learning-based fraud detection system.

SECTION II. Observation

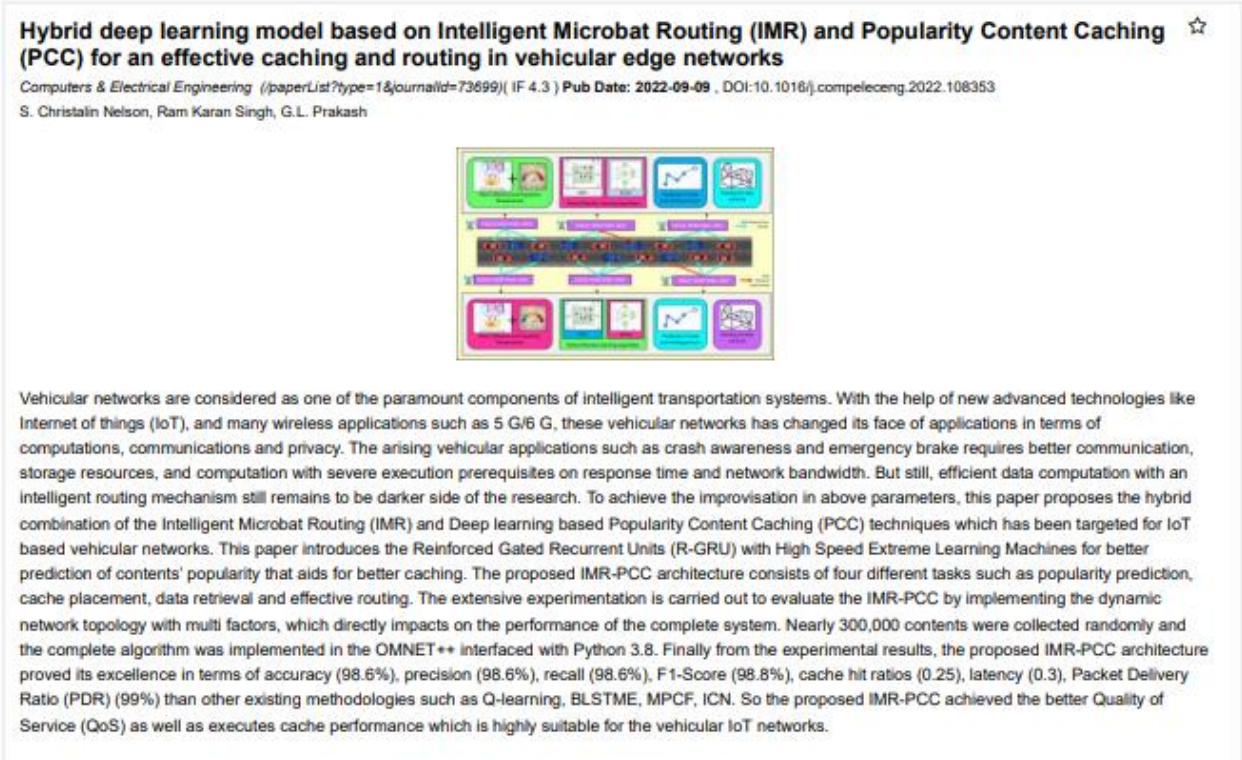
Fraud detection by MasterCard is a serious drawback according to Bhattacharyya. In observed studies, the utilization of information mining approaches for detecting credit card fraud is comparatively low, most likely due to a lack of readily available information [1]. By using authority and mobility to simulate synthetic data, they can remove customer privacy and security restrictions associated with real data when financial fraud is detected. To do this, researchers and the general public need to create a simple set of



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INTERNATIONAL JOURNALS with Scopus Indexed

1. **Christalin Nelson, S., Singh, R.K., Prakash, G.L.** Published a paper title “Hybrid deep learning model based on Intelligent Microbat Routing (IMR) and Popularity Content Caching (PCC) for an effective caching and routing in vehicular edge networks” *Computers and Electrical Engineering*, Volume 103, October 2022 108353
 DOI:10.1016/j.compeleceng.2022.108353



The screenshot shows the title, authors (S. Christalin Nelson, Ram Karan Singh, G.L. Prakash), journal name (Computers & Electrical Engineering), and a diagram of the IMR-PCC architecture. The diagram illustrates a flow from content popularity prediction to cache placement, data retrieval, and effective routing, involving components like R-GRU and HSELM.

Vehicular networks are considered as one of the paramount components of intelligent transportation systems. With the help of new advanced technologies like Internet of things (IoT), and many wireless applications such as 5 G/6 G, these vehicular networks has changed its face of applications in terms of computations, communications and privacy. The arising vehicular applications such as crash awareness and emergency brake requires better communication, storage resources, and computation with severe execution prerequisites on response time and network bandwidth. But still, efficient data computation with an intelligent routing mechanism still remains to be darker side of the research. To achieve the improvisation in above parameters, this paper proposes the hybrid combination of the Intelligent Microbat Routing (IMR) and Deep learning based Popularity Content Caching (PCC) techniques which has been targeted for IoT based vehicular networks. This paper introduces the Reinforced Gated Recurrent Units (R-GRU) with High Speed Extreme Learning Machines for better prediction of contents' popularity that aids for better caching. The proposed IMR-PCC architecture consists of four different tasks such as popularity prediction, cache placement, data retrieval and effective routing. The extensive experimentation is carried out to evaluate the IMR-PCC by implementing the dynamic network topology with multi factors, which directly impacts on the performance of the complete system. Nearly 300,000 contents were collected randomly and the complete algorithm was implemented in the OMNET++ interfaced with Python 3.8. Finally from the experimental results, the proposed IMR-PCC architecture proved its excellence in terms of accuracy (98.6%), precision (98.6%), recall (98.6%), F1-Score (98.8%), cache hit ratios (0.25), latency (0.3), Packet Delivery Ratio (PDR) (99%) than other existing methodologies such as Q-learning, BLSTME, MPCF, ICN. So the proposed IMR-PCC achieved the better Quality of Service (QoS) as well as executes cache performance which is highly suitable for the vehicular IoT networks.

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Indonesian Journal of Electrical Engineering and Computer Science
 Vol. 26, No. 1, April 2022, pp. 342-351
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Improvised convolutional auto encoder for thyroid nodule image enhancement and segmentation

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ABSTRACT

Thyroid ultrasonography and thermography are a widely used clinical technique for nodule diagnosis in thyroid regions. However, it remains difficult to detect and recognize the nodules due to low contrast, high noise, and diverse appearance of nodules. To alleviate doctors' tremendous labor in the diagnosis procedure, we advocate a machine learning approach to the detection and recognition tasks in this paper. Moreover, this research mainly focuses on segmenting the image and finding the probable region. In this research work an improvised convolutional auto encoder (ICAE) is introduced for segmenting the image and finding the probable region of thyroid gland and it enhances image. ICAE comprises various layer and mechanism, each having their own task. Apart from the traditional approach, skip connection is applied for the image enhancement and dual frame is introduced for better feature extraction. Further optimization technique is used for increasing the learning rate. ICAE is evaluated considering digital database thyroid image (DDTI) dataset with performance metrics like accuracy, true positive rate, false positive rate, dice coefficient and similarity index (SI); also, comparative analysis is carried out with various existing model and proposed model simply outperforms the existing model.

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1. INTRODUCTION

In last decade, thyroid cancer growth has been unanimous and further growth rate is 4.5% i.e., higher than any other cancer [1]; moreover, in the year 2019, nearly 54,000 new thyroid cancer has been reported in the USA alone and nearly 2060 people passed away due to this. Furthermore, it is observed that chances of turning benign to malignant with a rate of 4.5%-6% [2]; hence several health task force recommends the screening of thyroid cancer which includes ultrasound and neck palpation in asymptomatic people [1]. However, screening process faces huge issues, this causes thyroid nodules to opt for a various method such as computed tomography, ultrasonography and magnetic resonance imaging (MRI); ultrasonography is one of the popular diagnostic tools as it is easily available and inexpensive. Ultrasonography not only differentiate among solid nodules consisting of cystic components, but it also deals with nodule pathology. Moreover, ultrasonography increases more indication of increased malignancy risk which includes microcalcification, extrathyroidal margins, wide nodules and hypoechoic solid nodules and further, it ignores round shape, cystic composition, smooth margins, spongiform appearance, and echogenicity that are associated with benign disease [3], [4].

Journal homepage: <http://ijeecs.iaescore.com>

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7/7/23, 9:06 AM

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Measurement: Sensors
Volume 24, December 2022, 100555

Adaptive ambulance monitoring system using IOT

S. Mahalakshmi^a, T. Ragunthar^b, N. Veena^a, S. Sumukha^a, Pranav R. Deshkulkarni^a

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Abstract

- With the increase in the number of automobiles in urban cities, the number of accidents has increased manifold. Hence, the need for ambulances is increasing at an alarming rate. In order to increase the survival rates of the patients, an efficient communication of ambulances with the hospital and routing of the ambulances at the signal posts is very essential. Hence, the proposed architecture is distributed in nature. The system not only provides effective communication between the ambulance and the hospital but also helps the ambulance send the signal to nearby traffic signal posts to open up so that the ambulance can easily pass through saving ample amounts of time. The signal posts use a camera to detect the incoming ambulance and open up that lane so that the ambulance need not spend much time waiting for the traffic to get cleared.

Previous

Next

1. Introduction

Reducing the travel time of ambulances to increase the chance of casualty's survival has always been a challenge, especially in the urban cities due to high traffic congestion. Ambulances often spend time waiting at signal posts which reduces the chances of survival of the patient. Moreover, when it comes to accidents, every year, India accounts for 5 lakh accidents which is the world's highest. Also there have been many situations where the ambulance couldn't reach the accident spot or the hospital on time due to the traffic congestion. According to statistics, around 68% of traffic congestion occurs due to the signals.

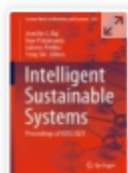
In order to avoid this, we need a system that can not only detect the ambulance but also provide effective communication with the upcoming signals so that the ambulance need not spend much time waiting at the signal posts. Effective communication with nearby hospitals can potentially help the hospital to keep track of the ambulance location and also arrange for the required facilities such as beds, surgeons, etc before the ambulance arrives. Effective communication with nearby ambulances can help in case of ambulance breakdown, so that the patient can be shifted from this ambulance to another easily. We have planned for a system that can provide a solution to the following problem and also provide effective communication with the hospital so that the hospital can be kept updated with the ambulance location and other information. The system uses long range transmission modules set up at the traffic signals to communicate the information received from the ambulance with other signal posts forming a closed loop so that the required information is eventually received by the nearest hospital.

Our project contributes to the society by providing faster access to reach the accident spot as well as the hospital by clearing the traffic at signals as the ambulance reaches the signal so that it can easily pass through. This can save many human lives as time is very precious when it comes to medical emergencies.

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Intelligent Systems and Networks, 2022

Prof. S. Mahalakshmi, Dr. Veena N Published a paper title “Condition Monitoring of a Sprinkler System Using Feedback Mechanism” Lecture Notes in Networks and Systems, 2022



Intelligent Sustainable Systems pp 503–514

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Condition Monitoring of a Sprinkler System Using Feedback Mechanism

[S. Mahalakshmi](#) ✉, [N. Veena](#), [S. Guruprasad](#) & [Pallavi](#)

Conference paper | [First Online: 27 August 2021](#)

546 Accesses

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2. Abstract

In India, traditional irrigation techniques, those that are operated by hand, are used widely because of their low price. There are different kinds of ways of irrigating fields. An automatic irrigation system isn't thus rife here. The proposed system permits versatile management of mechanical device valves for releasing water to fields, and data concerning the current standing and quantity of water discharged is distributed to the user by an app through the online server which acts as an information collector of this method. A mobile application is employed to indicate the action performed within the garden. The proposed solution provides simple and versatile management of irrigation methods and provides optimum water consumption. The shrewd sprinkler water system innovation depends on real water needs. This framework can be modified to naturally begin a set time and day consistently. Little versatile sprinklers can be incidentally positioned on gardens if extra watering is required or if no perpetual framework is set up. The framework has been effectively picked, actualized, and worked in the field. The framework setup has been changed to meet the water necessities as per the yield development stages. Using IoT for water management systems can be extended out to different techniques in irrigation. It helps to reduce human involvement in irrigation.

Prof. S. Mahalakshmi , Dr. Veena N, Prof. K. Vinutha Published a paper title “Automated Identification of Car Parking Slot and Bill Generation System” Proceedings of the International Conference on Electronics and Renewable Systems (ICEARS 2022)

DOI: 10.1109/ICEARS53579.2022.9751849

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Abstract

Abstract:It is a very common problem to wait outside a parking lot and look for any space available to park the vehicles. This overtime will be irritating and time consuming espec... [View more](#)

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- II. Literature review
- III. Proposed system
- IV. Implementation
- V. Conclusion

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Abstract:

It is a very common problem to wait outside a parking lot and look for any space available to park the vehicles. This overtime will be irritating and time consuming especially in traffic rich cities like Bangalore, Delhi etc. Parking Management App is a parking solution which solves the above problems by providing the user with the details of available space in the lot and calculating the amount accurately with the parameters of entry time and exit time. The app keeps history of all the vehicles parked at any parking spot with specific date and time. Parking lot managers can keep track of the vehicles entering their parking area and can utilize the built-in billing system. The project is being implemented using Android Studio and Firebase. Android Studio is a software for writing android apps and Firebase is a cloud storage platform by Google. Java and Extensible Markup Language (XML) were used as backend programming languages. The main idea behind the project was to develop a simple and user-friendly app to help the vehicle owners to find nearest parking lots.

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Intelligent Sustainable Systems pp 223–238

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Maximization of Disjoint K-cover Using Computation Intelligence to Improve WSN Lifetime

[D. L. Shanthi](#)

Conference paper | [First Online: 23 August 2022](#)

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Abstract

WSNs have been used in different sectors of applications such as industrial, environmental, and social due to the progress of technology and the necessity. Because the network's sensors are restricted by battery power, network operations are important. The life extension of a wireless sensor network has been explored in this study by locating a large number of disjoint set coverings. All of the targets were covered by each separate group of sensors. Instead of maintaining all sensor nodes in operation, the only way to prolong the service life by about K times is to use the sensors of one cover while the sensors of the other covers are in sleep mode. This approach saves both energy and time by processing useful data and reducing duplicate data coming from different sensors in a region. Different configurations of sensor networks have been tested using an evolutionary computation-based computer intelligence technique, as well as a genetic algorithm and

1.

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Original Article

Pneumonia Detection Using Novel Deep Learning Techniques

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²Assistant Professor of Computer Science, College of Horticulture, UHS Campus, Karnataka, India
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DOI: [10.47750/pnr.2022.13.S09.131](https://doi.org/10.47750/pnr.2022.13.S09.131)

Abstract

1. Pneumonia is one of the leading infectious disease that can kill children and elderly people around the world. The development of an automated system to detect pneumonia would be advantageous, especially to enable treatment of this disease in remote areas without much delay. pneumonia is a lung infectious disease which mainly affects the small air sacs known as alveoli. The main symptoms of pneumonia includes cough, fever and breathing problems . Aged people, children and persons who have medical problems are the main victims of this disease. Around 450 million people are affected by this disease on an average of each and every year. The most commonly used technique for diagnosing this disease is chest X-ray imaging. Chest X-ray examination is complex procedure to detect the disease because it involves lots of vulnerabilities. With latest advances in technologies we can use deep learning algorithms to detect the disease using chest x ray images. To deal with the scarcity of data, we used Deep Transfer Learning and designed the Hybrid Algorithms. The images of the chest X-rays were fed into the individual algorithms for training purposes. Parallel Deep Feature Extractors are used in conjunction with various algorithms. For classifying chest X-ray images into normal and pneumonia, Here we are proposing an hybrid model based on VGG16, VGG19, CNN, and Mobile Net networks. Individual image classification algorithms were combined to form a hybrid model .In comparison to individual algorithms, the new Hybrid Model with Deep Learning achieved higher accuracy than existing methods.

Keywords: VGG16, VGG19, Mobile-Net Convolution Neural Network

1. Introduction

Pneumonia is a severe disease caused by infections inside the lungs, It is an important respiratory organs. These infections, which can occur in one or both lungs, Infection is mainly by viruses, fungi and bacteria. The infection can block air sacs inside lungs preventing them from receiving oxygen-rich air. Hence the patient's breathing would be difficult and dangerous. Pneumonia is a severe disease that causes the air sacs in one or both lungs to become inflamed. Every year, it kills more children under the age of five than any other infectious disease, including HIV infection, malaria, and polio. One or more visual and/or auditory stimuli or tuberculosis may be provided by the pneumonia screening device. The model we are proposing here has achieved 99.47 accuracy, it is good enough compared with existing models. Pneumonia is mainly caused by a variety of bacteria, viruses, and fungi, the most familiar of which is Streptococcus pneumonia. Pneumonia is a Infectious disease that easily spreads among the members of the society.

Other characteristics that a pneumonia victim experiences include cough, chest pain and fever. Based on the criticality, the person's age, immunity factors, the effects of this disease can vary from moderate level to organ failure.


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INTERNATIONAL CONFERENCE with Scopus Indexed

1. **Dwarakanath G.V, Sudarsanam P, Bhanuprakash R, Kushalappa T.S and Yadav A.**
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RESEARCH ARTICLE | AUGUST 17 2022

IoT based manhole cover management

[Dwarakanath G. V.](#) ; [Sudarsanam P.](#); [Bhanuprakash R.](#); [Tanuj S. Kushalappa](#); [Antima Yadav](#)



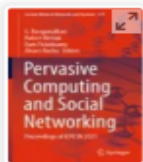
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AIP Conf. Proc. 2461, 020006 (2022)
<https://doi.org/10.1063/5.0092401>

In today's world, cities are turning into smart cities and we are heading towards urbanization. Technologies are being created every day to make our lives easier, new ways to implement them are introduced every minute. Water, electricity, communication, transportation, underground system are the parameters which are considered. Technologies are implemented to use them efficiently, reduce the cost and make it better.

In our cities, the drain water is being recycled and purified to use them. Water pipelines are placed below the roads and building which will lead to outside the cities to recycle them. These drainage systems should have proper flow of the drain water, if there is block the drain water will be on roads which will have a bad odor and also unhygienic, the environment of smart city has to be clean and hygienic to maintain the dignity of the city. So we have to maintain these systems, in order to do this, we have check whether there is block, if the lid on the road are closed, if there is any damage in the pipeline. This can't be executed frequently and throughout the city. If there is a problem in these systems, people has to call the authority. Since the draining system is underground, the problem can be detected only when the drain water in on the road. Managing these underground systems are challenging.

So we are proposing a system through IoT by placing sensors under the cover of the drainage to notify the concerning department before any problem is occurred, so it can be rectified beforehand. There are three sensors implemented to detect the main problems of the drainage system such as blockage, drain water overflow, the cover of the drainage is not closed properly or damaged, any harmful gases are present in the drainage that might cause fire, etc. and an interface to communicate, where notification gets to the municipal office. The idea is to notify if any problem is going to occur beforehand. By implementing our project to these drainage systems it will be solving few problems that we are facing because of the manual management of the drainage system.

2. **Sudarsanam P** Published a paper title “Fault-Tolerant Cluster Head Selection Using Game Theory Approach in Wireless Sensor Network” Lecture Notes in Networks and Systems book series (LNNS,volume 317), 2022



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Fault-Tolerant Cluster Head Selection Using Game Theory Approach in Wireless Sensor Network

[R. Anand](#) , [P. Sudarsanam](#) & [Manoj Challa](#)

Conference paper | [First Online: 01 January 2022](#)

557 Accesses

Part of the [Lecture Notes in Networks and Systems](#) book series (LNNS,volume 317)

Abstract

The present cluster head selection is fixed as a static node, so the cluster head becomes malicious the entire cluster communication is discarded in wireless sensor networks (WSNs). As per our new approach, the cluster heads are using fault tolerance schemes supports for selection cluster head through the game theory. This process may take additional energy to detect malicious cluster heads and to recover the network communication in the cluster. This article proposes fault-tolerant backup cluster head (BCH) selection influenced by game theory in wireless sensor networks WSNs by utilizing less energy. In WSNs, the malicious cluster heads can be exhibited efficiently using game theory through the different network conditions such as scalability, mobility, and energy utilization. Due to scalable WSNs, the cluster node is increasing in the cluster head becomes malicious thus network lifetime is reduced. So, the fault-tolerant BCH technique is incorporated to increase the lifetime of WSNs. So, the efficiency

3. **Sudarsanam P** Published a paper title “Learning of Advanced Telecommunication Computing Architecture (ATCA)-Based Femto Gateway Framework”



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Learning of Advanced Telecommunication Computing Architecture (ATCA)-Based Femto Gateway Framework

[P. Sudarsanam](#) , [G. V. Dwarakanatha](#), [R. Anand](#), [Hecate Shah](#) & [C. S. Jayashree](#)

Conference paper | [First Online: 16 July 2021](#)

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Part of the [Lecture Notes in Networks and Systems](#) book series (LNNS, volume 209)

Abstract

A case study of designing advanced telecommunication computing architecture (ATCA) framework using femtocells. A small cell is smaller than the expected base station, explicitly intended to broaden the information capacity, speed, and proficiency of a cell arrange. These low force radio access hubs can be sent inside or outside, and utilize authorized, shared, or unlicensed range. The femtocell gateway architecture is designed for a small range such as 10 m to a few kilometers. Small cells can be utilized to give in-building and open-air remote help. Mobile operators use them to expand their service coverage and additionally increment network limits. Small cells are downsized, low force, lightweight remote access base stations that are found regularly inside homes, workplaces, and shopping centers.

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Effective Communication Between Differently Abled And Normal People Using Speech To Sign Translation System

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Abstract

There are very less way of communicating between a differently abled person i.e. deaf and dumb also called as hearing impaired and normal people. Communications from deaf and dumb to normal people are done in many ways but from normal people to hearing impaired people have not been much. What we say cannot be understood by the deaf and dumb people so a system should be made so that a deaf and dumb person can understand the voice of normal people. The voice will be converted to sign language so that deaf and dumb people can easily understand. Machine learning techniques will be used to implement this with the help of Google API for voice recognition and then the Natural Language Processing is used. The voice will be broken into sentences or words and then the context of natural language processing will come into picture. The text will be compared with the gifs generated, if found the gifs will be shown as output or else letter by letter mapping will be done so the hearing impaired people can understand the voice through sign language. This is very important for the hearing impaired people. This helps hearing impaired people a lot because they can easily understand what the normal people are telling and for their daily life it will be very helpful. The system is tested with the number of data samples. As data samples increases, the accuracy of the model is said to have gone up as well.

Keywords: Sign language, Machine Learning, Natural Language Processing, Animations.

1. Introduction

Sign Language also called as signed language are the languages which are mainly used by deaf and dumb people also known by hearing impaired people. It can be easily presented through combination of hand shapes, movements of hands, arms and also of body with the facial expression change. It is mostly used by the people who have a problem of hearing and speaking called as differently abled people or hearing impaired in another word. They use sign language to communicate with everyone so people who communicate daily with the hearing impaired people need to learn sign language for now. The very basic need of deaf and dumb people i.e. hearing impaired people is to learn the sign language for their social need also.

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1. **Veena N, Prof. S. Mahalakshmi , Prof. Ambika Rani Subash & Prof. K. Vinutha** Published a paper title “Heart Disease Prediction Using Soft Computing Methods” Intelligent Systems and Networks, 2022
2. **Prof. Ambika Rani Subash** Published a paper title “Quantitative Analysis of Sustainable Energy Based Charging Systems” ICDCS 2022 - 2022 6th International Conference on Devices, Circuits and Systems.

Quantitative Analysis of Sustainable Energy Based Charging Systems

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Abstract - In today's world, the most rapidly growing technology is the mobile phone. People rely on mobile phones for communication, web surfing, entertainment, finance (e-wallets) and navigation among many other purposes. The most important element which keeps the mobile phone alive is its battery. These mobile phones use rechargeable batteries which are recharged through a power source, adapter and a wire after the battery has drained out. It is very inconvenient to charge a mobile phone outdoors where a power source is not accessible. Nowadays, wireless chargers and power banks are also used as a substitute to the conventional way of charging. But these methods have proven to be inefficient. There is a lot of research and experimentation going on to provide a more effective and portable method to charge the mobile phone. Though people have come up with innovative projects which involve the use of solar energy, thermoelectric energy etc., there is a great demand for new technology which drastically changes the way we charge our mobile phones. In this paper, various existing portable mobile charging techniques are discussed and highlighted their limitations. Further we have pinpointed the future scope in this field.

Keywords: *Mobile phone, Charger, Battery, Renewable source.*

I. INTRODUCTION

We live in a contemporary world, where mobile phones have become so prevalent in our daily lives to all age groups starting from toddlers to elderly people. We start our day in the morning waking up to pre-set alarms in our mobile phones. We use the mobile phones to scroll through social media, listen to music, play games, order food, check news

updates, shop online and finally review the day's activities by the end of the day. Almost all the features like camera, television channels, MP3, radio, instant messenger, social media, gaming, to pay bills, book cabs, manage stocks, GPS for navigation purposes, OTT platforms are all implanted in a single device with incredible mobility and a pervasive connectivity to the internet. It is believed that technology of smartphones is growing parallel to the acquisition of knowledge. The rapid growing technology of mobile phones has facilitated communication with each and everyone from anywhere in the world in an instant. In 2017, the number of smartphone users worldwide was estimated to be around 3.8 billion which occupies 48.33% of people in the world. After a span of just 3 years, it is estimated to be around 4.8 billion and 62.07% of people are on mobile phones today.

Battery is the most critical part of a mobile phone. Nowadays there are different types of batteries. Their quality and capacity decide how long the operation of a mobile phone can be prolonged with single charge. Mobile Charging is one of the trending topics in the field of electronics. There are three common conventional methods for charging these mobile batteries with or without smart circuits. They can be constant voltage, constant current and by both constant voltage and current. These days, everyone needs a fast-charging method in their busy scheduled lives. Thus, the battery chargers have to be carried everywhere to keep the mobile battery alive. But there are drawbacks in these chargers. Wired chargers are limited to a certain distance. When there is no power supply, we cannot charge our mobile phones

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1. **Shaymrao, S.M., Krishnaraju, P.S., Mahalingappa, T., Narayanappa, M.T.** Published a paper entitled "Design and development of anonymous location based routing for mobile ad-hoc network" International Journal of Electrical and Computer Engineering, 2022, 12(3), pp. 2743-2755

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Design and development of anonymous location based routing for mobile ad-hoc network

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Optimal tug of war partition
Strong secure anonymous location based routing

ABSTRACT

Mobile ad-hoc network (MANET) consists of wireless nodes interacting with each other impulsively over the air. MANET network is dynamic in nature because of which there is high risk in security. In MANET keeping node and routing secure is main task. Many proposed methods have tried to clear this issue but unable to fully resolve. The proposed method has strong secure anonymous location based routing (S2ALBR) method for MANET using optimal partitioning and trust inference model. Here initially partitions of network is done into sectors by using optimal tug of war (OTW) algorithm and compute the trustiness of every node by parameters received signal strength, mobility, path loss and co-operation rate. The process of trust computation is optimized by the optimal decided trust inference (ODTI) model, which provides the trustiness of each node, highest trust owned node is done in each sector and intermediate nodes used for transmission. The proposed method is focusing towards optimization with respect to parameter such as energy, delay, network lifetime, and throughput also above parameter is compared with the existing methods like anonymous location-based efficient routing protocol (ALERT), anonymous location-aided routing in suspicious MANET (ALARM) and authenticated anonymous secure routing (AASR).

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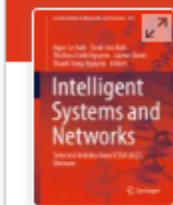
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INTERNATIONAL CONFERENCES with Scopus Indexed

1. Mahendrakar ShyamRao, S., Danti, R., Manjunath Thimmasandra Narayanappa, Published a paper title "Classification of Malicious Websites Using Feature Based Machine Learning Techniques" Lecture Notes in Networks and Systems, 2022, 471 LNNS, pp. 581–590



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Classification of Malicious Websites Using Feature Based Machine Learning Techniques

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Conference paper | [First Online: 05 July 2022](#)

357 Accesses

Part of the [Lecture Notes in Networks and Systems](#) book series (LNNS, volume 471)

Abstract

The start of the COVID-19 pandemic has revealed a huge increase in malware sites. The rising instances of phishing, spamming and malware have created a key requirement for a robust mechanism which can precisely detect and classify malicious URLs. Conventional classification methods such as blacklisting and signature-based detection are not adaptive due to enormous volume of data, innovations and technology changing over time, along with complicated features. In this work, we propose a feature-based machine learning system for the malicious URLs identification as a two-class problem and assess the performance of ML classifiers namely Random Forest classifier and Support Vector Machine. We have utilized a Kaggle dataset consisting of 72000 URLs for training our ML model. This research highlights various view-points related to the URL classification process which classifies the objective site as malicious or benign. Proposed method has wide applications in cyber security applications as well as cyber forensic investigations.


2. **Muneshwara, M.S., Swetha, M.S., Anand, R., Pushpa, S.K., Manjunath, T.N.** Published a paper title “IOT-Based Smart Street Light Control Application for Smart Cities” Lecture Notes in Networks and Systems, 2022, 311, pp. 321–333



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IOT-Based Smart Street Light Control Application for Smart Cities

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Conference paper | [First Online: 11 January 2022](#)

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Abstract

The primary aim of smart streetlights system is to conserve electricity by reducing the wastage of electricity which in turn helps in reducing the manpower. Streetlights are often lit up all night even when unnecessary i.e. when no one is around which wastes huge amount of electricity. Electricity which can be used productively elsewhere. In a manual streetlight system, the streetlights are switched on with full intensity from sunset to sunrise. There is no variation in intensity even when it is not needed. Hence electricity is wasted. This can be avoided by installing a smart street lighting system which can detect when to increase the intensity or completely turn off the lights. This can be achieved with the help of motion detectors which can detect any moving objects like cars, people or animals. Smart streetlights can also serve many other purposes. This system will also be equipped with a depth sensor which can detect flooding in the streets and send data regarding this to a server which can in turn warn the vehicles intending to travel through that area. This would help in preventing accidents.

3. **Swetha, M.S.** Published a paper title “Developing Virtual Police Station to Receive FIR through Digital Signature” Proceedings - 2022 6th International Conference on Intelligent Computing and Control Systems, ICICCS 2022

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Developing Virtual Police Station to Receive FIR through Digital Signature

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Abstract: The most recent innovations throughout every different sectors such as education, commerce, agribusiness, communication, banking and other such real-time applications. Currently, the Indian Police Department is using the traditional “pen and paper” method for all document works performed at the initial stages of the cases. This method was convenient in the earlier days but as the population is increasing and lawbreakers and dishonest events in the general public are on the rising trend, many cases are being enrolled. This has made it difficult to physically deal with the cases and all of their associated paperwork. The traditional method of visiting the police station and lodging a grievance and updating individually is a lengthy and time-consuming process. This might be replaced by an internet-based process. As a result, an E-Police station is being established, where the basic data regarding the incident and complaint is recorded or can be fed by the citizens through a web/mobile application, which can then be tracked from the department side directly in online mode. As the complete process happens in online mode, this method will deliver a more efficient service from police department to the general public. The proposed article describes the process of creating a Virtual Police Station to receive complaints by using a digital signature.

Keywords: Indian Police, E-Police, Virtual Police Station, Digital Signature, E-Crime management, Public Key Cryptography Architecture, ASP.NET, Factor Graph Method, Convolution Neural Network algorithms

1. INTRODUCTION

The E-Police station concept has been introduced by concerning the difficulties faced by the common people during the physical complaint registration process at any police station. It should be mentioned that in the current condition of the police system, one must submit a complaint by physically going through many procedures. This process consumes more time, money, and even energy. [1] As corruption is at an all-time high in India, it is considered as one of the factors that generate a concern for filing a complaint, particularly against a powerful individual, is that the system makes police officers hesitant to take complaints, which may lead to corruption and other unethical situations. [2] Another thing is that the internal management

system of the traditional police department complaint database is not transparent, free and unreasonable. [3] There is also a huge gap between the crime rate and the filing rate of FIRs, and even the lack of coordination between internal departments has led to delays in investigation. [4] There ought to be set up of a 'Third Eye' programming in the remarkable bits of the police office with the true that it helps the police administrators to screen terrible conduct and criminal records. [5] So by keeping these focuses a system have been proposed to foster a framework which gives an effectively available versatile application which shapes the frontend and an online interface for the police division. [6] It is an attempt to overhaul the police administration system. It will boost the confidence of citizens in the machinery. [7] It permits the police and public to go into each room of an electronic police headquarters to investigate and gain proficiency with the key systems like capture, enlistment of grievances of rape, enrollment of FIRs and that's only the tip of the iceberg. [8] Finally the imaginative and prescient and mission of police department is to offer support to all residents and make a superior and extra comfortable spot to stay and paintings at the same time as the missions are to transfer the ideas and law, to assure wellbeing and safety of resident, to prevent and become aware of wrongdoing, to address insults and to maintain concord and public manipulate. [9] To utilize the data innovation, Government of India supported the plan, improvement and execution of a 'Administration to Government (G2G), model called the Crime Criminal Information System (CCIS). The CCIS was designed to create computerized storage, analysis and retrieval of crime criminal records [10] The Crime Criminal Information System today is in activity in all the States. In CCIS, the data is gathered at area level not at fundamental unit of police organization for example the police headquarters. Normal Integrated Police Application (CIPA) was created with objective of automates the cycles (work process) at police headquarters and to give contributions to building CCIS. [11] Segmentation is not a project that can be left out by means of the government. In order to stumble on the groups involved, a dialogue ought to be set up with them, they must input internet groups. [12] Incidents of paperwork getting misplaced, broken, compromised or leaked and so on. Are growing each day. All those incidents have shattered the Self-belief of humans within the law. [13] The discontent among human beings has extended and the call for green obvious police system has grown with the usage of technology to

4. **Swetha, M.S.** Published a paper title “Emergency Medical Services Using Drone Operations in Natural Disaster and Pandemics” Lecture Notes in Networks and Systems, 2022



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Emergency Medical Services Using Drone Operations in Natural Disaster and Pandemics

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Abstract

The recent innovations in Unmanned Aerial Vehicles (UAV) have the potential to revolutionize the healthcare sector especially in the domains of medical service delivery and transportation. In order to accomplish such task, drones are employed to deliver healthcare products such as drugs and medical kits to the patients without any physical contact. This method reduces the total time taken for the delivery of the drugs. By implementing the proposed unmanned systems, inaccessibility would no longer pose a threat to the delivery of drugs. The main aim of this paper is to develop the drone based service delivery idea with a particular emphasis on healthcare. Here, an android application has been developed to monitor the status of the drug delivery and provide an efficient, accurate as well as fast delivery of drugs.

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Undergraduate engineering students employment prediction using hybrid approach in machine learning

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ABSTRACT

The knowledge discovery from student's data can be very useful in predicting the employment under different categories. The machine learning is helping in this regard up to the great extent. In this paper, a hybrid model of machine learning has proposed to predict the jobs categories, students may get in their campus placement. The considered groups of students are from undergraduate courses from engineering stream having the semester's scheme in their academic. The mapping of jobs has predicted based on their previous seven semesters marks as well as their personality index. The proposed hybrid model consists of three different model based on multilayer feed forward architecture, radial basis function neural network and K-means based clustering method. The proposed model provided the relative chances of available each job category with high accuracy and consistency.

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1. **Veena N, Prof. S. Mahalakshmi, , Prof. Ambika Rani Subash & Prof. K. Vinutha**
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1. **Ravi Kumar B.N and Suresh, Y.** Published a paper titled “Effective ANN Model based on
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*(IJACSA) International Journal of Advanced Computer Science and Applications,
 Vol. 13, No. 2, 2022*

Effective ANN Model based on Neuro-Evolution Mechanism for Realistic Software Estimates in the Early Phase of Software Development

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Abstract—There is no doubt that the software industry is one of the fastest-growing sectors on the planet today. As the cost of the entire development process continues to rise, an effective mechanism is needed to estimate the required development cost to control better the cost overrun problem and make the final software product more competitive. However, in the early stages of planning, the project managers have difficulty estimating the realistic value of the effort and cost required to execute development activities. Software evaluation prior to development can minimize risk and upsurge project success rates. Many techniques have been suggested and employed for cost estimation. However, computations based on several of these techniques show that the estimation of development effort and cost vary, which may cause problems for software industries in allocating overall resources costs. The proposed research study proposes the artificial neural network (ANN) based Neural-Evolution technique to provide more realistic software estimates in the early stages of development. The proposed model uses the advantages of the topology augmentation using an evolutionary algorithm to automate and achieve optimality in ANN construction and training. Based on the results and performance analysis, it is observed that software effort prediction using the proposed approach is more accurate and better than other existing approaches.

Keywords—Software cost estimation; COCOMO-II; neuro-evolution; artificial neural network; genetic algorithm

accuracy of cost estimation. If the cost is underestimated, the project may be delayed, lack implemented features, or not be completed. On the other hand, an overestimated cost can lead to higher software costs, a waste of resources, and even loss of opportunities for competing markets [3]. These factors can have negative consequences for the project, the development organization, and the customers. Thus, the quality of estimates can affect the quality of the software project.

Many software cost estimation models have been developed and improved, which can be categorized into algorithmic and non-algorithmic models [4]. In algorithmic cost model (ACM), typically a mathematical model or expressions are formulated using factors like i) source line of codes (SLOC), ii) risk calculation, and iii) skill levels obtained from the historical records; however, it fails to enumerate many vital factors including i) complexities, ii) reliability and experiences of the projects and due to this, it leads to the imprecise estimation. The constructive cost model- COCOMO is the most popular method in this category [5]. Further, it has evolved as COCOMO-II and has been widely used to design software cost predictors with various strategies considering basic cost indicators like lines of codes (LOC) and the function points [6-7]. The non-algorithmic approach is basically concerned with soft-computing approaches that overcome the limitations of the algorithmic model. The soft-computing approaches handle a better approximation of the solutions of

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INTERNATIONAL CONFERENCE with Scopus Indexed	
1.	Sreenivasa N, Mohan B.A, Fernandies, R, Satish, E.G and Ahmed A Published a paper title “The AgroCart Android Application to Manage Agriculture System” Lecture Notes in Electrical Engineering, 2022, 928, pp. 701-718 DOI:10.1007/978-981-19-5482-5_61
2.	Anil Kumar, Mohan, B.A, Geeta Patil and Surekha K B Published a paper title “Machine Learning based framework to predict the Network Usage in Smart Parking Applications” 4th International Conference on circuits, controls, communication and Computing(I4C-2022), 21-23 December 2022. DOI: 10.1109/I4C57141.2022.10057657
3.	N Sreenivasa, Mohan B.A, PiyushKumar Pareek, and E. G.Satish Published a paper title “LoRa Based Water Quality Monitoring System” on NeuroQuantology, November2022, Volume 20, Issue 15, pp.5796-5800. DOI: 10.14704/NQ.2022.20.15.NQ88583



LoRa BASED WATER QUALITY MONITORING SYSTEM

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Abstract –

The introduction of the Internet of Things (IoT) enabled the development of various real-time applications. In reality, IoT has facilitated the remote monitoring or sensing. A variety of networked sensor nodes can be deployed to provide periodic or continuous monitoring data, that can be used for further evaluation. In this paper, we demonstrate the use of IoT for water quality monitoring using LoRa as communication system. The water body is used for aquaculture, and many aquatic organisms are observed and studied to improve aquaculture ecosystem. LoRa is a low-power wide area modulation technique, that consists of a base station for the collection of real-time data from the sensors in the water body and a user interface/Dashboard is designed for better visualization of data for information analysis. We conduct some performance tests to determine the reliability and efficiency of the system, and the results are also presented.

Keywords — base-station, IoT, LoRa, Sensor, Water Quality

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I. Introduction

The key purpose of the botanical garden is to conserve flora's biodiversity, i.e. to save endangered species and to ensure plant protection. Consider a botanical garden, where a pool is present for aquatic species. Hence, it is necessary to consider the quality of water quality. Water quality can be defined as a function of the water concentration and state of organic and inorganic content, as well as some of the water's physical characteristics [1]. The main aim of water quality monitoring system is to measure and analyze the samples for future research and assessment of the findings. This method has many limitations such as:

- Manual errors that occur while collecting the samples for further analysis, like container used may change the quality of the sample.
- There is a failure to perform pattern examination dependent on chronic led information, as data might not be analyzed often sufficiently and additional information can be misplaced at any time because of the manual methods concerned in recording.
- Since the condition of water change in very short amount of time, it is difficult to collect the sample in short intervals and send it to lab for quality checking.

the spot and time of examining.

Given all these limitations, there is a need for more reliable approach for collecting water parameters for measure the water quality. This paper comprises the following sections, which will guide you through step by step to the research and findings. These are:

1. Research Elaborations
2. Results or Finding
3. Conclusions

II. Research Elaboration

Why is checking water quality is so important? Due to human negligence in keeping the water bodies clean, and tons of waste being discarded into water, it is very difficult for aquatic life to survive in such conditions. Hence, keeping a check on quality of water is very important.

Various methods are used to detect any changes that occur in water bodies over a period of time. Such innovations can be short-term. Regular monitoring of water quality is an essential part of identifying current or future problems. For example, the data was used to show that changes in fertilizers used in food have increased global nitrogen emissions in rivers by 20 percent over the last few years. Therefore, it is important to monitor water quality to maintain the

4.	<p>Surekha K B, Geeta Patil, Mohan B A and Anil Kumar Published a paper title “Arbitrage: Stock Market Comparative Analysis” Proceedings - 4th International Conference on Circuits, Control, Communication and Computing (I4C) in 2022. DOI: 10.1109/I4C57141.2022.10057786</p>
<p>Dr Anil Kumar Assistant Professor, BMSIT&M Scopus Id 58144722900</p>	
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1.	<p>Anil Kumar, Mohan, B.A., Geeta Patil and Surekha K B Published a paper title “Machine Learning based framework to predict the Network Usage in Smart Parking Applications” 4th International Conference on circuits, controls, communication and Computing(I4C-2022), 21-23 December 2022. DOI: 10.1109/I4C57141.2022.10057657</p>

Machine Learning based framework to predict the Network Usage in Smart Parking Applications

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Abstract— The automotive industry is growing daily, as many people prefer personal vehicles for many reasons. Due to the increased usage of private cars, especially in growing cities, parking space availability has become short and poses a big challenge. It also leads to further cascaded issues like traffic congestion, wasting time in finding free space, polluting the environment, and especially unnecessary wastage of fuel. Therefore inventing a smart parking system has become the need of the hour. Many researchers have attempted to design solutions to this issue by utilizing state-of-the-art technology in prominent areas like Wireless Sensor Networks, Cloud Computing, and Internet of Things. However, there is still scope for improvement in smart parking system performance. In this research work, we are simulating a smart parking system to get the parameters like network usage, transmission time, number of areas, and number of cameras used. The simulator works better for a small number of areas, but for larger-scale simulations, it takes more time. Hence, we propose a framework that can predict/analyze the performance of smart parking systems at an enormous scale using an ML algorithm. The experimental results show that predicting network usage of large-scale smart parking systems using an ML framework is 1500x faster than the simulation time of the CloudSim simulator.

Keywords— Cloud computing, CloudSim, Network usage, Machine Learning, Regression, Decision Tree

I. INTRODUCTION

Advancement in Information Technology has made people move towards urban places, searching the good career growth. The consequences of this are cities getting overpopulated. Due to this migration of people towards cities, specifically industry centered, the number of vehicles used for commuting from workplace to residential places, logistic vehicles, etc., will be increased considerably to greater extent [1]-[4]. Therefore, even though parking spaces are available, they are get shrunk. In this situation, it becomes a challenging task to search for a free parking place for the drivers, leading to wasting time searching for a parking place during peak hours. If more vehicles search for a parking place, this cascading effect will be traffic congestion. This leads to an unpleasant experience for the people with spending lot of time in searching the parking. Along with that, unnecessary fuel consumption will happen, which further leads to environmental pollution. According to [5] finding, car parking in American City Los Angeles costs around 730 tons of CO₂, 95000 Hours, and 47000 gallons of gasoline. As the population in the country is increasing, like India, it is a big concern. Many researchers have tried to address this issue by proposing smart car parking systems

using other enabling technologies, but still, there is a scope for a better solution.

Due to increased areas and the number of cameras to implement smart parking network usage, simulation time will be exponentially increased. To overcome this issue, we are proposing a machine-learning framework to predict the network usage for large-scale parking systems.

The findings and contributions of the paper are as follows:

- A detailed study of the CloudSim simulator was done.
- It was observed that the simulation time increases as the total number of areas increases.
- Total Network Usage is the critical element in estimating the overall performance of the smart parking environment.
- A Machine Learning framework was built to predict the Network Usage for large-scale parking systems.
- Proposed Machine Learning was able to predict the results with a minimum speedup of 1500X when compared to the most widely used CloudSim simulator.

This paper is structured as follows: A formal introduction to smart parking is discussed in Section 1. The existing work done is discussed in Section 2, and Section 3 Specifies the overall Methodology. Section 4 discusses experimental Results and is followed by Conclusion.

II. LITERATURE SURVEY

This section discusses the research on smart car parking systems, CloudSim, and machine learning algorithms. Vehicle drivers commonly try to find a parking place in congested cities by driving around the parking area, on streets, and on the roadside. As technology and smart devices like surveillance cameras and smartphones also come to the forefront in these areas, an ample number of automated techniques are helping drivers find parking slots. [6]-[10], have proposed a smart car parking system based on the cloud for smart cities. The solution consists of 3 tiers i.e., Application Layer, Communication Layer, and Sensor Layer. The topmost layer provides the services like locator service and parking control service, which is connected to the information center through an integrated service portal provided by the smart city administration. The communication layer will bridge the application layer to the

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[S. Savitha](#) & [N. Sreedevi](#) 

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Abstract

Safety is the top priority of every individual in our day to day lives. Urbanization as led to a rise in the trend of motorization which as influenced the road safety measures directly or indirectly. There are various aspects of safety measures to be taken care of while traveling or driving. There are many reasons especially human errors which leads to road accidents. According to the report by WHO and NHTS. A major death reported in our country is due to accidents. One of the main causes of the accident on highways is due to drowsiness, driver fatigue, alcohol, and drug consumption of drivers while vehicle driving. A most deadly accident can be prevented by detecting the causes earlier and preventing the accident if the driver is alerted in time of his drowsiness. In this paper, we present a brief survey on design and models used for the detection of accidents. This paper also presents a survey on the analysis methods used for various reasons that cause accidents, the conventional IoT-based models are used in detecting driver drowsiness, fatigue, drunken driving, and distractions. Detailed analysis of widely used ML and AI-based techniques in this regard.

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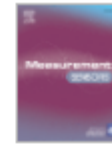
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Reliability-driven time series data analysis in multiple-level deep Learning methods utilizing soft computing methods


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Abstract

This paper introduces a novel method for mining data & information retrieval using series data for the duration. A multi-resolution S transform is viewed as a stage-adjusted transform of wavelet/a parameter window low period. Fourier-transform is used to recover significant characteristics from nonstationary duration series data with electricity-network disruptions. In pattern classification of disturbance waveform information, and incorporated Learning Vector Quantization neural-network & different feed-forward neural-network designs were employed afterward extending required characteristics from the period of series-data. A fuzzy Multilayer perceptron accepts other connectionist systems and therefore is utilized in the final phase of encoding information inside the linking weights to produce fuzzy disturbance rules pattern inference. With energy signal time series data, a pattern classification performance of 99% was attained. Utilizing the new measurement processes, the data-driven information retrieval was displayed. A method proposed in this research is generically used to mine for information similarities in either duration of the series data pattern.

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A Statistical Analysis of Fruit and Vegetables Quality Detection and Disease Classification for Smart Farming

pdf

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Keywords:
machine learning, fruit quality, smart farming, disease detection, classification

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Abstract

The agricultural industry is the country's primary source of economic growth. Indian agriculture struggles with detecting and identifying fruit and vegetable defects. Fruit and vegetable faults can be spotted using their forms (i.e. colours and textures). Local markets struggle with fruit and vegetable flaws and infections because quality evaluations and classifications are time-consuming. By using the quality of fruit, we can determine how long it will last after purchase. Farmers can predict the best time to harvest fruit to avoid over-ripening. In addition, this will help farmers plan for harvest losses and increase their profits. For defect detection, image processing, machine learning (ML), and artificial intelligence (AI) tools have recently been presented. ML has established itself as cutting-edge technology with multiple applications in various fields. These methods have often been used to judge food quality in recent years. The present state of machine learning methods for estimating food quality and safety is examined in this paper. Product quality is an essential factor in determining the competitiveness of a manufacturing company. First, an introduction to the various approaches to machine learning is presented. Then, a complete comparison of the various methods for identifying the quality of various types of food is presented. To find answers to issues in the food industry, such as identifying the quality of fruits and vegetables, we looked through many research articles. This study found that machine learning techniques in the food industry are superior to more conventional ways.

1.

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2022 IEEE International Conference for Women in Innovation, Technology & Entrepreneurship (ICWITE)

Load Balancing in Cloud Computing Environment

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Abstract—Cloud computing has many advantages over traditional computing like scalability, elasticity, accessibility. Due to these advantages, it has gained popularity in the Information Technology industry. The popularity of cloud computing has forced all organizations (including Micro Small and Medium Enterprises) to move their businesses from traditional computing to cloud computing. This transition has increased cloud-based services worldwide. The worldwide cloud market is set to surpass \$330 billion USD in the year 2020 and is expected to grow at a Compound Annual Growth Rate (CAGR) of 17.5% from 2020 to 2025. The growth in cloud adoption has resulted in a high surge of network traffic. Failure to handle this enormous traffic may result in reduced system performance, inefficient resource utilization, server outage. One of the solutions for these problems is cloud load balancers. The cloud load balancers improve system performance by distributing load among all available resources.

The research work is carried out to build a new general load balancing algorithm and also extends the ability of another algorithm in the natural phenomena based category. Finally, the two new proposed algorithms are tested under the clustering environments.

Popular algorithms like Throttled, Active Monitoring, etc. in the category general Load Balancing have drawbacks of longer search time and inefficient resource utilization. To decrease search time and improve resource utilization an algorithm named Capacity Based Load Balancing (CBLB) is proposed in the general category. The algorithm is implemented and analyzed using CloudSim simulator and Amazon Web Services (AWS) real cloud environments. In both environments, the performance is examined for homogeneous as well as heterogeneous setups. In both setups, the performance parameters makespan, average response time, and throughput are considered for the analysis of the results. The proposed algorithm is compared with the popular Throttled algorithm. Besides, the adaptability of the algorithm is tested for the varied number of Datacenters (DCs), a varied number of Virtual Machines (VMs), and varied capacity VMs. The CPU utilization of the algorithms is also checked by using the cloud watch of AWS to ensure effective utilization of resources. The proposed algorithm has shown better performance than the Throttled in both simulation and real cloud environments for all the parameters.

The proposed CBLB algorithm is used to enhance the popular natural phenomena-based Artificial Bee Colony (ABC) algorithm. The performance of the enhanced ABC algorithm named ABC_CBLB is compared with the basic ABC algorithm. The experiments are carried out for homogeneous and heterogeneous setups in both CloudSim and AWS platforms. The performance is tested for the varied number of DCs and varied number of VM. In these experiments in addition to the parameters makespan,

average response time, throughput, and CPU utilization, the average waiting time is considered. Under all variations and environments, ABC_CBLB has shown an improved performance compared to the basic ABC algorithm.

Clustering is a technique that improves performance and resource utilization. Clustering allows parallel execution of cloudlets which in turn reduces total execution time and improves throughput. Hence, an attempt has been made to use clusters to improve the performance of the proposed CBLB and ABC_CBLB algorithms. The popular K-mean clustering algorithm is used to perform clustering. Clustered CBLB and ABC_CBLB are compared with the Throttled and ABC (both with and without a cluster). All the algorithms have shown significant improvement with the usage of a cluster in comparison to a non-clustered environment. The implementation of the algorithms is done in the CloudSim simulator. The simulation results are analyzed for the parameters makespan, throughput, and average response time. The optimal cluster number was identified by taking readings for different k-values of the K-mean. Additionally, the identified k-value was verified using the Elbow method. Further, the performance is also verified for the changed number of VMs. In addition to this, the performance of ABC_CBLB with clustering is compared with the existing algorithms Load Balancing based on Bayes and Clustering (LB_BC) and Load Balancing Resource Clustering (LB_RC).

The proposed algorithms CBLB and ABC_CBLB have shown an improvement over the existing popular algorithms in both simulation and real cloud implementations. An attempt to use the clustering technique with these algorithms has also shown an improvement in the performance over existing algorithms.

I. INTRODUCTION

The establishment and management of necessary resources is one of the primary challenges in IT organizations. It is challenging to estimate the amount of resources needed due to the dynamic volatility in user numbers. Performance suffers if the number of users exceeds expectations. Large amounts of resources are wasted if the number of users is lower than expected. In addition to this, a business needs a lot of manpower to maintain its assets and install the necessary software. The creation and upkeep of resources is a costly and time-consuming task. The cloud computing provides solution for all these problems. Hence to avail its benefits, the organizations are adopting cloud computing. These adoptions have brought in significant challenges in cloud computing such as security, managing cloud spending, lack of resources/ expertise, governance, managing the multi-cloud environment, migration,

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