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T.N. Palayam (Po), Gobi (Tk), Erode (Dt) – 638 506



MASTER OF COMPUTER SCIENCE AND ENGINEERING

2022-2023

S.NO	REG.NO	STUDENT NAME	PROJECT	INTERNSHIP	FIELD VISIT
1	731221405001	ARUNKUMAR R	✓	✓	
2	731221405002	CHARLY S	✓	✓	
3	731221405005	GAYATHRI S	✓	✓	
4	731221405006	INDHIRAN R	✓	✓	
5	731221405007	LOGARAJA S		✓	
6	731221405008	NAVEEN S	✓	✓	
7	731221405009	PONMANI A	✓	✓	
8	731221405010	RAJESH KUMAR A	✓	✓	
9	731221405011	RANJANI R	✓	✓	
10	731221405014	SURESHKUMAR P	✓	✓	
11	731222405001	KIRUTHIKA S		✓	
12	731222405002	THAMARAISELVI R		✓	


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DEPARTMENT OF MASTER OF COMPUTER SCIENCE AND ENGINEERING

PROJECT BATCH LIST (2022-2023)

S.NO	REGISTER NO	NAME LIST	PROJECT TITLE	GUIDE NAME
1	731221405001	ARUNKUMAR R	EDUCATION DATA TAKING OUT TO CARRY PROGRAM LEARNING VIA ANALYTIC DATA	DR.N.SATHYABALAJI
2	731221405002	CHARLY S	TRAFFIC PREDICTION AND FAST UPLINK FOR HIDDEN MARKOV IOT MODELS	DR.N.SATHYABALAJI
3	731221405005	GAYATHRI S	MEMORY AWARE ACTIVE LEARNING SENSOR FOR SYSTEM SERVER MONITORING	MRS M.C.SAVITHRI
4	731221405006	INDHIRAN R	DISCRIMINATE GABOR ENSEMBLE FILTER USING HYPER SPECTRAL IMAGE CATEGORIZATION	MR.E.ANANTH
5	731221405008	NAVEEN S	AN INTRUSION DETECTION PROCESS BASE ON MACHINE LEARNING SPECTATOR COMMUNICATION SYSTEMS	DR.N.SATHYABALAJI

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6	731221405009	PONMANI A	RICE PLANT DISEASES CLASSIFICATION USING IMAGE PROCESSING	MRS.P.SASIREKA
7	731221405010	RAJESH KUMAR A	SECURE AGRO-FOOD SUPPLY CHAIN TRACEABILITY USING BLOCKCHAIN AND IPFS	DR.N.SATHYABALAJI
8	731221405011	RANJANI R	CARDA MOM PLANT DISEASE DETECTION APPROACH USING KNN	MRS M.C.SAVITHRI
9	731221405014	SURESHKUMAR P	A BLOCKCHAIN APPROACH TO ENSURING PROVENANCE TO QUTSOURCED CLOUD DATA INA SHARING ECOSYSTEM	DR.N.SATHYABALAJI



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PROJECT

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**EDUCATION DATA TAKING OUT TO CARRY PROGRAM
LEARNING VIA ANALYTIC DATA**

A PROJECT REPORT (PHASE-II)

Submitted by

ARUNKUMAR R

731221405001

in partial fulfilment for the award of the degree of

MASTER OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING



JKK MUNIRAJAH COLLEGE OF TECHNOLOGY

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OCTOBER 2023



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ANNA UNIVERSITY, CHENNAI

BONAFIDE CERTIFICATE

Certified that this Report titled "EDUCATION DATA TAKING OUT TO CARRY PROGRAM LEARNING VIA ANALYTIC DATA" is the bonafide work of "ARUNKUMAR R (731221405001)" who carried out the project work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.



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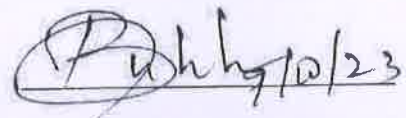
JKK Munirajah College of Technology

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Submitted for the project viva Examination held on 09.10.2023 (Fri)



INTERNAL EXAMINAR



EXTERNAL EXAMINAR



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ABSTRACT


The framework includes the following sequence data collection, log and score collection, and preprocessing clustering algorithms for problem-solving, for clustering data in Euclidean space, extracting statistical features from each cluster, and applying A frequent pattern growth algorithm for each cluster to determine data patterns and association rules. A set of recommendations based on extracted features, data patterns and rules. Tune other parameters to get the best results for the clustering and association rule mining algorithms.

At this time, in addition to classroom learning, the system also enhances programming learning and hands-on opportunities unsupervised algorithms.

The classification generates a large archive of analytical data result codes, logs, and score that can be valuable raw material for research in programming learning. We propose an educational data mining structure that supports programming learning using

Algorithms and data structures are used in programming courses to approximate the data that students use to solve real-world problems. We also experimentally use synthetic data to demonstrate the performance of our algorithm. Investigational results demonstrate that the proposed framework successfully extracts useful features, patterns, and rules from analytical data. Additionally, these extracted features, patterns, and rules highlight weaknesses and areas for improvement in programming learning.

Computer programming is of broad interest in the development of information and communication technologies in real life. Meet the growing demand for highly skilled programmers in critical challenges.


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CHAPTER I

INTRODUCTION

Today's information and communication technology (ICT) industry demands for highly skilled programmers for further development. The conventional computer programming learning environment is insufficient to prepare highly skilled programmers due to the limited number of exercise classes, limited practice opportunities, and lack of individual tutoring. In addition, most educational institutions, such as schools, colleges, and universities are struggling to build more educational facilities to increase academic activity (e.g., additional exercise classes, practice, and individual tutoring) due to logistical and organizational constraints. The growing number of people in classrooms in educational institutions, the large number of students per class, and some lectures are conducted with more than a thousand participants in the massive open online courses which complicate the individual tutoring process.

The growing ratio between students and educators raises the question of how to provide individual support to students to improve their problem-solving skills. Especially, when learning computer programming, students need a lot of practice and individual tutoring to improve their programming knowledge and skills. Computer programming is one of the fundamental courses in ICT discipline. Programming practice and competition can play an important role in acquiring good programming skills.

Educational data is evolving and the diversity of these data varies from one e-learning platform to another. Efficiently handling this massive and diverse educational data is a nontrivial and challenging task. Educational data mining (EDM) technique has emerged to address this problem. Due to the diversity, volume, nature, and structure of educational data, conventional data mining algorithms cannot be applied directly. Also, the data preprocessing is one of the most important tasks in the EDM process to achieve better results.

CHAPTER 8

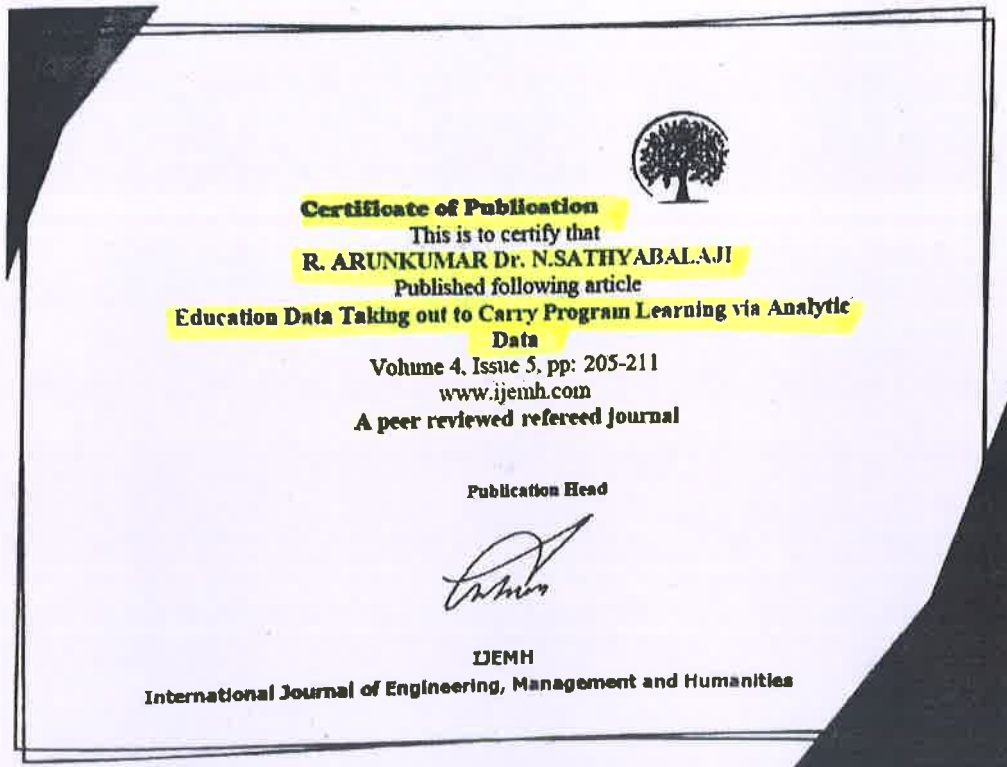
CONCLUSION AND FUTURE SCOPE

8.1 Conclusion And Future Scope

Proposed an EDM framework for data clustering, patterns, and rules mining using real-world problem solving data. A mathematical model for data preprocessing, MK-means, and FP-growth algorithms were used to conduct this study. For programming education, OJ systems have been adopted by many institutions as academic tools. As a result, a huge number of programming-related resources (source codes, logs, scores, activities, etc.) are regularly accumulated in OJ systems. A large amount of real-world problem-solving data collected from the AOJ system was used in the experiments. Problem-solving data preprocessing is one of the main tasks to achieve accurate EDM results. Therefore, a mathematical model for problem-solving data preprocessing is developed. Then, the processed data are clustered using Elbow and MK-means algorithms. Various statistical features, data patterns and rules are extracted from each cluster based on different threshold values (K , min Conf, min Sup).

In the future, the experimental results of EDM using problem-solving data can be integrated to visualize different LA for programming platforms such as the OJ system. In addition, fuzzy estimation and polynomial approximation methods can be handy to dynamically select the optimal min Sup values based on the dataset. Appropriate min Sup values could help to generate the actual number of frequent elements and association rules from the dataset.

APPENDIX-3
Publication Proof



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**TRAFFIC PREDICTION AND FAST UPLINK FOR
HIDDEN MARKOV IOT MODELS**

PHASE II REPORT

Submitted by

CHARLY S

731221405002

In partial fulfillment for the award of the degree of

MASTER OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING



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OCTOBER 2023


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BONAFIDE CERTIFICATE

Certified that this Report titled "TRAFFIC PREDICTION AND FAST UPLINK FOR HIDDEN MARKOV IOT MODELS" is the bonafide work of "CHARLY S (731221405002)" who carried out the project work under my supervision. Certified further that to the best of my knowledge the work reported hereindoes not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.



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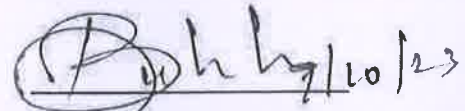
T.N.Palayam.

Submitted for the Project Viva-voce Examination held on....09.12.2023...



INTERNAL EXAMINER

INTERNAL EXAMINER



EXTERNAL EXAMINER

EXTERNAL EXAMINER



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ABSTRACT

In this work, I present a novel traffic prediction and fast uplink (FU) framework for IoT networks controlled by binary Markov events. First, I apply the forward algorithm with hidden Markov models (HMMs) in order to schedule the available resources to the devices with maximum likelihood activation probabilities via the FU grant. In addition, I evaluate the regret metric as the number of wasted transmission slots to evaluate the performance of the prediction. Next, I have formulated a fairness optimization problem to minimize the Age of Information (AoI) while keeping the regret as minimum as possible. I proposed an iterative algorithm to estimate the model hyper parameters (activation probabilities) in a real-time application and apply an online-learning version of the proposed traffic prediction scheme. Simulation results show that the proposed algorithms outperform baseline models, such as time-division multiple access (TDMA) and grant-free (GF) random-access in terms of regret, the efficiency of system usage, and AoI.



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CHAPTER 1

INTRODUCTION

Recent advances in the Internet of Things (IoT) has led to the deployment of a large number of machine type communication (MTC) devices to collect real-time information. The number of such IoT-MTC devices is rapidly growing to realize different use cases, such as environment monitoring, remote surgery, and autonomous vehicles . In 5G, MTC service modes are massive MTC (mMTC) and ultra reliable low-latency communication (URLLC) . The Quality-of-Service (QoS) demands vary among the service modes. In addition, many use cases have recently had more strict demands, which need extremely low end-to-end latency in a massive deployment of IoT devices to collect real-time information . The behavior of the traffic of MTC devices (MTDs) differs from that of the traditional human-type communication devices (HTDs). The HTDs traffic tends to be heterogeneous, whereas the traffic of MTDs is homogeneous and highly correlated.

To elucidate traffic correlation in MTC, I consider the following road safety example as in Let event 1 and event 2 correspond to a vehicle moving down the street at normal speed, and a vehicle breaking the speed limit, respectively. Meanwhile, sensor 1 and sensor are motion detectors, necessary to control the traffic lights, and speed limit alarm, respectively. In this scenario, event 1 will be detected by sensor 1 only. However, both sensors may likely detect event 2. Hence, we infer that sensor 2 will not likely be active except if sensor 1 is active. Moreover, if sensor 2 is active, sensor 1 will most probably be active but not vice versa. In such a scenario, it is essential to estimate the possible sensor activation pattern and allocate resources at low latency. If a human is crossing the street, a human detector or a road safety alarm could then transmit a signal to the base station (BS).

The BS in turn sends a compulsory brake signal to a high-speed vehicle to enforce it to slow down the speed. This all should occur within a window of a few milliseconds to avoid an accident.



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CHAPTER 9

CONCLUSION

CONCLUSION:

This article considered the Markovian events which serve to model the activity of the massive deployment of IoT devices. I proposed an FU algorithm that efficiently predicts the activation pattern of the IoT devices based on the forward algorithm and grants the available resources to the devices with the highest likelihood of activation probabilities. I formulated an optimization problem that compromises a small value of the regret to minimize the AoI of the IoT devices and achieve a desirable degree of fairness. In addition, I formulated an expectation-maximization algorithm based on the Baum-Welsh procedure to estimate the system hyper parameters. Finally, i developed an online-learning version of the proposed scheme. Simulation results showed that the proposed algorithm outperforms the existing models, e.g., TDMA and GF, regarding regret, system usage efficiency, and AoI.

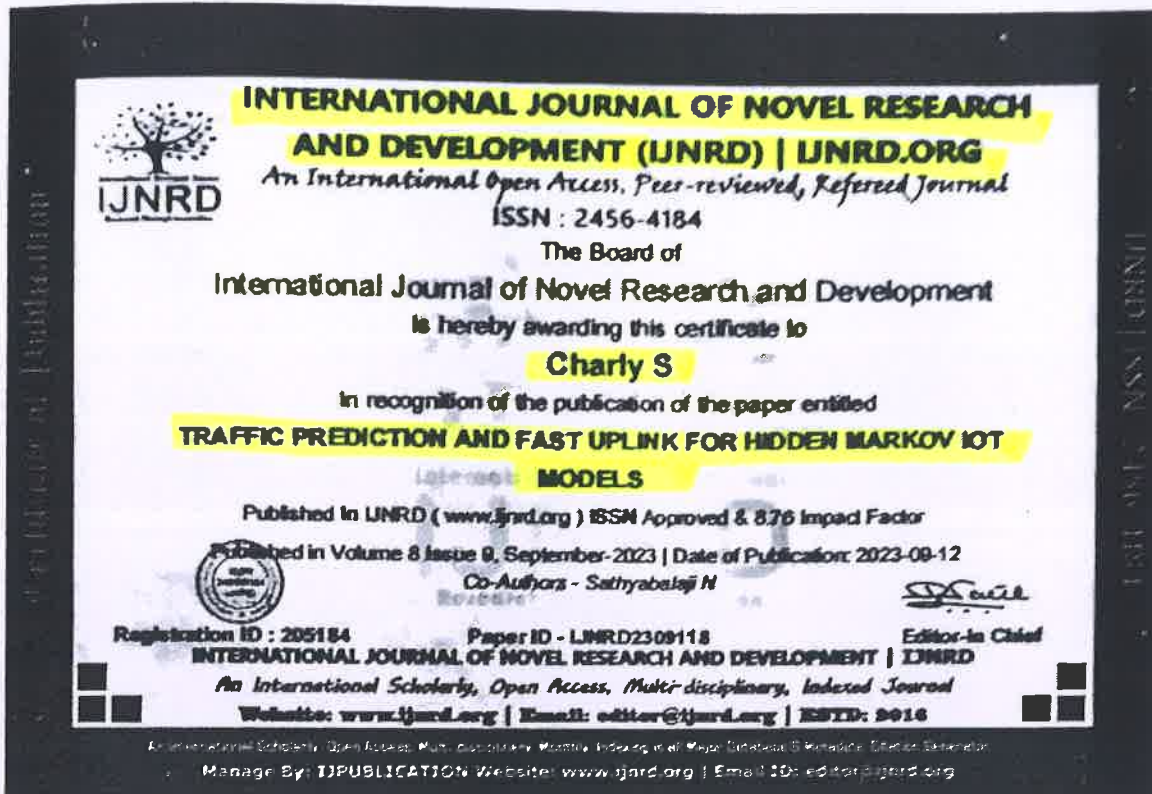
The proposed algorithms were much simpler than machine learning-based predictors regarding the complexity of the computations. Therefore, the proposed algorithms could be used as traffic predictors in critical applications, e.g., predictive UAV positioning , road safety, and other applications with low-latency communication demands .



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APPENDIX-3

PAPER PUBLISHED PROOF



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CP4153

NETWORK TECHNOLOGIES

LTPC
3003

COURSE OBJECTIVES:

- To understand the basic concepts of networks
- To explore various technologies in the wireless domain
- To study about 4G and 5G cellular networks
- To learn about Network Function Virtualization
- To understand the paradigm of Software defined networks

UNIT I NETWORKING CONCEPTS 9

Peer To Peer Vs Client-Server Networks. Network Devices. Network Terminology. Network Speeds. Network throughput, delay. Osi Model. Packets, Frames, And Headers. Collision And Broadcast Domains. LAN Vs WAN. Network Adapter. Hub. Switch. Router. Firewall, IP addressing.

UNIT II WIRELESS NETWORKS 9

Wireless access techniques- IEEE 802.11a, 802.11g, 802.11e, 802.11n/ac/ax/ay/ba/be, QoS – Bluetooth – Protocol Stack – Security – Profiles – zigbee

UNIT III MOBILE DATA NETWORKS 9

4G Networks and Composite Radio Environment – Protocol Boosters – Hybrid 4G Wireless Networks Protocols – Green Wireless Networks – Physical Layer and Multiple Access – Channel Modelling for 4G – Concepts of 5G – channel access – air interface - Cognitive Radio spectrum management – C-RAN architecture - Vehicular communications-protocol – Network slicing – MIMO, mmWave, Introduction to 6G.

UNIT IV SOFTWARE DEFINED NETWORKS 9

SDN Architecture. Characteristics of Software-Defined Networking. SDN- and NFV-Related Standards. SDN Data Plane. Data Plane Functions. Data Plane Protocols. OpenFlow Logical Network Device. Flow Table Structure. Flow Table Pipeline. The Use of Multiple Tables. Group Table. OpenFlow Protocol. SDN Control Plane Architecture. Control Plane Functions. Southbound Interface. Northbound Interface. Routing. ITU-T Model. OpenDaylight. OpenDaylight Architecture. OpenDaylight Helium. SDN Application Plane Architecture. Northbound Interface. Network Services Abstraction Layer. Network Applications. User Interface.

UNIT V NETWORK FUNCTIONS VIRTUALIZATION 9

Motivation-Virtual Machines –NFV benefits-requirements–architecture- NFV Infrastructure - Virtualized Network Functions-NFV Management and Orchestration -NFV Use Cases-NFV and SDN–Network virtualization –VLAN and VPN

COURSE OUTCOMES:

CO1: Explain basic networking concepts

CO2: Compare different wireless networking protocols

CO3: Describe the developments in each generation of mobile data networks CO4:

Explain and develop SDN based applications

CO5: Explain the concepts of network function virtualization

SUGGESTED ACTIVITIES:

1. Execute various network utilities such as traceroute, ping, ipconfig
2. Implement the Software Defined Networking using Mininet
3. Implement routing in Mininet
4. Install a virtual machine and study network virtualization
5. Simulate various network topologies in Network Simulator

REFERENCES

1. James Bernstein, "Networking made Easy", 2018. (UNIT 1)
2. Houda Labiod, Costantinode Santis, Hossam Afifi "Wi-Fi, Bluetooth, Zigbee and WiMax", Springer 2007 (UNIT 2)
3. Erik Dahlman, Stefan Parkvall, Johan Skold, 4G: LTE/LTE-Advanced for Mobile Broadband, Academic Press, 2013 (UNIT 3)



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**MEMORY AWARE ACTIVE LEARNING SENSOR
FOR SYSTEM SERVER MONITORING**

PHASE II REPORT

Submitted by

GAYATHRI S

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In partial fulfillment for the award of the degree of

MASTER OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING



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BONAFIDE CERTIFICATE

Certified that this Report titled "MEMORY AWARE ACTIVE LEARNING SENSOR FOR SYSTEM SERVER MONITORING" is the bonafide work of "GAYATHRI S (731221405005)" who carried out the project work under my supervision. Certified further that to the best of my knowledge the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.



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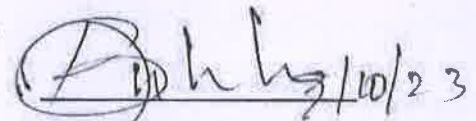
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Submitted for the Project Viva-voce Examination held on 09/10/2023



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EXTERNAL EXAMINER



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ABSTRACT

I propose a novel active learning framework for activity recognition and server monitoring. My work is unique in that it takes limitations of the oracle into account when selecting sensor data for annotation by the oracle. This capacity constraint is manifested not only in the number of queries that a person can respond to in a given time-frame but also in the time lag between the query issuance and the oracle response. I introduce the notion of mindful active learning and propose a computational framework, called EMMA, to maximize the active learning performance taking informativeness of system data, query budget, and human memory into account. I formulate this optimization problem, propose an approach to model memory retention, discuss the complexity of the problem, and propose a greedy heuristic to solve the optimization problem.

I design an approach to perform mindful active learning in batch where multiple system observations are selected simultaneously for querying the oracle. I demonstrate the effectiveness of our approach using three publicly available activity datasets and by simulating oracles with various memory strengths. I show that the activity recognition accuracy ranges from 21% to 97% depending on memory strength, query budget, and difficulty of the machine learning task. Moreover, I show that the performance of our approach is at most 20% less than the experimental upper-bound and up to 80% higher than the experimental lower-bound.

To evaluate the performance of EMMA for batch active learning, I design two instantiations of EMMA to perform active learning in batch mode. I show that these algorithms improve the algorithm training time at the cost of a reduced accuracy in performance. Another finding in our work is that integrating clustering into the process of selecting sensor observations for batch active learning improves the activity learning performance by 11.1% on average, mainly due to reducing the redundancy among the selected sensor observations.

I observe that mindful active learning is most beneficial when the query budget is small and/or the oracle's memory is weak. This observation emphasizes advantages of utilizing mindful active learning strategies in mobile health settings that involve interaction with older adults and other populations with cognitive impairments.



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CHAPTER 1


INTRODUCTION

With the advent of the Internet-of-Things (IoT) paradigm, applications of sensor based systems have advanced significantly across many domains from health monitoring and autonomous vehicles to smart building and environmental monitoring. Mobile and wearable devices are being increasingly utilized, along with machine learning algorithms, to monitor physical and mental health, and to improve human well-being through clinical interventions. Most of these applications are human-centered in that they focus on monitoring human health and even interacting with humans to incorporate their feedback for improved performance of the system.

The monitoring component often relies on computational algorithms that can detect important health events. For example, wearable sensors are extensively utilized to record human physiological data and then, computational algorithms such as machine learning models are applied for data analysis and to make predictions about events of interest. To train accurate machine learning models for different applications, such as activity recognition, an adequate number of labeled sensor data is required.

However, data collections and related experiments are mainly done in laboratory settings where the experiments are highly controlled. Unfortunately, models that are trained based on sensor data collected in controlled environments and laboratory settings perform extremely poorly when utilized in uncontrolled environments and outside clinics. Therefore consideration of real-world and uncontrolled settings has become increasingly important. Specifically, in human-centered applications, various limitations of human-beings, which can affect the performance of the trained models, need to be taken into account.

For an activity recognition classifier to be accurate, one needs to collect and label sensor data in end-user settings. Therefore, active learning is a natural choice for labeling the data where the end-user acts as the oracle agent and iteratively query the user for correct labels. Throughout this article, the terms 'end-user' and 'oracle' are interchangeably used. In such a human-centered monitor setting, it is critical to design active learning strategies that are mindful of the user's cognitive and compliance capabilities.


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CHAPTER 9

CONCLUSION

9.1 Conclusion

Prior research on active learning takes in formativeness of data and query budget into account when selecting the data for query. In this project, i showed that cognitive constraints of the oracle are of significant importance that can greatly compromise active learning performance. I posed an optimization problem to combine data uncertainty with memory retention for use in ubiquitous and mobile computing applications. I derived a greedy approximation algorithm to solve the proposed mindful active learning problem. My extensive analyses on three publicly available datasets showed that EMMA achieves up to 97% accuracy for activity recognition using wearable sensors. I also showed that integrating memory retention improves the active learning performance by 16%.


In this work, i simulated the memory strength of the end-user for validation purposes. My future work also focuses on conducting user studies that involve cognitive assessment of the user where i will assess the oracle's memory retention quantitatively.



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APPENDIX-3

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**Discriminate Gabor Ensemble Filter using Hyper Spectral
Image Categorization**

A PROJECT REPORT (PHASE-II)

Submitted by

INDIRAN R

731221405006

in partial fulfillment for the award of the degree of

MASTER OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING



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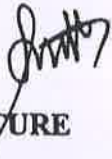
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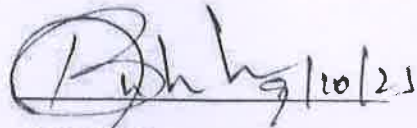
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ABSTRACT

The fixed Gabor filters can extract common features with different scales and orientations, while the learnable filters can learn some complementary features that Gabor filters cannot extract. Based on GEF, we design network architecture for HSI classification, which extracts deep features and can learn from limited training samples. In order to simultaneously learn more discriminative features and an end-to-end system, we propose to introduce the local discriminate structure for cross-entropy loss by combining the triplet hard loss. Results of experiments on three HSI datasets show that the proposed method has significantly higher classification accuracy than other state-of-the-art methods. Moreover, the proposed method is speedy for both training and testing. For a broad range of applications, hyper spectral image (HSI) classification is a hot topic in remote sensing, and convolutional neural network (CNN)-based methods are drawing increasing attention.

However, to train millions of parameters in CNN requires a large number of labeled training samples, which are difficult to collect. A conventional Gabor filter can effectively extract spatial information with different scales and orientations without training, but it may be missing some important discriminative information. In this article, we propose the Gabor ensemble filter (GEF), a new convolutional filter to extract deep features for HSI with fewer trainable parameters. GEF filters each input channel by some fixed Gabor filters and learnable filters simultaneously, and then reduces the dimensions by some learnable 1×1 filters to generate channels.




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CHAPTER I

INTRODUCTION

AHYPERSPECTRAL image (HSI) contains hundreds of continuous bands in the ultraviolet, visible, and infrared regions, which effectively combine spatial and spectral information. HSI classification, that is, classifying every pixel with a certain land-cover type, is the cornerstone of HSI analysis. It has a broad range of applications, including land cover mapping, mineral exploration, water-pollution detection, natural disasters, and biological threats. Many HSI classification algorithms have been proposed over the past decade, including subspace-based methods, support vector machine (SVM), extreme learning machine (ELM), sparse representation classifier (SRC), low rank representation, extended morphological attribute profiles (EMAPs), invariant attribute profiles (IAPs), etc. Deep-learning-based methods have drawn much attention recently in image classification. Deep learning uses a neural network with multiple hidden layers to automatically learn features from the original image, layer by layer, with better results compared to conventional shallow methods. For HSI, the number of labeled samples is limited, because it takes effort to determine the class of each pixel. Some unsupervised deep-learning methods, including stacked automatic encoder (SAE) and deep belief network (DBN), have been proposed to extract features for HSI. However, since SAE- and DBN-based methods only have 1-D fully connected layers, they cannot automatically learn spatial features.


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CHAPTER 9

CONCLUSION AND FUTURE SCOPE

Conclusion And Future Scope

Which filters each input channel by fixed Gabor filters together with learnable filters, followed by some learnable 1×1 filters to generate the output channels. Based on the proposed GEF, we designed a network architecture for HSI classification. To learn more discriminative features and an end-to-end system at the same time, we proposed to introduce the local discriminant structure for cross-entropy loss by combining the triplet hard loss. With limited training samples, the proposed method performs significantly better than other state-of-the-art HSI classification methods. Moreover, the proposed method is fast for both training and testing. However, the proposed method cannot obtain higher accuracy for normal image classification, because the input for the proposed network is a small image patch with many channels, which is only designed for HSI classification with limited training samples. For normal image classification, an image is a sample. When there are millions of training samples, the network should be much more complex and deeper to obtain better performance. In our future work, we will investigate how to improve the proposed method for the normal image classification task, and how to combine other conventional features with CNN to obtain better performance.




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APPENDIX-III

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**AN INTRUSION DETECTION PROCESS BASE ON MACHINE
LEARNING SPECTATOR COMMUNICATION SYSTEMS**

A PROJECT REPORT (PHASE - II)

Submitted by

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in partial fulfilment for the award of the degree of

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in

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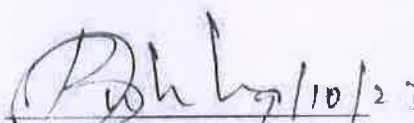
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ABSTRACT

The first layer is used to detect and identify wireless network attacks based on machine learning algorithms such as Random Forest Algorithm and Gradient Boosting Decision Tree Algorithm. The second layer is used to detect abnormal physical conditions of train movement based on state observers. By combining the results of the above two layers, a comprehensive intrusion detection result is presented. Simulation results show that the proposed method is effective and practical. In order to ensure the information security of vehicle-ground communication system, this paper proposes an intrusion detection method based on machine learning and state observers to detect and identify various attacks. Communication-based train control (CBTC) systems are typical cyber-physical systems in urban rail transport. The vehicle-ground communication system is a very important subsystem in the CBTC system, which uses wireless communication protocols to transmit control commands. However, it also faces some potential information security risks. The detection system can not only detect the abnormality of the wireless network data, but also detect the abnormality of the physical condition of the train. The method consists of two layers.



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CHAPTER I

INTRODUCTION

AT PRESENT, with the development of economy and the expansion of city scale, urban rail transit has been a primary passenger transportation method. The communication-based train control (CBTC) system, as a popular train operation control system, is widely used in urban rail transit. In the CBTC system, the train-ground communication subsystem is a critical security-related subsystem. It adopts wireless protocols to transmit control commands and train state information. Because of openness and vulnerability of wireless communication, the train-ground communication system can be a potential target for an attacker.

Once the train-ground communication system suffers from an attack, the train operation will become less efficient. In serious cases, train operation security accidents can happen. Therefore, in the CBTC system, it is vital to ensure the security of the train-ground communication system. For traditional information technology (IT) networks, various schemes are proposed to defense attacks. Especially, the intrusion detection method is a primary information security defense method, which can be divided into anomaly detection and misuse detection. The anomaly detection method needs to model normal behaviors accurately. Based on the normal behavior model, this method determines whether a newly received data is abnormal. The anomaly detection method can detect zero-day attacks. However, this method usually has a higher false positive rate, because any tiny change different from the normal model can cause an attack alarm. Besides, this method can only detect an abnormal behavior, but cannot identify its attack type. The misuse detection method needs to model a specific attack behavior in advance, which causes this method not to detect unknown attacks, for example zero-day attacks. This method also needs to manually update the attack model database when a new attack is identified. In addition, there are some intrusion detection methods that combine anomaly detection and misuse detection methods, called hybrid intrusion detection methods, which can avoid the disadvantages of each method.

CHAPTER 8

CONCLUSION AND FUTURE SCOPE


8.1 Conclusion And Future Scope

An intrusion detection method based on machine learning and state observer is proposed in the train-ground communication system. The method includes two layers. In the first layer, machine learning algorithms are used to detect and identify the intrusion behavior on wireless network data. The machine learning algorithms include the random forest algorithm, the gradient boosted decision tree algorithm, the AdaBoost algorithm and the support vector machine algorithm. Further, in the second layer, an intrusion detection method based on state observer is proposed to recognize the abnormal train physical states. Finally, based on the detection results of wireless network data and train physical states, a reliable intrusion detection result is given, which is important for CBTC systems. Both theoretical analysis and simulation results show that only long-term continuous attacks can affect the train's operation, while short-term continuous or random attacks do not affect the train's operation.

Based on these experiments, some conclusions can be drawn. If the intrusion detection only focuses on the network layer, invalid alarms and defenses will increase, which aggravates the system overhead. If the intrusion detection only focuses on physical layer, the detection result has serious hysteresis, which means that the attack cannot be reported in time. When the attack is recognized, the system has been greatly affected and an emergency braking or collision will be inevitable. In the proposed method, the attack is simultaneously detected in the network layer and the physical layer. And the results are comprehensively analyzed.


APPENDIX-3

PUBLICATION PROOF




Certificate of Publication
This is to certify that
S.Naveen,Dr. N.Sathyanbalaji
Published following article
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**RICE PLANT DISEASES CLASSIFICATION USING
IMAGE PROCESSING**

PHASE II REPORT

Submitted by

PONMANIA

731221405009

in partial fulfillment for the award of the degree of

MASTER OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING



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ABSTRACT

Rice is considered one the most important plants globally because it is a source of food for over half the world's population. Like other plants, rice is susceptible to diseases that may affect the quantity and quality of produce. It sometimes results in anywhere between 20–40% crop loss productions. Early detection of these diseases can positively affect the harvest, and thus farmers would have to be knowledgeable about the various disease and how to identify them visually. Even then, it is an impossible task for farmers to survey the vast farmlands on a daily basis. Even if this is possible, it becomes a costly task that will, in turn, increases the price of rice for consumers. Machine learning algorithms fitted to drone technology combined with the Internet of Things (IoT) can offer a solution to this problem. In this project, a Deep Convolutional Neural Network (DCNN) transfer learning-based approach for the accurate detection and classification of rice leaf disease.


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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Rice is one of the most consumed foods globally as it is a main source of diet for many countries, including the most populated countries such as China, India, Pakistan, and others. The classification of Rice is under the class Orza type, which includes within that family other grain foods such as wheat, corn, and cereal. The reason why it is popular is that it is rich in supplements, minerals, and nutrition. It is estimated that it is a basic diet choice for more than three billion people.

Rice is a very general term because there are many types of rice around the globe and even the way they are grown varies as well. However, it should be mentioned that all rice plants share some commonalities in their development which are specifically three phases of development before harvest.

A total of 15% of agricultural farm areas around the world are used for rice farming. The main production of rice is in the east of India and Pakistan. Recently, there has been a noticeable reduction in rice production for various reasons. One of the main causes is rice plant disease or maladies. One of the most unwanted maladies is what is referred to as sheath blight, leaf blasts, and brown spots because they greatly affect rice production or grain quality.

The maladies, though different, in effect, share the commonality of having spots on the plant leaves. Like many diseases, early detection can reduce or prevent the associated damage. The fundamental issue is the absence of constant observation of the plants.

CHAPTER 12

CONCLUSION AND FUTURE SCOPE

12.1 CONCLUSION

Leaves are among the main parts of plants where diseases are visibly apparent. Different diseases affect the leaves in different ways that make them distinct from each other. Rice plants are very important because it is a source of food for over half the population of the world. Diseases that infect rice plants greatly affect the quality and quantity of rice produced. It is estimated that rice disease can cause 20–40% production loss annually. The manual detection of these diseases requires disease knowledge from farmers and requires extensive work to visually observe vast farmlands with individual rice crops to achieve the task of early diagnosis. This seems to be an impossible task, and even if it was possible, this would be a very expensive task that would end up increasing the price of rice for consumers.

It will include a complete drone technology-based IoT Technology based deep learning system that can be practically tested in real-life real-time scenarios. In addition, work will continue in our pursuit of the optimal deep learning technique able to diagnose all the rice leaf diseases that exist. In addition, and related to the field of agriculture, we plan to explore other plant leaf diseases of plants that are similarly important to humankind.

12.2 FUTURE SCOPE

For future work, this project evaluates the techniques in data mining and image processing in use by researchers designed for detection, diagnosis and recognition of plant diseases. Still lot of research is going on for to produce and automated plant diseases detection via mobile phone captured images.

**SECURE AGRO-FOOD SUPPLY CHAIN
TRACEABILITY USING BLOCKCHAIN AND IPFS**

A PROJECT REPORT (PHASE II)

Submitted by

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In partial fulfillment for the award of the degree of

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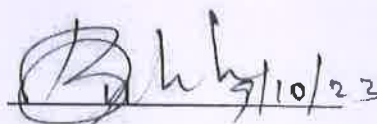
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ABSTRACT


There is a growing demand for transparency along the agri-food chain, both from customers and governments. The adoption of blockchain technology to enable secure traceability for the management of the agri-food chain, provide information such as the provenance of a food product and prevent food fraud, is emerging rapidly, due to the inherent trust and inalterability provided by this technology. In this project, to propose a new approach to easily customize and compose general Ethereum-based smart contracts designed for the agri-food industrial domain, to be able to reuse the code and modules and automate the process to shorten development times, while keeping it safe and reliable. Starting from the definition of the real production process, to aim automatically generates both the smart contracts to manage the system and the user interfaces to interact with them, thus producing a system that works semi automatically.



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CHAPTER I INTRODUCTION

Blockchain technology is a new distributed, decentralized and immutable ledger database that can assure immutability and integrity of data without the need of a third trusted party. This is one of the reasons for which strong expectations exist on this technology to solve problems in sectors in which several untrusted actors have to work together. such as in the case of the agri-food industry. Blockchain technology appeared for the first time in 2008 when one or more developers under the pseudonym Satoshi Nakamoto published a paper on a P2P electronic cash system [1] based on a digital currency called Bitcoin. This currency is based on a blockchain and does not need any intermediaries or central authority to transfer money from one person to another person. A blockchain is a specific type of distributed database able to store data in a secure and immutable way, and simultaneously to create transparency of the data history. It is based on a technological protocol that enables data to be exchanged with third parties within the P2P network without the need for intermediaries, because participants interact anonymously with encrypted identities, through transactions. Each transaction must be validated by a community of users through a consensus process, and then recorded in the ledger by adding it to an immutable chain of blocks holding the transactions stored in every network node. Many companies and startups are already adopting, and working on blockchain technology, trying to exploit the many advantages it promises. so we are experiencing a strong growth of ideas and applications.


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CHAPTER 10

CONCLUSION

10.1 CONCLUSION

Now days, consumers worldwide want to be sure that the food they eat is safe and can be reliably traced back to its point of origin to give assurance that what they are buying is authentic and healthy. For this reason, they are demanding the highest standards of food safety throughout the supply chain and they are willing to pay for the intangible attributes of secure traceability and country of origin labeling. Traceability systems are considered important to ensure the safety of a food product and prevent food fraud in the food supply chain. It is essential to improve the current traceability systems, as unscrupulous producers could exploit the gaps in the systems to their advantage and to the detriment of consumers.

Systems based on blockchain technology and smart contracts, integrated with the Internet of Things, allow to implement a traceability system where the producers can share the responsibility to contribute information to their products, and independent third party can identify themselves and certify the correctness of the data related to products' origin and quality. In this way, the customer can be assured of the truthfulness of the reported information with a high degree of confidence.

In this context, we proposed a system enabling developers to quickly and smoothly develop traceability systems in the agri-food domain, without the need to grasp in every detail the technicalities of SC development, which is clearly different from classical software development. To this purpose, we accurately represented the problem domain, which was found suitable for such an approach, and developed a system able to automatically generate both the SCs and the UI of a tracing system.

Our approach starts from the description of the supply chain to be traced in terms of actors, producers, resources and products, events, and data. This description is given using a set of spreadsheet pages, which is a tool very easy to use also by people expert in the domain, but not in computer science. From these pages, converted to.csv les, the SCs are generated, as well as the HTML5 pages able to interact with them and providing the UI of the dApp.

This methodology can be used at every node of the supply chain and can capture critical

APPENDIX - 3

PUBLICATION PROOF:



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CARDAMOM PLANT DISEASE DETECTION

APPROACH USING KNN

PHASE II REPORT

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Dept.of Computer Science and Engineering

J.K.K Munirajah College of Technology,

T.N.Palayam.



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SUPERVISOR

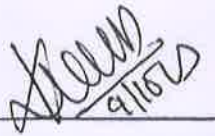
Mrs. M.C. SAVITHRI M.E.,
Associate Professor,

Dept.of Computer Science and Engineering

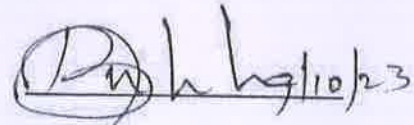
J.K.K Munirajah College of Technology,

T.N.Palayam.

Submitted for the Project Viva-voce Examination held on 9/10/23.....



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OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (TK), ERODE (Dt).

ABSTRACT

Identification of the plant disease is the key to preventing the losses in the yield and quantity of the agriculture product. The studies of the plant diseases means the studies of visually observable patterns seen on the plant. Health monitoring and disease detection on plant is very critical for sustainable agriculture. It is very difficult to monitor the plant disease manually. It requires tremendous amount of work, expertise in the plant disease and also require the excessive processing time. Hence, image processing is used for the detection of plant disease. Disease detection involves the steps like image acquisition, image processing, image segmentation, feature extraction and classification.

This paper discussed the methods used for the detection of plant diseases using their leaves images. It also discussed some segmentation and feature extraction algorithm used in the plant disease detection. This is something on which the economy profoundly depends. Infection discovery in plants is a significant job in the agribusiness field, as having disease in plants is very common. To recognize the diseases in leaves, a continuous observation of the plant is required. This observation or continuous monitoring of the plants takes a lot of human effort and it is time consuming too. To make it simply some sort of programmed strategy is required to observe the plants. Program based identification of diseases in plants makes easier to detect the damaged leaves and reduces human efforts and time- saving.

The proposed algorithm distinguishing sickness in plants and classify them more accurately as compared to existing techniques. It is very difficult to monitor the plant disease manually. It requires tremendous amount of work, expertise in the plant diseases, and also require the excessive processing time. Hence, image processing is used for the detection of plant diseases.


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CHAPTER 1

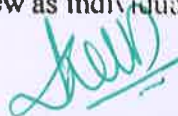
INTRODUCTION

In field of agriculture, detection of disease in plants plays an important role. To detect a plant disease in very initial stage, use of automatic disease detection technique is beneficial. For instance a disease named little leaf disease is a hazardous disease found in pine trees in United States. The affected tree has a stunted growth and dies within 6 years. Its impact is found in Alabama, Georgia parts of Southern US. In such scenarios early detection could have been fruitful.

The existing method for plant disease detection is simply naked eye observation by experts through which identification and detection of plant diseases is done. For doing so, a large team of experts as well as continuous monitoring of plant is required, which costs very high when we do with large farms. At the same time, in some countries, farmers do not have proper facilities or even idea that they can contact to experts. Due to which consulting experts even cost high as well as time consuming too. In such conditions, the suggested technique proves to be beneficial in monitoring large fields of crops. Automatic detection of the diseases by just seeing the symptoms on the plant leaves makes it easier as well as cheaper. This also supports machine vision to provide image based automatic process control, inspection, and robot guidance.

Plant disease identification by visual way is more laborious task and at the same time, less accurate and can be done only in limited areas. Whereas if automatic detection technique is used it will take less efforts, less time and become more accurate. In plants, some general diseases seen are brown and yellow spots, early and late scorch, and others are fungal, viral and bacterial diseases. Image processing is used for measuring affected area of disease and to determine the difference in the color of the affected area .

Image segmentation is the process of separating or grouping an image into different parts. There are currently many different ways of performing image segmentation, ranging from the simple thresholding method to advanced color image segmentation methods. These parts normally correspond to something that humans can easily separate and view as individual objects.



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CHAPTER 9


CONCLUSION

9.1 CONCLUSION

There are number of ways by which we can detect disease of plants and suggest remedies for them. Each has some pros as well as limitations. On one hand visual Analysis is least expensive and simple method, it is not as efficient and reliable. Image processing is a technique which is most spoken for very high accuracy and least time consumption are major advantages offered. The applications of K-means clustering and Neural Networks (NNs) have been formulated for clustering and classification of diseases that effect on plant leaves.

Recognizing the disease accurately and efficiently is mainly the purpose of the proposed approach. The experimental results indicate that the proposed approach is a valuable approach, which can significantly support an accurate detection of leaf diseases in a little computational effort. Along side the supply of cultivation tools, the farmers also need access to accurate information that they can use for efficient crop management and there is no better way than providing them a service that they can use through the software.

Mobile application can be developed which is handy and easy to use. An extension of this work will focus on automatically estimating the severity of the detected disease. As future enhancement of the project is to develop the open multimedia (Audio/Video) about the diseases and their solution automatically once the disease is detected.


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APPENDIX-3

Paper Publication Proof

INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal
ISSN : 2456-4184


The Board of
International Journal of Novel Research and Development
is hereby awarding this certificate to
Ranjani R

In recognition of the publication of the paper entitled
Cardamom Plant Disease Detection Approach Using KNN
Published In IJNRD (www.ijnrd.org) ISSN Approved & 8.76 Impact Factor
Published in Volume 8 Issue 9, September-2023 | Date of Publication: 2023-09-13
Co-Authors - Sevithri M. C

Registration ID : 205240 Paper ID - IJNRD2309142
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An International Scholarly, Open Access, Multi-disciplinary, Indexed Journal
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**A BLOCKCHAIN APPROACH TO ENSURING
PROVENANCE TO OUTSOURCED CLOUD DATA IN A
SHARING ECOSYSTEM**

PROJECT PHASE II REPORT

Submitted by

SURESHKUMAR P

731221405014

In partial fulfillment for the award of the degree of

MASTER OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING




JKK MUNIRAJAH COLLEGE OF TECHNOLOGY,

T.N. PALAYAM, GOBI-638 506.

ANNA UNIVERSITY: CHENNAI 600025

OCTOBER 2023


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GOBI (Tk), ERODE (Dt).

ANNA UNIVERSITY, CHENNAI

BONAFIDE CERTIFICATE

Certified that this Report titled "A BLOCKCHAIN APPROACH TO ENSURING PROVENANCE TO OUTSOURCED CLOUD DATA IN A SHARING ECOSYSTEM" is the bonafide work of "SURESHKUMAR P (731221405014)" who carried out the project work undermy supervision. Certified further that to the best of my knowledge, the work reported hereindoes not form part of any other thesis or dissertation on the basis of which a degree or awardwas conferred on an earlier occasion on this or any other candidate.



SIGNATURE

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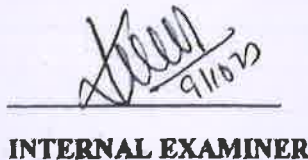


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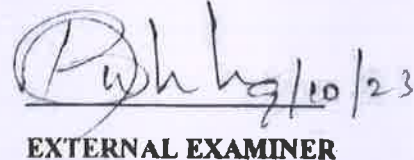
SUPERVISOR
Dr.N.SATHYABALAJI., M.E., Ph.D
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Dept.Of Computer Science and Engineering
J.K.K Munirajah College of Technology,
T.N.Palayam.


Submitted for the Project Viva-voce Examination held on..09..10..2023



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EXTERNAL EXAMINER



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Abstract

The proliferation of cloud-based services for data storage and sharing has brought to the forefront concerns regarding data provenance, security, and integrity. In response, we present an innovative blockchain-based solution tailored to ensure data provenance in decentralized sharing ecosystems. Leveraging the immutability and transparency inherent in blockchain technology, our approach establishes an incorruptible ledger of data transactions, thereby bolstering data integrity and security. Smart contracts play a pivotal role, automating data sharing agreements and enforcing access control protocols, fostering trust and accountability among participants. Empirical findings underscore the effectiveness of our approach in maintaining data provenance and transparency, making it a viable choice for real-world cloud data sharing scenarios. Here, we showcase the use of Solana, a high-performance blockchain platform, to facilitate data provenance tracking, ensuring high throughput, low latency, and scalability. This article delves into system architecture, smart contract development, data sharing processes, and the role of Solana's consensus mechanism in upholding data integrity and transparency, offering a comprehensive solution to the challenges of modern data sharing ecosystems.


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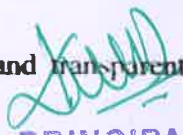
CHAPTER I INTRODUCTION

The advent of cloud computing has revolutionized the landscape of data storage and sharing, offering unprecedented scalability and accessibility to individuals and organizations alike. However, the convenience of cloud-based data sharing is accompanied by inherent challenges, particularly in the domain of data provenance – the ability to trace and ensure the authenticity and integrity of data as it traverses various stages within cloud ecosystems. As data becomes increasingly outsourced to cloud service providers, concerns related to data handling, security, and the potential for unauthorized access have gained prominence. Data provenance, in the context of cloud computing, plays a pivotal role in safeguarding data integrity, enforcing security protocols, facilitating compliance, and ensuring comprehensive auditability within cloud systems.

In this digital age, data has become a valuable asset, and its security and traceability are paramount. When data is entrusted to third-party cloud providers, the need for a robust mechanism to guarantee its provenance becomes essential. Data provenance ensures that data can be traced back to its origins, providing insights into how it has been processed, modified, and accessed. It serves as a crucial element in maintaining trust and accountability in cloud environments, especially in scenarios involving sensitive or critical data.

This research endeavors to propose a robust blockchain-based solution tailored to address the multifaceted challenges associated with ensuring data provenance in decentralized cloud data-sharing environments. Leveraging the principles of blockchain technology, which is known for its transparency, immutability, and decentralization, this research aims to achieve the following objectives:

1. Implement a blockchain network to maintain an immutable and transparent


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CHAPTER X

CONCLUSION AND FUTURE WORK

CONCLUSION

The proposed blockchain approach utilizing Solana presents a robust solution for ensuring data provenance to outsourced cloud data in decentralized sharing ecosystems. The use of Solana's high-performance blockchain platform, combined with smart contracts, ensures high throughput, low latency, and scalability, making it suitable for real-time data provenance tracking. This approach offers transparency, immutability, and data integrity, providing users with a verifiable record of data ownership, modifications, and transfers. As blockchain technology continues to evolve, the proposed approach showcases its potential to revolutionize data provenance in decentralized ecosystems.



FUTURE WORK

Future work includes investigating scalability improvements, exploring interoperability with other blockchain networks, and enhancing privacy protection mechanisms.



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APPENDIX-III
PUBLICATION PROOF



**International Research Journal Of Modernization
in Engineering Technology and Science**
(Reviewed, Open Access, Fully Refereed International Journal)



e-ISSN: 2582-5298

IRJMETS Certificate Volume 05 Issue 10 100100000164 **Date: 06/10/2023**







Certificate of Publication

This is to certify that author **"Suresh Kumar P"** with paper ID **"IRJMETS51000000164"** has published a paper entitled **"A BLOCKCHAIN BASED SOLUTION FOR ENSURING PROVENANCE TO OUT SOURCED CLOUD DATA IN A DECENTRALIZED SHARING ECOSYSTEM"** in **International Research Journal Of Modernization In Engineering Technology And Science (IRJMETS), Volume 05, Issue 10, October 2023**

A. Dhanu
Editor in Chief



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Accredited by NAAC with "A" grade



T.N. Palayam (Po), Gobi (Tk), Erode (Dt) – 638 506

INTERNSHIP DETAILS 2022-23

SL.N O	REGISTER NUMBER	STUDENT NAME	NAME OF THE COMPANY	LOCATION	DATE
1	731221405001	ARUNKUMAR R	KAASHIV INFOTECH	CHENNAI	07.08.2023 to 12.08.2023
2	731221405002	CHARLY S			
3	731221405005	GAYATHRI S			
4	731221405006	INDHIRAN R			
5	731221405007	LOGARAJA S			
6	731221405008	NAVEEN S			
7	731221405009	PONMANI A			
8	731221405010	RAJESH KUMAR A			
9	731221405011	RANJANI R			
10	731221405014	SURESHKUMAR P			


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GOBI (Tk), ERODE (Dt).



Internship

1 message

MON 31 Jul 2023 at 2.00pm

From: HODCSE <hodcse@jkkmct.edu.in>

Date: MON 31 Jul 2023 at 2.00pm

Subject: **Internship-reg**

To: KAASHIV INFOTECH <kaashiv.info@gmail.com >

Dear Sir,

I am requesting to be joining your **KAASHIV INFOTECH**. The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from your staff.

Additionally, I shall complete all insurance forms for the new intern orientation. I look forward to working with you and your fine team. I appreciate your confidence in me and providing the chance to work with and observe your outstanding staff.

Refer the following students: **ARUNKUMAR R, CHARLY S, GAYATHRI S, INDIRAN R, LOGARAJA S, NAVEEN S, PONMANI A, RAJESH KUMAR A, RANJANI R, SURESHKUMAR P**

Sincerely,

Second Year M.E CSE Student,
J K K Munirajah College of Technology,
T.N.Palayam, Erode-638506, Tamilnadu.


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T.N. PALAYAM (Po)-638506.
GOBI (Tk), ERODE (Dt).



Internship

1 message

THUR 03 Aug 2023 at 3.30pm

From: KAASHIV INFOTECH <kaashiv.info@gmail.com >

Date: THUR 03 Aug 2023 at 3.30pm

Subject: Internship-reg

To: HODCSE<hodcse@jkkmct.edu.in>

Dear SIR,


I am writing to confirm my acceptance of your internship offer of 07.08.2023 to 12.08.2023 and to tell you how to be joining my KAASHIV INFOTECH. The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from my staff.

As we discussed, I will report at 8:00 a.m. on AUG 05, 2023 and will be ready to take on my first assignment as an intern from my company. Additionally, I shall complete all insurance forms for the new intern orientation. I look forward to working with you and your fine team. I appreciate your confidence in me and providing the chance to work with and observe my outstanding staff.

Refer the following students: ARUNKUMAR R, CHARLY S, GAYATHRI S, INDHIRAN R, LOGARAJA S, NAVEEN S, PONMANI A, RAJESH KUMAR A, RANJANI R, SURESHKUMAR P

Sincerely,

HR Manager,
KAASHIV INFOTECH,
Chennai.


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This is to certify that **Ms.RANJANI R**, studying **ME.Computer Science and Engineering** in **J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY** has successfully completed Internship Program from **07.08.2023 to 12.08.2023** at **Kaashiv info tech, Chennai**

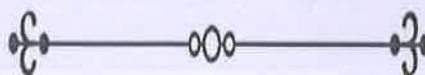
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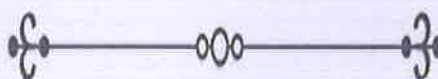
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Manager



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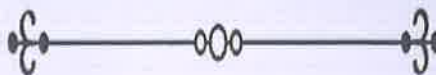
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During the Internship, her Performance was good.



Manager



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During the **Internship**, her Performance was good.



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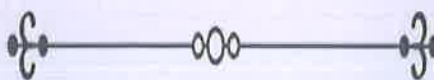
This is to certify that **Mr.LOGARAJA S**, studying **ME.Computer Science and Engineering** in **J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY** has successfully completed **Internship Program** from **07.08.2023** to **12.08.2023** at **Kaashiv info tech, Chennai**
During the **Internship**, her **Performance** was good.






Manager



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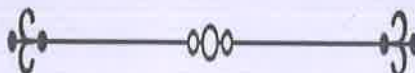
This is to certify that **Mr.INDHIRAN R**, studying **ME.Computer Science and Engineering** in **J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY** has successfully completed **Internship Program** from **07.08.2023** to **12.08.2023** at **Kaashiv info tech**, Chennai
During the **Internship**, her Performance was good.



Manager



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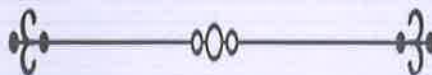
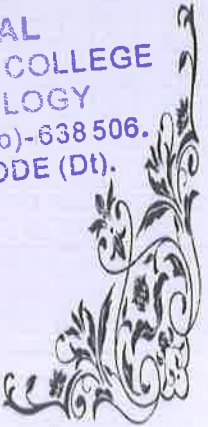
This is to certify that **Ms.GAYATHRI S**, studying **ME.Computer Science and Engineering** in **J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY** has successfully completed **Internship Program** from **07.08.2023** to **12.08.2023** at **Kaashiv info tech**, Chennai
During the Internship, her Performance was good.



Manager



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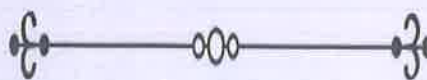
This is to certify that **Mr.CHARLY S**, studying **ME.Computer Science and Engineering** in **J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY** has successfully completed **Internship Program** from **07.08.2023** to **12.08.2023** at **Kaashiv info tech**, Chennai
During the **Internship**, her Performance was good.



Manager



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During the **Internship**, her Performance was good.

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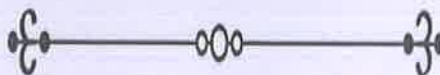
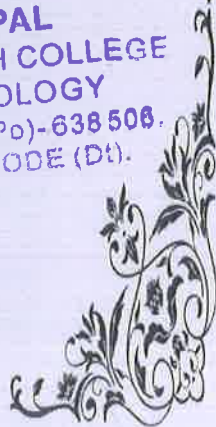
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Accredited by NAAC with "A" grade

T.N. Palayam (Po), Gobi (Tk), Erode (Dt) – 638 506



INTERNSHIP DETAILS 2022-23

SI.N O	REGISTER NUMBER	STUDENT NAME	NAME OF THE COMPANY	LOCATION	DATE
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2	731222405002	THAMARAISELVI R			


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OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).



Internship
1 message

MON 14 Aug 2023 at 2.00pm

From: HODCSE <hodcse@jkknct.edu.in>

Date: MON 14 Aug 2023 at 2.00pm

Subject: **Internship-reg**

To: TOPBEAN TECHNOLOGIES <hr.topbeaninfo@gmail.com >

Dear Sir,


I am requesting to be joining your **TOPBEAN TECHNOLOGIES**. The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from your staff.

Additionally, I shall complete all insurance forms for the new intern orientation. I look forward to working with you and your fine team. I appreciate your confidence in me and providing the chance to work with and observe your outstanding staff.

Refer the following students: **KIRUTHIKA S, THAMARASELVI R**

Sincerely,

First Year M.E CSE Student,
J K K Munirajah College of Technology,
T.N.Palayam, Erode-638506, Tamilnadu.


PRINCIPAL
JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638506.
GOBI (TK), ERODE (Dt).



Internship

1 message

THUR 17 Aug 2023 at 3.30pm

From: TOPBEAN TECHNOLOGIES <hr.topbeaninfo@gmail.com >

Date: THUR 17 Aug 2023 at 3.30pm

Subject: Internship-reg

To: HODCSE<hodcse@jkkmct.edu.in>

Dear SIR,

I am writing to confirm my acceptance of your internship offer of 21.08.2023 to 26.08.2023 and to tell you how to be joining my **TOPBEAN TECHNOLOGIES**. The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from my staff.

As we discussed, I will report at 8:00 a.m. on AUG 19, 2023 and will be ready to take on my first assignment as an intern from my company. Additionally, I shall complete all insurance forms for the new intern orientation. I look forward to working with you and your fine team. I appreciate your confidence in me and providing the chance to work with and observe my outstanding staff.

Refer the following students: **KIRUTHIKA S, THAMARAISELVI R**

Sincerely,

HR Manager,
TOPBEAN TECHNOLOGIES,
Coimbatore.


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TOPBEAN TECHNOLOGIES™

— THE EXPERT TEAM —

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. **THAMARASELVI R**, studying **ME.Computer Science and Engineering** in **JKK Munirajah College of Technology** has/have successfully completed the **internship** program from **23.01.2023** to **28.01.2023** at **topbean technologies, Coimbatore**.

During the **internship**, His/Her performance was good.

Manager

28.01.2023

Date

PRINCIPAL
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TOPBEAN TECHNOLOGIES™

— THE EXPERT TEAM —

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms.KIRUTHIKA S**, studying **ME.Computer Science and Engineering** in **JKK Munirajah College of Technology** has/have successfully completed the internship program from **23.01.2023 to 28.01.2023** at **topbean technologies, Coimbatore.**

During the internship, His/Her performance was good.

Manager

28.01.2023

Date

PRINCIPAL

**JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY**

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