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Worked in Industrial Engineering, Manufacturing Engineering, Fabrication Shop, Productivity Projects, Sales & Marketing and Complete Operations, Including Finance/IT and HR.

Worked as a Manufacturing Engineer in Shippensburg, USA. Certified Six Sigma Black belt from CII, Certified Lean Leader (TPS/GPS) from Gifu, Japan, Volvo Group India Country Management Team   Member.

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A Survey on Application of Deep Learning: Unsupervised Auto Encoder

Mr.Raghavendrachar S[1] , Dr. Rekha B Venkatapur[2]

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[2]Professor & Head, Department of Computer Science and Engineering, KSIT, Bengaluru-560109,rekhabvenkatapur@ksit.edu.in

Abstract – Deep Learning is playing an increasingly important role in our lives. Deep learning is not a restricted learning approach, but it abides various procedures and topographies which can be applied to an immense speculum of complicated problems. Deep learning methods have made a significant break-through with appreciable performance in a wide variety of applications with useful security tools. It is considered to be the best choice for discovering complex architecture in high-dimensional data by employing back propagation algorithm. Deep learning has already made a huge impact in areas, such as cancer diagnosis, precision medicine, self-driving cars, predictive forecasting, biological image classification, speech recognition, smart city and many more. This paper mainly focuses on the working of unsupervised autoencoders and its applications.

Key Words: Deep Learning, back propagation, unsupervised learning, autoencoders,

I. INTRODUCTION

Machine learning is a subsection of Artificial Intelligence that imparts the system, the benefits to automatically learn from the concepts and knowledge without being explicitly programmed. Neural Network is a machine learning technique that is inspired by and resembles the human nervous system and the structure of the brain. It consists of processing units organized in input, hidden and output layers. The nodes or units in each layer are connected to nodes in adjacent layers. Each connection has a weight value. The inputs are multiplied by the respective weights and summed at each unit. The sum then undergoes a transformation based on the activation function, which is in most cases is a sigmoid function, tan hyperbolic or rectified linear unit (ReLU).The implementation of neural networks consists of the following steps:

1. Acquire training and testing data set
2. Train the network
3. Make prediction with test data

Deep learning technology works on the Artificial Neural Network system (ANNs). These ANNs constantly take learning algorithms and by continuously increasing the amounts of data, the efficiency of training processes can be improved. Deep learning is also known as deep structured learning and hierarchical learning that consists of multiple layers which includes nonlinear processing units for the purpose of conversion and feature extraction.

In the Deep learning methodology, the term "Deep" enumerates the concept of numerous layers through which the data is transformed. It must be noted that there is a difference between Deep learning and Representational learning. Representational learning includes the set of methods that helps the machine to take the raw data as input and determines the representations for the detection and classification purpose.

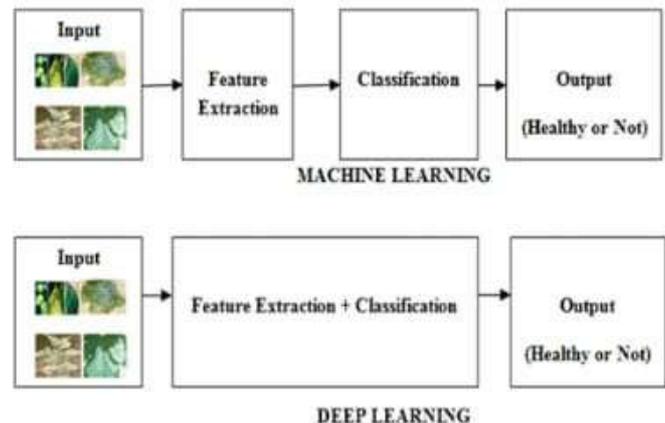Figure 1 depicts the differences between the Machine learning and Deep learning.

Figure 1: Difference between Machine Learning and Deep Learning

Deep learning techniques use nonlinear transformations and model abstractions at a high level in large databases. It also describes that a machine transforms its internal attributes, which are required to enumerate the descriptions in each layer, by accepting the abstractions and representations from the previous layer.

Deep learning paradigm uses a massive ground truth designated data to find the unique features, combinations of features and then constructs an integrated feature extraction and classification model to figure out a variety of applications. The meaningful characteristic of deep learning is the data that uses general purpose methods, various extensive features and no intervention of human engineers.

The key factors on which Deep learning methodology is based are:
  ➢ Nonlinear processing in multiple layers or Stages.
  ➢ Supervised or Unsupervised learning.

Nonlinear processing in multiple layers to a hierarchical method in which the present layer accepts the results from the previous layer and passes its output as input to the next layer. Hierarchy is established among layers so as to organize the importance of the data. Here Supervised and Unsupervised learning are linked to the class target label. Its availability means a supervised system and absence indicates an unsupervised system.

The structure of this paper is organized as follows: Section II is about the Basic Architectures of Deep Neural Network (DNN). Section III provides detailed explanation about the working of unsupervised autoencoders architecture.Section IV provides advantages and applications of Unsupervised autoencoders and finally Section V is the conclusion of this paper.

Nearest Neighbor Monitoring Mechanism for Efficient and Secure Data Aggregation in WSN Environment

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The Internet of Things has observed tremendous growth in the last two decades utilizing wireless sensor technologies and as the number of smart devices and applications increases, the need for data collection and analysis data becomes increasingly difficult. In general sensor nodes are powered through batteries hence it restricts the efficiency of Wireless Senor Network. Data aggregation is a top-most mechanism for redundancy discarding and improvising the network lifetime. It also possesses various advantages which include minimizing the energy consumption, minimizing the network traffic. Furthermore, as sensor nodes are deployed in hostile averments and transmit sensitive information, designed networks are prone to various attacks. As a result, the focus of this research work is on designing and developing the Nearest Neighbor Monitoring (NN-SDA) mechanism to provide secure data aggregation in an efficient and secured manner. Furthermore, the proposed mechanism allows the nearest neighbour node to monitor and detect the malicious node. Further, the NN-SDA-mechanism algorithm is designed by adding the anomaly and detecting the malicious nodes. The NN-SDA mechanism is evaluated in terms of malicious packet identification rate, average energy utilization, and system throughput and the comparative analysis is performed with the existing model.

Keywords: Data Aggregation, Secure Data Aggregation, NN-SDA Mechanism, WSN,

I. INTRODUCTION

Internet of Things (IoT) has been promoting several recent trending domains such as communication networks, Big Data, Artificial Intelligence, and so on. Furthermore, the recent development of these domains has elevated IoT to attract more and more investment in terms of commercial aspects, technical aspects, and improvisation of human life aspects. Generally, IoT can connect many devices and emerge in every application from critical to daily life applications such as smart homes, smart grid, intelligent transportation, and so on. It also requires an efficient network to perform optimally, which is normalized through Wireless Sensor Network (WSN). The IoT and WSN are parallelly interconnected and the growth has been analyzed.

WSN aka Wireless Sensor Network is a defined network that is deployed in inaccessible areas and performs data propagation; the main role of this constituted device in WSN is to sense the data, gather the data and transmit it to a base station for further process. The idea of WSN possesses various advantages in different applications like military service, agriculture, and so on. Furthermore, the implementation cost is very low for applications everywhere such as wildfire management, monitoring management, military surveillance, homeland security, and etc. Moreover, huge utilization of sensor networks contributed to huge data generation and processed and WSN possesses various restrictions such as network lifetime due to limited energy since most of the sensors are battery-based and recharging is highly improbable since it is deployed in remote areas.

Moreover, due to sensor node nature and deployment environment, WSN has different security issues than the traditional network. Some of them are:

A. Data confidentiality: Data confidentiality is one approach where the secrecy of the sensed data through a physical sensor device is secured and not disclosed to a third party.

B. Data integrity: Data confidentiality guarantees the security of data but it does not protect from data being altered; hence
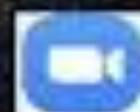
Efficient Intrusion detection of malicious node using Bayesian Hybrid Detection in MANET

Sangeetha. V[1],Vaneeta M [2],S Swapna Kumar [3],Piyush Kumar Pareek[4], Sunanda Dixit[5]

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[2]Associate Professor, Dept of CSE, K.S.Institute of Technology, Bengaluru
[3]Professor, Dept of E &C, Vidya Academy of Science & Technology, Thrissur
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Abstract. In the past several years there have been considerable interest developed towards study on distributed networks. The key underlying application under such technology is mobile ad hoc networks (MANETs), which have been exploiting the range of research opportunity. In MANET due to infrastructure less network and dynamic topology changes, security becomes one of the important issues. The defense strategies such as intrusion detection system (IDS) impose a method to build efficient detection of malicious nodes. Game theory is mainly used to study security problems identification in MANET. The Bayesian Hybrid Detection (BHD) is applied to detect the malicious nodes. A BHD allows the defender to adjust based on opponent observation. The simulation is carried out using the MATLAB for malicious nodes detection. The security degree is measured by the payoff index and system stability index (SSI). Also the processing vs. accuracy index level is measured to identify reliability of detection. The proposed system enables for enhancing security in MANET's by modeling the interactions among a malicious node with number of legitimate nodes. This is suitable for future works on multilayer security problem in MANET.

Keywords: Bayesian game, Cluster nodes, Game theory, Intrusions, genetic algorithms

1. Introduction

In the wireless networking the nodes are spatially and randomly distributed, leads to exploration field of mobile ad hoc networks (MANETs). MANET is a network that consist of set of mobile nodes that communicate each other over wireless link. These mobile nodes will always establish dynamically own network without any infrastructure to forward data in a multi-hop mode. In a MANET, each mobile node can separately organize and interconnect with each other over bandwidth uncomfortable wireless relatives where, safety has become one of the important issues. Some of the applications in

Jennifer S. Raj
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Efficient Two-Layer Image Protection with Wavelet Transform Compression

M. Vaneeta, V. Sangeetha, and S. Swapna Kumar

Abstract The encoding complexity of an image format is a vigorously updating area of study in the field of two-layer protection with wavelet transform compression. In the proposed method, hybrid 2D-FDCT watermarking and RSA encryption for multispectral images predicted an efficient system. This approach satisfies the encryption security, robustness and classification accuracy retention of an algorithm. The two-layer protection of encrypted and embedded watermark image followed by wavelet transform compression minimizes the file size in the exhaustive process for encoding. An important merit is that encoding time is very much reduced in contrast to other security and compression mechanisms. The enhanced value of PSNR as well as trade-off of MES, normalized cross-correlation, the average difference and structural content improves the storage large file size medical image and improves bandwidth to an acceptable level.

Keywords Compression · DCT · Encryption · Image processing · Watermarking

1 Introduction

The Internet of things (IoT) is considered as the interconnection of computing devices such as in factory machinery, medical equipment or domestic appliances, enabling

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Certificate

This Certificates Acknowledges and Honors

Prof. /Dr. /Mr. /Ms. _____Rekha B Venkatapur_____ of

_____KSIT_____ has Participated and Presented Paper Titled

" _A Survey on Application of Deep Learing: unsupervised Auto Encoder_

"

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A Survey on Application of Deep Learning: Unsupervised Auto Encoder

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Abstract – Deep Learning is playing an increasingly important role in our lives. Deep learning is not a restricted learning approach, but it abides various procedures and topographies which can be applied to an immense speculum of complicated problems. Deep learning methods have made a significant break-through with appreciable performance in a wide variety of applications with useful security tools. It is considered to be the best choice for discovering complex architecture in high-dimensional data by employing back propagation algorithm. Deep learning has already made a huge impact in areas, such as cancer diagnosis, precision medicine, self-driving cars, predictive forecasting, biological image classification, speech recognition, smart city and many more. This paper mainly focuses on the working of unsupervised autoencoders and its applications.

Key Words: Deep Learning, back propagation, unsupervised learning, autoencoders,

I. INTRODUCTION

Machine learning is a subsection of Artificial Intelligence that imparts the system, the benefits to automatically learn from the concepts and knowledge without being explicitly programmed. Neural Network is a machine learning technique that is inspired by and resembles the human nervous system and the structure of the brain. It consists of processing units organized in input, hidden and output layers. The nodes or units in each layer are connected to nodes in adjacent layers. Each connection has a weight value. The inputs are multiplied by the respective weights and summed at each unit. The sum then undergoes a transformation based on the activation function, which is in most cases is a sigmoid function, tan hyperbolic or rectified linear unit (ReLU).The implementation of neural networks consists of the following steps:

1. Acquire training and testing data set
2. Train the network
3. Make prediction with test data

Deep learning technology works on the Artificial Neural Network system (ANNs). These ANNs constantly take learning algorithms and by continuously increasing the amounts of data, the efficiency of training processes can be improved. Deep learning is also known as deep structured learning and hierarchical learning that consists of multiple layers which includes nonlinear processing units for the purpose of conversion and feature extraction.

In the Deep learning methodology, the term "Deep" enumerates the concept of numerous layers through which the data is transformed. It must be noted that there is a difference between Deep learning and Representational learning. Representational learning includes the set of methods that helps the machine to take the raw data as input and determines the representations for the detection and classification purpose.

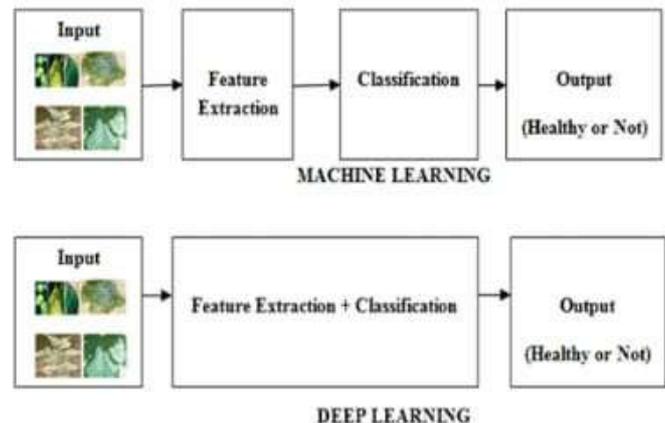Figure 1 depicts the differences between the Machine learning and Deep learning.

Figure 1: Difference between Machine Learning and Deep Learning

Deep learning techniques use nonlinear transformations and model abstractions at a high level in large databases. It also describes that a machine transforms its internal attributes, which are required to enumerate the descriptions in each layer, by accepting the abstractions and representations from the previous layer.

Deep learning paradigm uses a massive ground truth designated data to find the unique features, combinations of features and then constructs an integrated feature extraction and classification model to figure out a variety of applications. The meaningful characteristic of deep learning is the data that uses general purpose methods, various extensive features and no intervention of human engineers.

The key factors on which Deep learning methodology is based are:
- ➢ Nonlinear processing in multiple layers or Stages.
- ➢ Supervised or Unsupervised learning.

Nonlinear processing in multiple layers to a hierarchical method in which the present layer accepts the results from the previous layer and passes its output as input to the next layer. Hierarchy is established among layers so as to organize the importance of the data. Here Supervised and Unsupervised learning are linked to the class target label. Its availability means a supervised system and absence indicates an unsupervised system.

The structure of this paper is organized as follows: Section II is about the Basic Architectures of Deep Neural Network (DNN). Section III provides detailed explanation about the working of unsupervised autoencoders architecture.Section IV provides advantages and applications of Unsupervised autoencoders and finally Section V is the conclusion of this paper.

An Exploratory Study for Process Optimization in IT Industry

H. Aditya Pai, Piyush Kumar Pareek, M. S. Narasimha Murthy, Sunanda Dixit, and Sneha Karamadi

Abstract Software defect prediction (SDP) is the method essential for testing during life cycle of the software development (LCSD). It finds out those stages of the software which are more prone towards defect and requires extensive testing. In this way, the testing can be without usage of extra resources. Though SDP is an essential step in the testing, it is not always easy to do the prediction of which stage of the software is having defects. There are various reasons which barriers for the smooth performances of defect prediction. In this paper, we carried out the survey on different IT companies and analyzed their software process model by performing SWOT chart. The chart gave us the idea to perform value stream mapping (VSM) that identifies the non-value added process activities in the IT companies. Also failure effective analysis model (FEAM) to know the outcome or threats over the defects identified. We also came up with the hypothesis for the delay in software development process. ANOVA analysis was carried out to understand the turbulence in the business environment.

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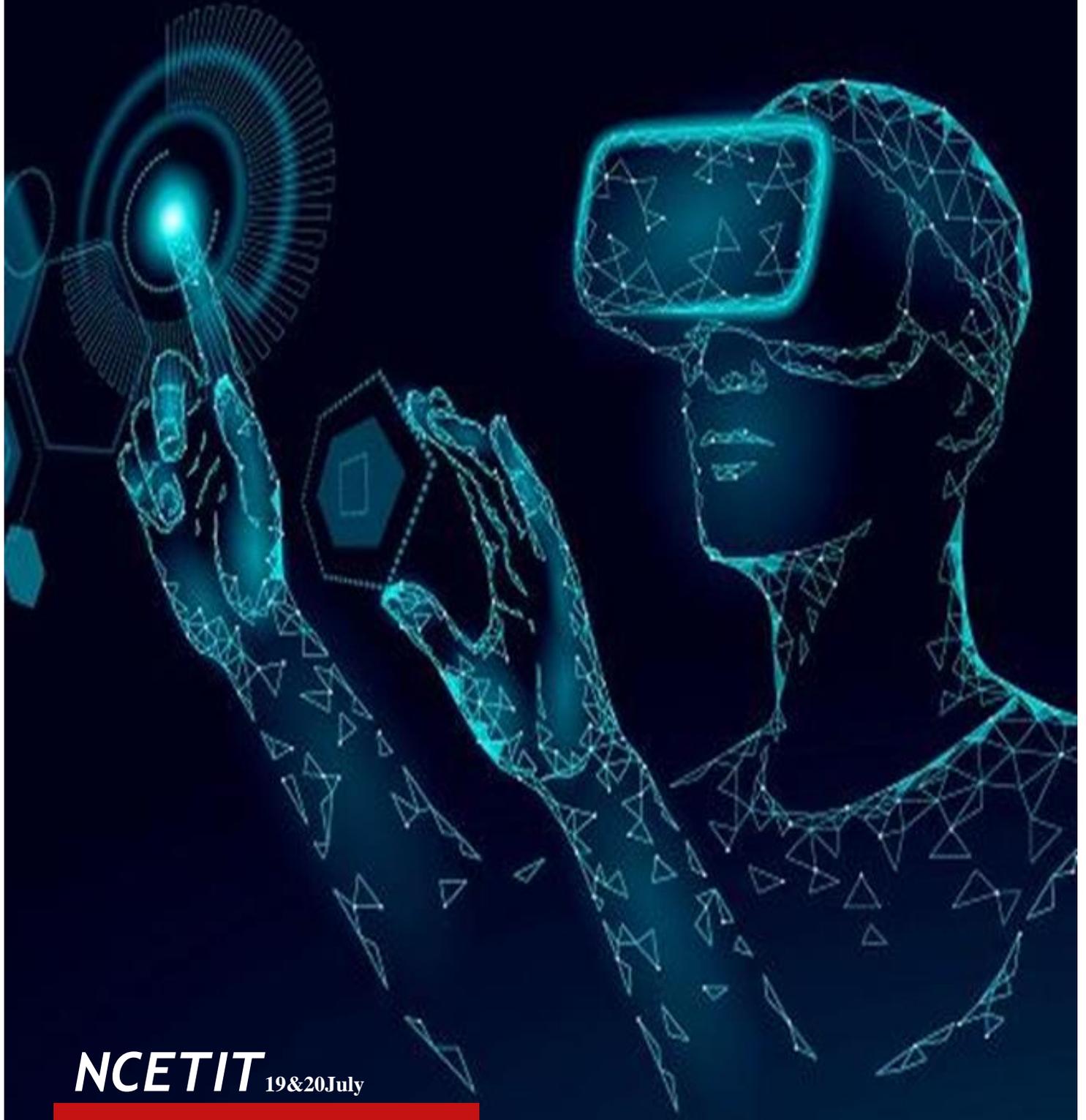Department of Computer Science and Engineering, K. S. Institute of Technology, Bangalore, India
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A Study on Secure Software Development Life Cycle (SSDLC)

S. G. Gollagi, M. S. Narasimha Murthy, H. Aditya Pai,
Piyush Kumar Pareek, and Sunanda Dixit

Abstract This article analyzes how estimation can be applied to programming headway techniques and work products to screen and improve the security characteristics of the item being made. It is centered on specialists—organizers, engineers, necessities geniuses, coders, analyzers, and managers—who need bearing concerning the best way to deal with push toward estimation for secure improvement. It does not address security measurements of system or network operations. At this moment, it has focused on understanding secure programming improvement life cycle.

Keywords Secure programming · Headway techniques · Measurements products

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TABLE OF CONTENTS

Voice Based E-Prescription

A system for Appointment Booking, Prescribing and EHR.

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Abstract - We all know that we are going through tuff times due to COVID-19 and this has made the fact of meeting anyone in person difficult. People in remote areas have difficulty traveling to a clinic. But as of now, we all know that most of the consultations are done online / over the phone, which results in miscommunication of the medicines prescribed. Also if the patient forgets the medicine name, dosage, he /she has to keep contacting the doctor again and again.Our idea mainly focuses on eliminating these errors and helping the doctors generate prescriptions by voice commands and send the same to the patient as SMS/PDF.

I. INTRODUCTION

The outbreak of Novel Coronavirus disease is a grave menace to the entire world affecting millions of people. Massive annual conferences to small society meetings alike have moved to the online mode. The new format (online mode) poses numerous technical and organizational challenges, but it also offers opportunities. Our application helps in reaching out to patients virtually and consulting them. Also, adverse drug effects are a major cause of death in the world with tens of thousand deaths occurring across the world each year because of medication or prescription errors. Many of such errors involve the administration of the wrong drug or dosage by caregivers to patients due to indecipherable handwritings, drug interactions, confusing drug names etc. The adoption of voice-based e-prescription could eliminate some of these errors because they allow prescription information to be captured and heard through voice response rather than in the physician's handwriting. This project presents a design and implementation of a voice-based E-Prescription along with the ability to book appointments using the IVR system as the main idea. This application helps the doctors to generate patient prescriptions using voice commands and send the same as an SMS for people who do not have the facility of a smartphone or as a pdf to the patients over social media. Furthermore, the application has features wherein the doctors can access records of patients and send messages. Patients can book appointments based on doctors availability on our app or using the IVR system. They can also use the CHATBOT feature to book tests prescribed by the doctor and access their records as well independent of the type of phone they use.

II. METHODOLOGY

The existing systems offer consultation facilities but it limits its facilities to only high end devices like smartphone/PC users. We propose a system where all the users will have to go through a one time registration process, which helps the system maintain patients' profiles as well as classify smartphone and basic cell phone users.

Once the user is registered, he/she can,

1. Book appointments
2. View prescriptions
3. Hear the audio version of the prescription

The Method is to process an audio file of prescription and reach out to people with smartphones or those with basic cell phones.

The system has 2 major entities

2.1 Converting the audio file to Text format and sending it as PDF/SMS to the patient.

The idea is to use the prescription audio file, recorded by the doctor, feed it as input to Google speech-to-text api and further process the prescription to a proper format.
The API being used is Google's Speech-to-Text API, The Speech-to-Text API synchronous recognition request is a way of performing recognition on speech audiodata. After Speech-to-Text processes and recognizes all of the audio, it returns a response.

2.2 Storing the audio file of prescription in the database.

The audio file can be played either on the application or

REMOTE ACCESS

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Abstract - An Android Mobile Application that provides an simple way to access your mobile contacts, helps users convert the audio profile of the mobile(silent to ringer), tracks the location of the mobile, enables users to lock the mobile, fetch battery status and latest OTPs remotely just through a simple SMS without Internet Connectivity.

1. INTRODUCTION

We are in a society where everything is happening at the speed of a light. Keeping track of quite demanding essentials in this expeditious life. Here comes the use of our application called 'Remote Access'. It's a personal offline assistant to help you with the frequent problems faced in daily life.

Remote Access application performs the following operations:

1. Fetches the required contacts from the phone.
2. Changes the sound profile if it is in silent mode.
3. Track your phone's location if you lost it.
4. Lock your phone if you feel it is insecure.
5. Fetch the battery status of the mobile.
6. Fetch the latest OTPs from the mobile.

All the above features can be implemented by just sending a simple SMS from any phone remotely with the correct passcode and required action to be performed. Then the app reads the message received and performs accordingly by sending back the message with the required details. Here the passcode is used for the purpose of the security.

2. PURPOSE

Humans often tend to forget their phone and get into trouble. This becomes serious in some situations when people can't find their phones in some important situations or if they feel that their phone is insecure. There are many people who want an alternative to access their phones remotely.

Here's where our application comes into use. Remote Access is a light weight offline Android application that can help everyone with the common problems faced in day-to-day life. Upon installing this application on the remote mobile then you can just send a simple SMS from any mobile with the required keyword, access key and action to be performed. The response will be sent back to you from your mobile. Also in the same way we can also track the location, change the sound profile and also lock the phone by just sending a simple SMS.

3. LITERATURE SURVEY

Upon a Survey, A person on an average loses his nine items daily. That nearly comes into 3,300 items per year close to 2.5 days. Over an average of 60.5 years of adult life, that's nearly 200 thousand items lost and over 150 days wasted in a lifetime. The most commonly lost items in the UK survey are mobile / smartphone, house keys, car keys, paperwork, sunglasses/ glasses.

So its clear Mobile phones are misplaced a lot. What if we had misplaced/forgot the mobile and had gone out without knowing it. We can't imagine this situation, without our mobile and having to make some important calls, or want to know the OTPs received/

Based on going through online references we thought of conducting a very own survey. Upon surveying a group of around 100 people varying from teenagers to elderly persons through Google forms the results were as below:
Google Form link:
- https://forms.gle/LYs1zJLorBW85zHC8

LISTEN FOR VISION

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Abstract—Blind is one who is unable to see because of injury, disease, or a congenital condition. The biggest challenge for a blind person is to navigate around places. There are around 253 million people worldwide who are blind and these people face lots of challenges to perform their day to day activities especially related to moving and navigation. In this context we came up with this model of android application that is simple and easy to use to help blind people in navigation by detecting surrounding obstacles and giving the audio instructions regarding the same.

Keywords—Visually impaired , Android

1. INTRODUCTION

Visual impairment is decreased ability to see or complete loss of sight (blind) and cannot be corrected by any normal means like lenses or spectacles. Visually impaired people face many problems among which detecting obstacles and navigating between places are important ones .With an intention to help such people we are building an android application that can be used for moving around conveniently. Visually impaired people have to deal with lot of challenging conditions due to their poor vision or complete loss of sight. Quality of life is affected for a visually impaired person due to his/her wanting to constantly depend on some other person for completing there day to day activities that increases the rate of depression and anxiety. With this application person can overcome the use of mobility aids like canes. In our android application we use a camera mainly that detects the surrounding objects and the instructions are given in form of audio signals. In simple this android application uses a smart phone with camera that's easily available to detect surrounding objects that can help navigating in unknown environments.

2. LITERATURE SURVEY

With vision being most vital sense organ for humans its disorder or loss affects the person in terms of his performance of day to day activities. In recent advancement of technology ,scientists are trying to develop various systems to make visually impaired individuals help feel more independent and get better awareness of their surroundings. These developments prove to be boon in lives of blind individuals. Various systems have been developed to help blind users understand about their surroundings.

A smart cane was built that alerts the blind people to get the obstacles ahead of him through voice alert and vibr.

could help them in walking carefully with less accident. But this could cost a blind and it makes them uncomfortable to move in crowded environment.

Viziyon is a IOT based hand held device which detects the surrounding obstacles and alerts the user. Ruxandra proposed a smart phone based system which determines the type of object classifying as normal or urgent.

3. METHODOLOGY

Camera Access - Our application request for the permission to access the smart phone camera.

Camera2API is the latest Android camera framework API that replaces the deprecated camera framework libraries. Camera2API can customize phone camera automatically and takes images at faster intervals and applies effects and filters directly if required. This way it makes camera2 API more powerful.
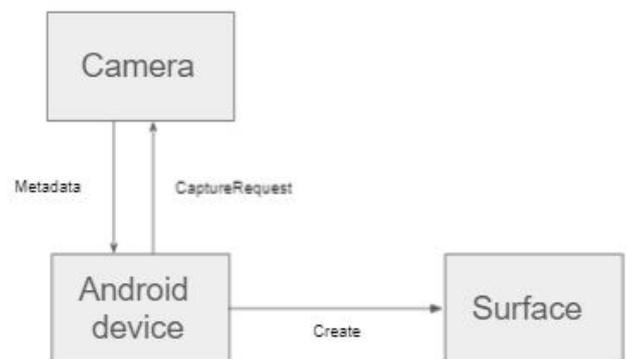

Fig 1 Camera2API Block Diagram

Dataset - Coco is a large-scale dataset featured with object detection, segmentation and captioning or labeling. COCO consist of 328,000 images with 2.5 million zlabeled instances and 91 object categories with 11 super categories. COCO has several features like object detection, object segmentation, stuff segmentation, recognition in context.

Object detection - Tensor Flow Lite is Tensor Flow's light solution for mobile devices. It enables inference called on-device machine

ANIMAL INTRUSION DETECTION USING MACHINE LEARNING

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Abstract:

In India agriculture is the prop of the economy and majority of the population depend on agriculture for their livelihood. But one of the common threats that is human animal conflict is causing a major damage to the farmland, which is responsible for the crop loss and this is leading to financial loss to the farmers. To overcome this issue the help of Machine Learning and Raspberry pi, we have proposed a digital surveillance system to monitor the farmland for any intrusion of animal and to divert them with the help of the siren. Our system is also used to alert the farmers and forest officials by sending an alert Twilio message.

Keywords: Machine Learning, Raspberry Pi, SMS Twilio

E-DEFENCE FOR PEOPLE SAFETY

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Abstract:

Every day in our society we come across so many issues like medical emergencies, accidents, kidnaps and many more. Where in people especially girls are into serious problems. This made us think about an application which basically is a system for detecting the problem and alerting the authorities using most commonly available electronic devices like smart phones.

Keywords:

Short Message Service (SMS), Global Positioning System (GPS), Global System for Mobile Application (GSM), Security.

DETECTION OF MELANOMA SKIN CANCER

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Abstract

Dermatology diseases are one of the biggest medical issues in 21st century due to its highly expensive and complex diagnosis. Skin cancer are mainly of 2 types – Melanoma and Non -melanoma. Early detection of this fatal Melanoma skin disease increases the curing rate to 90%. In diagnosis of medical images vision of computer can play a vital role and is also proved by many existing systems.

Keywords:

Skin Cancer, Melanoma, CNN, Inception v3, Firebase.

1. INTRODUCTION

SKIN- Jack of all trades meaning it performs various tasks like protects the body by covering all the muscles and other tissues, maintaining the body optimal temperature in extreme climatic conditions, helps as an excretory organ removing wastes through sweating. Melanocyte if present in human skin causes Melanoma. Our task is mainly centered around detection of this lethal type of malignant growth. Melanoma can be detected by straightforward visual assessment known as ABCDE examination where A stands for ASSYMETRIC cancerous mole tend to be irregular in shape. B stands for BORDER it appears to be ragged and notched while C stands for COLOR includes uneven shades of colors. D stands for DIAMETER. If a mole becomes greater than ¼ inch is cancerous and E stands for EVOLVING. High closeness between various sorts of skin lesions makes a visual appraisal troublesome and prompts wrong examination. Therefore, an automated system is proposed to ease out the skin lesions classification.

2. OBJECTIVES

The below are objectives:

- To design and develop novel image processing approached based system for melanoma detection.
- Segregating the available datasets into benign and malignant region based on training the network.
- Segment the region of interest effectively by removing the noise.
- Feature extraction for effectively extracting properties of benign and malignant region.
- Training Neural Network with variation in layers to find best efficiency.
- Test case to load the image and identify the test image is benign or malignant.
- Graphical User Interface to use the program functionality.

3. METHODOLOGY

The system consists of four stages:

3.1 DATASET COLLECTION:

The appropriate dataset was collected from International Skin Imaging Collaboration (ISIC) Archive. Goal of the archive is to serve as image resources for public for research and development, teaching, testing of diagnostic AI algorithms.
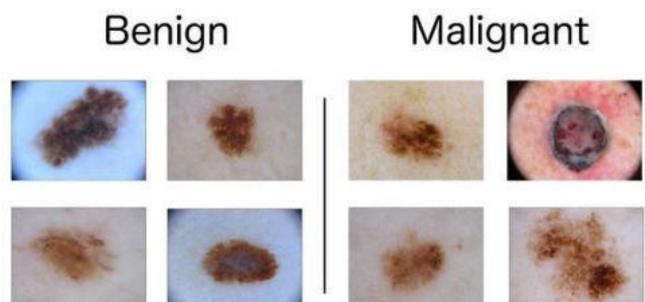

Fig 3.1 Sample images from Dataset

3.2 PRE-PROCESSING:

The Inception v3 architecture of Convolutional Neural Network is used to create a model. Image preprocessing is said to be crucial part of system and can directly influence accuracy that the model attains. Inception v3 offers many

Human Activity Recognition in Videos Using SVM

JYOTHY INSTITUTE OF TECHNOLOGY

Authors Details

Sanket S Kulkarni, Dr. Sahana D Gowda, Dr. Rekha B Venkatapur

JyNConTR201

TR2

In Possession is known to be 9/10ths of the Law in the modern world. It is therefore imperative that one be able to protect one's properties from worldly harms such as thefts and security breaches, property damage, individuals with malicious intent, etc. The methodologies used by the intruders and hackers for stealing have been exponentially improving due to the advent of technology in the modern world. The monitoring techniques also need to improve with the changing world. With the improvement in mass media and various forms of communication, the environment can now be monitored and controlled to the advantage of the property owners. The new techniques used to tackle fraud and destruction include video surveillance and tracking. By using the technologies every inch and second of the area can be monitored and captured in interest. However, so far the technologies used are passive in nature, i.e. the monitoring systems only help to detect the crime but do not participate actively in stopping or curbing the crime while it takes place. We have also developed a technique for detecting motion in a video stream environment and this is an idea to ensure that the surveillance systems not only engage effectively in preventing the crime, but do so when the crime is taking place. Therefore, a system is used to detect any motion in a live streaming video and the software will activate once motion is detected in the live stream.

Selection of particular activation functions in different research fields

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Activation functions play a very important role in the success of deep learning models. In this paper we will review the performance of different activation functions in different scenarios. Accuracy of deep learning models is high due to the concept of hidden layers. Considering the fact to improve the performance of different deep neural networks, status, development and the result of different activation functions is required. More specifically, advantages and disadvantages of different activation functions in different research fields will be outlined in this paper. This paper will also give you a brief idea about which activation function is better than the other activation functions in terms of performance.

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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

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10:50 AM -11:00 AM (IST)	**A BRIEF ABOUT NCEIET-2021** Dr . T. K. Sateesh ,**EPCET**
11:00 AM -12:00 PM (IST)	**KEYNOTE ADDRESS** Dr . Dinesh K Anvekar Former Professor -**R&D,IISC**
12:00 AM -1:00 PM (IST)	**KEYNOTE ADDRESS** Dr . Dinesha . H.A Founder and Director, Cybersena(R&D) , India Private Limited.
1:30 PM – 4:00 PM (IST)	**Paper presentation**

Youtube link:
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10:30 AM – 11:30 AM (IST)	**KEYNOTE ADDRESS** Dr. Channappa B Akki Registrar, IIT, Dharwad
11:30 AM – 12:30 PM (IST)	**KEYNOTE ADDRESS** Dr. Nickolas professor, Dept of Computer Applications , **NIT,** **Tiruchirapalli**
1:00 PM - 3:00 PM (IST)	**Paper Presentation**
3:00 PM – 3:30 PM (IST)	**VALIDATORY PROGRAM**

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TEAM NCEIET-2021

Critical Survey for Scheduling and Resource Allocation Methods in Hadoop-MapReduce on Clouds

Vaishali Sontakke[1], Dr. Dayananda R B[2]

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ABSTRACT

Cloud computing is defined as the computing platform which hosts the various services and application for the users and businesses. It provides the access to the users with less cost and easily accessibility from any part of the world and works on the theory of Pay as you go service. In cloud environment computing resources provided as they demanded. It forms upon developments of virtualization. Cost of computing resources, highlighting towards resource scalability and provided on-demand services. It permits business consequences to upgrade and degrade their resources based on requirements. Meanwhile an open source Hadoop performance MapReduce has become a widespread model for data-intensive application for short job and low response time. IN this paper, we study the works on scheduling and resource allocation for matching the processing load .We provide the comparison of the same, comparison includes the various methodology along with their shortcomings.

Keywords : Hadoop, Mapreduce, Survey, Scheduling, Resource Allocation.

I. INTRODUCTION

Cloud environment is a recent technology to offer services to clients at a little time that is fast serving time . As growing number of current applications develop data-intensive in nature. In the past era, the World Wide Web has been embraced as an perfect platform for emerging data-intensive applications, meanwhile the communication model of the Web is more open and powerful[1]. Search engines, online auctions, webmail, and online retail sales are illustrative data-intensive Web applications where data mining and web indexing necessity to entree expanding data sets which ranges from few gigabytes to several terabytes or now a days petabytes. For example, in Google the MapReduce model processing parallel nearly twenty petabytes of data per day. Cluster computing environments for parallel data processing with high-performance MapReduce is an attractive model. The scalability of MapReduce is verified as high, since a job in the MapReduce model is segregated into abundant block, the appearance of section headings, document margins, column width, column spacing and other features.

Small tasks successively on several machines in a large-scale cluster. Hadoop is popular open-source implementation of the Google's MapReduce model is mainly developed by Yahoo [3]. Yahoo servers using

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The department of Electronics and Communication Engineering (ECE) provides an unrivaled education in electronics and communication engineering and embedded system subjects to our under graduate and post graduate students. Department of ECE started its UG program in 2003 and PG program in 2013. Department has strength of 463 students guided by a team of devoted and diligent staff members. The laboratories are well equipped with modern equipment under the supervision of qualified technical support staff. The facility of ECE includes library facilitating the academic and research work of the staff and students. Students has good and consistent placement record in many Core and IT companies and dept. associated with professional bodies like IE(I), IETE, ISTE.

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DEADLINES

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Camera Ready Paper	20th August 2020

Publication

*Author can select any one of the journal listed below to publish their paper, subject to approval after review.

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(UGC Journal) - ISSN NO : 0976-0091

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ISSN (Print): 2320-9798

Other accepted papers will be published in the ICIES 2020 conference proceedings.

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Ransomware Attack Prediction using Machine Learning Techniques

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Abstract—**The Tremendous growth in current world technology has increased malware variants to exhibit polymorphic attacks. Ransomware is a category of malware that is the biggest threats in cyber security today. Ransomware capture victims' computer by encrypting or locking files and demand the payment of some ransom in crypto-currency for the restoration of the files. This attack causes significant amount of financial loss to individuals, institutions, and businesses. Ransomware performs many file-related operations in a small amount of time to lock or to encrypt files of a victim's machine.** Hence, to handle ransomware attacks more efficient methods need to be developed. **The three types of ransomware detection techniques available are: static, dynamic and hybrid. In this paper, we present static ransomware prediction model using benign and exploit dataset of log files. Random Forest, Artificial Neural Networks and Support Vector Machine algorithms are used to analyze our model. Our work analysis shows that random forest gives best accuracy of 99.476% compared to Artificial Neural Networks and Support Vector Machine with accuracy of 98.200% and 97.776%.**

Keywords— Artificial Neural Networks, Malware, Ransomware prediction, Random Forest Support Vector Machine.

I. INTRODUCTION

The use of digital devices is increasing day by day in this modern era. The threats on these digital devices are also rising. Virus, worms and malware are malicious programs that can attack and cause trouble by gaining access to digital devices. There are many malicious programs, such as virus, worm, or spyware released in the wild, which can seriously harm digital systems. Among the current malicious software, ransomware is a recent kind of malware that has blowout mainly in last couple of years. Ransomware is created from two words payment and product. Webster's word reference described Ransom as "cash that is paid with a specific end goal to free somebody who has been caught or grabbed" and as "a thought paid or requested for the arrival of somebody or something from top captivity"[1].

Locker and Crypto are the two main types of ransomware attacks[2]. Locker ransomwares do not manipulate the victim's files but it locks the system by preventing users accessing the computer. In contrast, Crypto ransomwares encrypt the victim's files to restrict the user's access to their files and it also does not manipulate the files. Crypto-ransomware searches for files with specific extensions and encrypt only those files. It does not encrypt the whole hard-disk. The attacker releases the encryption key to the victim if and only if the ransom is paid through secret payment mechanisms, such as cryptocurrencies. Compared to locker ransomware crypto ransomwares are more hazardous. Thus, the ultimate goal of the attacker is to earn money. Therefore, ransomware detection mechanism should be very effective and efficient to avoid loss of money or data.

Ransomware attack victims are enterprises, Small-Medium Businesses (SMB), and individuals. As per the survey conducted in 2016, out of 290 selected organizations, 50% were its victims, and around 40% of its target victims have paid millions of ransom in a year[3]. Some examples of Crypto ransomware comprise of CryptoWall [4], CryptoLocker [5], Locky [6] and SamSam [7]. Examples of Locker ransomware include: CTB-locker [8]. Recently in 2017, Wannacry the most well-known and destructive ransomware variant locked the data and demanded a ransom of about £92 million from many organizations including Britain"s National Health Service, some of Spain"s largest companies like Telefónica, and computers through Russia, Ukraine, and Taiwan [9]. The growing danger of ransomware attacks requires way out for prevention, detection and removing ransomwares programs. Even though various malware detection and classification approaches have been proposed, these approaches are not suitable to defend against ransomware because these approaches generally focus on distinguishing malware from benign files. Therefore, a new detection mechanism specialized for ransomware is needed, and the mechanism should focus on ransomware-specific characteristics to distinguish ransomware from other types of malware as well as benign files. Moreover, considering that a key characteristic of ransomware infection, it is necessary to

Comparision between K-Means and Expectation Maximization algorithm using Iris plant

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Abstract— **Nowadays many courses in machine learning will start with clustering, as everyone knows clustering is very simple and important in many application. Clustering is an unsupervised learning problem. An unsupervised learning is a machine learning technique in which the model is allowed to work on its own to discover data. Unsupervised learning always deals with unlabelled data and can be more unpredictable compared to other learning techniques. Clustering is a technique that will find pattern in a collection of unlabelled data. Clustering algorithms will process and find clusters in given data. There are many clustering algorithm to utilize. In this paper, two clustering algorithms like K-means and Expectation Maximization(EM) algorithm is utilized for examination of the species in iris plants. K-Means clustering algorithm is partitioning method. Gaussian mixture model(GMM) is multivariate distribution which is consists of a mixture of one or more multivariate Gaussian distribution component. This paper considers Iris plant as the fundamental object, in which we distinguish various classes: Setosa, Versicolour, and Virginica. We apply Kmeans and EM algorithm to compare clustering performance using parameters like sepal and petal length and width. The main observation in the paper is that EM-GMM algorithm performs significantly better than k-means.**

Keywords— *algorithms, cluster, data, kmeans, machine learning.*

I. INTRODUCTION

Clustering is a procedure of collection of data points into incoherent groups with the goal that the data in a similar group are comparative, however information having a place with various group contrast[1]. A cluster is an assortment of data that are like each other are in same group and not at all like the data in different clusters. At present the utilizations of PC innovation is expanding quickly which made high volume and high dimensional informational collections. These information is put away carefully in electronic media, in this manner giving potential to the improvement of programmed information examination, order and information recovery. The clustering is significant piece of the information examination which apportioned given dataset in to subset of comparable information focuses in every subset and unlike information from different groups. The Clustering[2] is helpful with expanding in computerized information to draw important data or drawing fascinating patterns from the informational indexes consequently it discovers applications in numerous fields like bioinformatics, design acknowledgment, picture handling, information mining, advertising and financial aspects and so forth.

There have been many clustering techniques proposed yet K-means[3] is one of the most seasoned and most well known grouping procedures. In this technique the quantity of group (k) is predefined before examination and afterward the determination of the underlying centroids will be made arbitrarily and it followed by iterative procedure of appointing every information highlight its closest centroid. This procedure will continue rehashing until assembly rules met. Nonetheless, there are deficiencies of K-implies, it is critical to proposed procedures that improve the conclusive outcome of examination. In this paper some significant enhancements towards the precision and proficiency of the grouping strategy is done.

Machine learning method Unsupervised Learning techniques consist of clustering algorithm that works by finding the comparable information for unlabeled model by isolating the information as indicated by their comparative nature[4]. Clustering intends to partition the dataset into a majority of the group's information by sharing some attribute of every subset. In such expresses, the separation work technique is utilized to quantify the closeness or nearness of every information thing. There are several
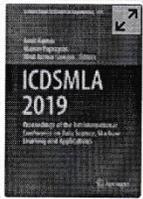
ICDSMLA 2019 pp 152–159

Power-Cognizant Proactive Routing Protocol for Amending Energy in Ad-hoc Networks

B. Devika ✉ & P. N. Sudha

Conference paper | First Online: 19 May 2020

58 Accesses

Abstract

The execution of an Ad hoc Wireless Network is controlled by a key factor "power", as it is the essential resource of any communication system. Utilizing such power effectively and efficiently is the most important Task. Power has to be optimized according to the requirement. In an ad hoc network, nodes exchange information with each other by forming a multi-hop wireless network & sustaining connectivity in a localized fashion. Optimizing power in such a network is a significant challenge ad hoc routing protocols are power hungry as they expend a substantially large amount of

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Power-Cognizant Proactive Routing Protocol for Amending Energy in Ad-hoc Networks

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Abstract. The execution of an Ad hoc Wireless Network is controlled by a key factor "power", as it is the essential resource of any communication system. Utilizing such power effectively and efficiently is the most important Task. Power has to be optimized according to the requirement. In an ad hoc network, nodes exchange information with each other by forming a multi-hop wireless network & sustaining connectivity in a localized fashion. Optimizing power in such a network is a significant challenge ad hoc routing protocols are power hungry as they expend a substantially large amount of battery power contained in the nodes. Hence routing in an ad hoc network is eminently power restricted. Research has been done choosing the appropriate routing protocol at the network layer and power aware protocol at MAC layer. In this paper, a proactive routing protocol has been implemented which is power aware. FSR is the routing protocol chosen and MAC 802.11 standards have been used in combination of a routing protocol to optimize power. The simulation is executed using NS-2 and the power consumption has reduced.

Keywords: Ad hoc networks · Fisheye state · Manet · Mac · Power cognizant

1 Introduction

Wireless communication is the quickly expanding & most vital technological areas in the communication field. Our lives are unimaginable without Wireless communication like TV, Radio, Mobile, Radar, GPS, Wifi, Bluetooth, RFID etc. In Latin ad hoc means "for this purpose". Ad hoc networks are group of self-organizing nodes or terminals that exchange information with each other by combining a multi-hop wireless network and sustaining connectivity in a suburbanized manner in an infrastructure less environment. Several classifications of Ad hoc networks are MANET, VANET, FANET, WSN etc. Ad hoc network operate with IEEE 802-11 standards. Initially ad hoc networks were designed for military and disaster recovery applications, due to their fast deployment feature without the existence of any infrastructure. But with rapid growth of mobile communication, MANETs are regarded as important contemplate in the future inception of system technologies [1].

Various power optimization techniques are existent in Ad hoc networks. Optimization of power is of at most importance in Ad hoc networks as their structure is autonomous and non-existence of central governing body. Various layers are affected while optimizing power in ad hoc network like physical, network & MAC layer [2].
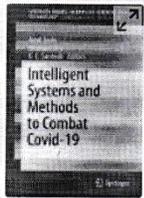
Intelligent Systems and Methods to Combat Covid-19 pp 11–17

COVID-19 Apps: Privacy and Security Concerns

Surekha Borra ✉

Chapter | First Online: 27 August 2020

Part of the book series: SpringerBriefs in Applied Sciences and Technology ((BRIEFSINTELL))

Abstract

Today, with the rapid spread of COVID-19, many governments and start-ups are coming forward to develop smartphone apps that trace where we all are, whom we met and for how long, with a goal of interrupting new chains by informing potentially exposed people. These new platforms make use of anonymous use of Bluetooth technology and GPS, enabled either on smartphones or armbands in order to prepare maps corresponding to quarantine monitoring, contact tracing, movement tracking, social distancing and density reports. With different apps for different countries, one thing most of the apps facilitate is tracking. To save lives during

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COVID-19 Apps: Privacy and Security Concerns

Surekha Borra

Abstract Today, with the rapid spread of COVID-19, many governments and start-ups are coming forward to develop smartphone apps that trace where we all are, whom we met and for how long, with a goal of interrupting new chains by informing potentially exposed people. These new platforms make use of anonymous use of Bluetooth technology and GPS, enabled either on smartphones or armbands in order to prepare maps corresponding to quarantine monitoring, contact tracing, movement tracking, social distancing and density reports. With different apps for different countries, one thing most of the apps facilitate is tracking. To save lives during an extraordinary crisis, many governments are willing to overlook privacy implications. Keeping in view that the sensitive data being collected is not exclusive to public health organizations and governments, this chapter explores different apps that were developed aiming to combat COVID-19, and the related personal data privacy concerns that arise in the post-coronavirus era.

Keywords Apps · Bluetooth · COVID-19 · GPS · Privacy · Security

1 Introduction

While the researchers around the world are busy developing COVID-19 related AI-driven tools [1, 2], forecasting methods [3–5], screening [6] and image-assisted decision support systems [7], COVID-19 mobile apps are being developed for a variety of reasons, ranging from quarantine monitoring, contact tracing, movement tracking, social distancing and density reports. All these mobile apps with or without the consent of the user collect user personal information, including location histories and stores the data on the third-party servers, which might lead to serious cyberthreats and associated fears. Hence, reporting the available apps and analysing the side effects including security and privacy concerns is the need of the hour.

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Proceeding of First Doctoral Symposium on Natural Computing Research pp 155–162

Automation of Anomaly Detection in Warehouses: A Machine Learning-Based Approach

P. Pratiksha ✉, K. Pooja, Onkar Misra & Surekha Borra

Conference paper | First Online: 19 March 2021

264 Accesses | **1** Citations

Abstract

The warehouses offer its clients top notch services for a wide scope of items. To ensure the best conditions for the put away merchandise, the owners of warehouses must ensure faultless state. The warehouses must be operational on a day in and day out premise and need to

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Automation of Anomaly Detection in Warehouses: A Machine Learning-Based Approach

P. Pratiksha, K. Pooja, Onkar Misra, and Surekha Borra

Abstract The warehouses offer its clients top notch services for a wide scope of items. To ensure the best conditions for the put away merchandise, the owners of warehouses must ensure faultless state. The warehouses must be operational on a day in and day out premise and need to offer storage for stocking seeds, pharmaceuticals items, etc. The focus of this paper is to survey the state-of-the-art technologies used for anomaly detection with respect to warehouse safety, and to propose an automatic alerting system based on machine learning techniques. After experimenting with several classifiers, the cubic support vector machine (SVM) classifier model exhibited highest accuracy for AlexNet-based features on the given dataset.

Keywords Machine learning · Sensors · Imaging · Warehouses

1 Introduction

Warehousing services are becoming more and more distinct based on the stored material and the type of warehouses. The stored materials require an ideal environmental set up to maintain quality of the products which depends upon the temperature, humidity, degree of light, presence of CO_2, etc. Each product demands its own arrangement of recommended temperature settings. To safeguard the temperature wide open to, the nature of protection is of extreme significance. Leakages in the

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Proceeding of First Doctoral Symposium on Natural Computing Research pp 163–170

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Acute-Lymphoblastic Leukemia Detection Through Deep Transfer Learning Approach of Neural Network

Tali Veerappa Renuka ✉ & Borra Surekha

Conference paper │ First Online: 19 March 2021

Part of the book series: Lecture Notes in Networks and Systems ((LNNS,volume 169))

Abstract

Manual examination of blood smears under microscope is observer subjective, time consuming, and labor intensive. A computerized system would be best choice for quantitative and qualitative inspection of blood smear images. This paper presents classification of white blood cells into healthy and unhealthy using SVM machine learning model. Features from images are extracted with transfer learning approach of deep convolutional neural network using Alex-net pretrained model. This approach validates the process of discriminating white blood cells into healthy and acute lymphoblastic leukemia affected

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Tali Veerappa Renuka and Borra Surekha

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Keywords Leukemia · Convolutional neural network · SVM · Alex-net · ALL

1 Introduction

One of the significant inventions in recent modern medicine is digital pathology. Cell morphology and tissue structure are studied using digital pathology and microscopy images. Disease diagnosis by medical practitioner is fully dependent on pathological investigations. Manual analysis of microscopic blood smear images by highly expert pathologists is very labor intensive, time consuming, and subjected to inter-observer variations. Recent innovations in image processing and computer vision techniques have improvised digital pathology in terms of objectivity and reproducibility. Hence, since past decades, many researchers and practitioners have diverted their focus on

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Intelligent System Design pp 827–835

Secure Anti-piracy System

Junaid Khan, Akshatha Shenoy, K. M. Bhavana, Megha S. Savalgi & Surekha Borra ✉

Conference paper | First Online: 11 August 2020

Part of the book series: Advances in Intelligent Systems and Computing ((AISC,volume 1171))

Abstract

This paper proposes a secure movie distribution and playing system which can avoid piracy in theaters. In the proposed system, an IR LED based anti-piracy screen is set up for discouraging illegal recording of movies. The optimization of power is achieved through progressive activation and deactivation of IR LEDs. Copyright protection of movie file is provided using invisible watermarking, and confidentiality and security are provided by encrypting the movie file as well as by enabling the decryption based on the authorized location verification of theaters. The system is also designed to allow only the authorized personnel to operate the

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Secure Anti-piracy System

Junaid Khan, Akshatha Shenoy, K. M. Bhavana, Megha S. Savalgi, and Surekha Borra

Abstract This paper proposes a secure movie distribution and playing system which can avoid piracy in theaters. In the proposed system, an IR LED based anti-piracy screen is set up for discouraging illegal recording of movies. The optimization of power is achieved through progressive activation and deactivation of IR LEDs. Copyright protection of movie file is provided using invisible watermarking, and confidentiality and security are provided by encrypting the movie file as well as by enabling the decryption based on the authorized location verification of theaters. The system is also designed to allow only the authorized personnel to operate the system upon receiving the one-time password (OTP) from the owner. The experimental results proved that the developed system is secure and discourages the illegal video recording by creating artificial degradation in the recoded video. The system also helps to resolve rightful ownership via invisible watermarking.

Keywords Piracy · Watermarking · Encryption · Global positioning system (GPS) · Security · Copyright protection

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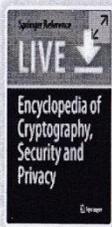e-mail: borrasurekha@gmail.com

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Encyclopedia of Cryptography, Security and Privacy pp 1–4

Biometric Sensors

Surekha Borra, Nilanjan Dey & R. Simon Sherratt

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40 Accesses

Synonyms

Biometric detectors; Biometric scanners; Biometric transducers

Definition

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Biometric Sensors

Surekha Borra[1], Nilanjan Dey[2], and R. Simon Sherratt[3]
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Synonyms

Biometric detectors; Biometric scanners; Biometric transducers

Definition

A biometric sensor is an electronic device that captures raw biometric samples in a form that is suitable for generation of a biometric template, which can further be used for verification or authentication of an individual's identity. Examples include cameras, computer keyboards, microphones, fingerprint readers, and iris scanners.

Theory

Biometric sensors are the heart of any biometric identity system. Sensors range from a simple microphone for voice capture to a high-definition camera for face capture or are specially designed to scan the iris, vein pattern, retina, signatures, and gait motion.

Biometric sensors capture reflected, transmitted, or projected acoustic or light signals, capacitive levels, or pressure differences proportional to the biometric trait. The transducers inbuilt within the sensors convert sensor measurements into electrical signals for further processing, digitization, storing, and matching.

The selection of biometric sensors and their classification depends upon the application, the biometric modality, technology, user acceptance, shape and size, connectivity, installation type, capturing distance, interface, contact type, capture mode, capture time, operating temperature, storage temperature, depth of field, illumination, resolution, device dimensions, weight, power source, power consumption, cost, false acceptance rate (FAR), and false rejection rate (FRR).

Most biometric sensors act like scanners to convert an individual's physical characteristics into images at different spatial resolutions, pixel resolutions, frame rate, compression levels, pixel depths, and imaging wavelengths. Multispectral imaging sensors generate multiple images at varying wavelengths and differing levels of

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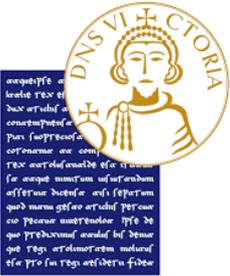
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Electronic Gauge for Micron Measurement and its Relevance to Industry 4.0

B. A. Prathima[1] · P. N. Sudha[1] · P. M. Suresh[2] · M. Mruthunjaya[3]

Abstract

Micron measurement of the manufactured part is an integral part of production process. This decides qualification of the manufactured part's acceptance or rejection. First principle methods are well established to measure the manufactured parts with utmost certainty. In the advent of Industry 4.0 in the digital revolution era of manufacturing, an electronic measurement of various dimensional parameters is gaining prominence. The shortcomings of measurement by first principle methods such as written documents, inability to automate the analysis and hence cloud connectivity, etc., can be achieved with electronic gauging. In the proposed work, an electronic gauge with micron resolution and cloud connectivity is devised for measurement of outer diameter of a mass production component. The measured readings are validated using statistical methods for the Gauge Repeatability and Reproducibility (GRR). The electronic gauge registered greater stability in the key parameters of gauge capability such as Equipment Variation (EV), Appraiser Variation (AV), Part Variation (PV) and %GRR over its conventional measurement counterpart. The electronic gauge recorded %GRR of 7.81% against conventional gauge's %GRR of 14.47%. This made the electronic gauge acceptable without any conditions for the measurement of a critical parameter in mass production environment. The paper extended the scope to record the measurement readings in cloud-enabled platform to make the measurement system ready in the context of Industry 4.0. The proposed model has been implemented and validated in a mass production set-up, engaged in manufacturing of precision auto components.

Keywords Electronic gauge · Metrology · Micron measurement · Industry 4.0 · LVDT · GRR

Introduction

Digitalization is the new revolution in the manufacturing world. Manufacturing industry is compelled to shift towards digitalization to increase productivity, performance and

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competitiveness. Mechanization, electrification, automation have contributed significantly during their first, second and third revolutions respectively. Digitalization is termed as the fourth industrial revolution. This is all set to play a major role in close looping many aspects of manufacturing activity by carrying big data from shop floor to the management through the Cyber Physical System (CPS) and coming back to the shop floor in the form of meaningful decisions to enhance productivity, performance and finally clocking higher degree of competitiveness.

Various degrees of digitalization have happened in different areas of the manufacturing industry. However, to reap the maximum benefits of industry 4.0 capabilities and possibilities, all areas of manufacturing such as production, quality, maintenance, supply chain, human resource management, supplier integrations, etc., also are expected to attain fair levels of maturity in digitalization.

In this paper, measurement of manufactured part is taken up for digitalization. Measurement of micron resolution dimension using electronic gauge equipped with Linear

REVIEW ARTICLE

AlexNet Based Pirate Detection System

Ritu Patil[1] · N. Vishal Goutham[1] · G. R. Sunil Kumar[1] · Surekha Borra[1]

Abstract
Finding the pirate is a crucial job in fighting the piracy-related problems. Factors such as wide option of seating positions, and modern technological advancements in real-time application make this task more difficult to tackle. The use of watermarking techniques is a classic method to gather information about the pirated video, but they have their own shortcomings. This paper reviews the current techniques which are used to combat the piracy problems in theatres, techniques to identify the pirates, brings a contrast on their performances, and proposes a more efficient pirate detection system.

Introduction

In the current world of digitalization, any individual can shoot the videos using digital camcorders, mobile phones, etc., and distribute the recorded content via the Internet. Movie piracy corresponds to movie theft by an anonymous person who records the movie from inside the theatre using devices such as digital camcorders or smartphones. The pirate then circulates the pirated content via the Internet or sells in the form of DVD's illegally. Digitalization has made smartphones available to everyone at low cost than ever before. These smart phones have a decent camera quality. Using these, the pirates record the videos. This has directed in flow of the illegal recordings at an exceptional rate within the piracy market. Moreover, the availability of high-speed Internet facilities at most of the places has made it very much easier to upload these recordings on Internet websites.

Movie piracy is a very widely spread crime in many countries. The trends in online and theatre piracy have reached record heights and threatening industry supply chains. Some of the most vulnerable pirated contents from online are music, motion pictures, print media, and software. In Indian film industry, piracy is becoming a crucial issue. Every year,

the Digital Cinema Industry (DCI) is suffering huge number of losses due to these illegally recorded movies in theatres. It might be in the theatres or from the over-the-top (OTT platforms). The Motion Pictures Association of America (MPAA) has conducted a deep investigation about piracy in the movie field in the year 2005. And correspondingly, the statistic report testifies that U. S. motion picture studios lose 6.1 billion dollars or more every year. This amount of loss in the profits cause a financial crisis for the studios.

Using the forensic watermarking system, the illegal recording can be found on the Internet and can be used in finding out the culprit. However, by that time, the pirated movie would have been circulated in a wide manner where it cannot be stopped. Digital watermarking technology seems to be taking care of when it comes to copyright protection criteria for both traditional film and digital cinema content. A few of the rules have been defined by the Data Centre Interconnect (DCI). The forensic mark contains details about the film, such as time stamp and location of the theatre as per the DCI rules. The information extracted from the pirated file conveys when and where the recording is being done. Electronic watermarks, however, can only be used to track the unauthorized delivery of digital content, so they cannot deter anyone from illegally filming movies with a camcorder in a cinema theatre.

This paper focuses mainly on finding the pirate who records film content in the theatre, with an objective to prevent people, from capturing videos of the movie played in the theatre, thereby reduce, and terminate piracy in the cine field.

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ADVANCED SEARCH

Ensemble learning as a prerogative method of predicting mortality of patients with cardiovascular diseases

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B S K Jayasudha ; P N Sudha ; Ketan Keshav ; Nagalekha Ramesh   All Authors •••

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Abstract:
Among diseases that account for higher death rates, Cardio Vascular Diseases (CVD) stand forefront. Many works have been carried out since long to predict effectiveness in mortality prediction using models like data mining, logistic regression, neural networks etc. considering only traditional cardiovascular risk factors. As time and technologies evolved with incorporation of newer features these models ended up with predicted mortality rate of an accuracy 60-70%. There are many more attributes to be explored that are significant in predicting mortality rate in CVD patients, opening the scope to develop prediction models with traditional and non-traditional risk factors, much wider. This pape is focused on predicting mortality rates using three models. Each model's performance metrics are calculated to check the accuracy of the model. This helps one to build models that could best predict the outcome. Use of Ensemble learning method enhanced the prediction accuracy to 91%. This helps to validate the decision more accurately about mortality predictions and thereby assessing the risk.

Conference Location: Bangalore, India

I. Introduction

Cardiovascular problems are predominantly the number one death-causing factors in many countries [1]. Often heart disease and cardiovascular disease are used interchangeably. Any changes in the regular rhythm of the heart, pacing, number of beats, and other irregularities cause cardiac problems [2]. Few are considered to be trivial and some are very serious conditions leading to death if immediate medical attention is not given. Cardiovascular problems include atrial arrhythmias, ventricular arrhythmias, myocardial infarction, cardiomyopathy, congenital .... diseases [3]. Timely provision of correct treatment only can save the life of a person. Hence .... play an important role. More thrust is now on predictive analytics to provide care and possibly pre-emptive treatments is facilitated before the onset of the disease. Finding out the risk factors that could prevent cardiovascular diseases and spreading the knowledge of these risk factors to the masses ....

Ensemble learning as a prerogative method of predicting mortality of patients with cardiovascular diseases

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Abstract— Among diseases that account for higher death rates, Cardio Vascular Diseases (CVD) stand forefront. Many works have been carried out since long to predict effectiveness in mortality prediction using models like data mining, logistic regression, neural networks etc. considering only traditional cardiovascular risk factors. As time and technologies evolved with incorporation of newer features these models ended up with predicted mortality rate of an accuracy 60-70%. There are many more attributes to be explored that are significant in predicting mortality rate in CVD patients, opening the scope to develop prediction models with traditional and non-traditional risk factors, much wider. This paper is focused on predicting mortality rates using three models. Each model's performance metrics are calculated to check the accuracy of the model. This helps one to build models that could best predict the outcome. Use of Ensemble learning method enhanced the prediction accuracy to 91%. This helps to validate the decision more accurately about mortality predictions and thereby assessing the risk.

Keywords— *Cardiovascular diseases, Ensemble learning, Logistic Regression, Random forest.*

I. INTRODUCTION

Cardiovascular problems are predominantly the number one death-causing factors in many countries [1]. Often heart disease and cardiovascular disease are used interchangeably. Any changes in the regular rhythm of the heart, pacing, number of beats, and other irregularities cause cardiac problems [2]. Few are considered to be trivial and some are very serious conditions leading to death if immediate medical attention is not given. Cardiovascular problems include atrial arrhythmias, ventricular arrhythmias, myocardial infarction, cardiomyopathy, congenital heart disease, and other vascular diseases [3]. Timely provision of correct treatment only can save the life of a person. Hence proper diagnosis and prognosis play an important role. More thrust is now on predictive analytics to provide care and possibly pre-emptive measures or treatment before the onset of the disease. Finding out the risk factors that could develop cardiovascular diseases and spreading the knowledge of these risk factors to the human community is one of the important objectives of Engineering in cardiology. Machine learning with statistical analysis helps achieve these goals [4] [5].

Ensemble learning, a machine learning technique/method that combines many algorithms built on the same data set or subsets of the same data set to solve a problem. This is found to improve the machine learning results and make better predictions compared to a single model [6]. This work on prediction focuses on three machine learning algorithms like Logistic Regression (LR), Random Forest (RF) and Neural Networks (NN). In this work, hospital deaths are predicted by considering the dataset consisting of the patient's vitals who are suffering from cardiovascular disease.

The dataset is obtained from a community initiative of MIT's GOSSIS, certified from the Harvard Privacy Lab, it consists of more than 130,000 patients who were in hospital Intensive Care Unit (ICU), in a span of one-year time frame. This dataset is part of consortium of many countries spanning Australia, Argentina, Brazil, Zealand, Sri Lanka, and around 200 hospitals in the United States. Among the many modalities in the dataset including physiological measurements are laboratory tests, Apache scores on severity of illness and the type of disease. Patients suffering from cardiovascular diseases are only considered in this study.

The paper is organized into different sections as follows - Prediction model using Logistic Regression, Prediction model using Random Forests and prediction model using Neural networks are discussed in Sections II, III and IV and in the ensuing section the Results are discussed.

II. PREDICTION MODEL USING LOGISTIC REGRESSION (PLR)

In PLR, a widespread supervised Machine Learning algorithm. Logistic Regression (LR) is used for statistical analysis. Given a set of variables which are independent and based on the observations made earlier, it predicts the dependent variable. Outcome obtained from LR is usually a discrete value. It is similar to the output of a logical function like True or False, Yes or No, 0 or 1, etc. It gives the probabilistic intermediate values between 0 and 1 instead of only 0 and 1. PLR is built mainly because of the ability of LR to provide probabilities and also classify the new data using datasets which are continuous and discrete in nature. This distinct feature of LR gives the shape "S", instead of fitting a regression line, as in the case of Linear regression.

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Machine Learning Technology Development In Cultivation of Paddy Crops Along With Management Issues

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ABSTRACT

In this research paper, a brief review of the machine learning technology development in the cultivation of paddy crops along with management issues is presented in a nutshell. The advancement of AI advances with profound learning calculations and information science has made new open doors in the cross-utilitarian rural advances space. In this paper, we present an innovation audit with a comprehensive report and Adaption of Advanced Machine Learning approaches in Paddy Crop Cultivation and Management. Worldwide innovation changes have impacted the rice planting designs in the course of recent many years. Accessibility of the gigantic data set of data identified with the different species has made the investigation simpler particularly in the front of robotized species acknowledgment utilizing progressed AI calculations. In this innovation audit, broad investigation and examination are led to anticipate, recognize, measure, arrange, and distinguish the rice plant infections and determining rice crops utilizing different AI procedures. The sifting and arrangement of the introduced articles show how the paddy cultivating and development cycle will profit by cutting edge AI innovations. Incorporation of sensor information with AI is giving the best approach to cultivate the executive's framework to develop into ongoing shrewd computerized reasoning empowered applications which give exact proposals and profound experiences for rancher choice help and activity.

Keywords— Algo, AI, Cultivation, Classification, CNN, ML, MLR, Paddy, RTR, Review, SVM.

INTRODUCTION

In the field of software engineering, the primary and significant region in the new patterns is Machine Learning. Programming applications dependent on AI are discovered to be more precise in expectation of the yield even without unequivocally modified. Samuel Arthur planned the name Machine Learning [1-2]. AI predicts the yield by building the calculations and gain from the information set.ML is joined with different computational assignments like planning, expectation, investigation and so forth Unaided learning technique is getting more well known with exploratory information and information mining [3-4]. The unaided technique initially learns and develops the example dependent on the information and afterward used to distinguish the abnormalities. The prescient examination is a high-level strategy that utilizes complex models and numerical estimations for determining. These information designs help information investigators, subject matter experts, and creators to think of the best and precise outcomes [5-6]. A few strategies and numerous models were considered for the characterization of pictures naturally utilizing ML methods. Quality and the amount of the picture information assume a crucial part in the precision of programmed order and recognizable proof. Preprocessing is the initial move towards accomplishing required boundaries and that can be utilized for grouping. Picture handling applications principally rely upon the element extraction of the pictures. Different AI procedures and techniques which are applied for the different cycle of paddy development is concentrated in this audit [7-8].

ADAPTION OF ADVANCED MACHINE LEARNING TECHNOLOGIES IN PADDY CULTIVATION

Paddy Cultivation [12] domain has seen significant developments over past decades resulting in improvement and increase in crop production, agriculture process automation, and effective resource utilization. In the last twenty-five years, embedded systems [10], advanced and specialized sensors [17], Global Positioning Systems, and actuators have enabled the integration of many electromechanical machines specifically intelligent agricultural robots to the agriculture domain. The advent of new technologies like robotics, Image processing, neural networks,

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