

Original Article

Deep Learning Based Tomato PLDD

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Abstract - Agriculture sector is the prime source of food and industrial raw material that satisfies the increasing population demand and industrial revolution. However, plant leaf disease detection (PLDD) degrades the quality of food and agricultural products, leading to economic loss for farmers. Recently, many deep learning frameworks have been presented for the PLDD that has shown gigantic improvement over traditional machine learning-based leaf disease detection. The performance of these deep learning frameworks is often limited due to lower feature variability, data scarcity problem, and low accuracy for multiple plant disease detection. This article presents PLDD based on a deep convolutional neural network (DCNN) to improve the feature variability and disease detection accuracy. The effectiveness of the proposed approach is evaluated on tomato plants from the PlantVillage dataset. The proposed method provides 98.83% and 96.06% accuracy in 2-class and 9-class for PLDD.

Keywords - Agricultural Automation, PLDD, Deep Learning, Precision Agriculture, Convolutional Neural Network.

1. Introduction

Tremendous global population growth leads to a huge demand for food sources and industrial raw materials. The agriculture sector is the prominent source of food and industrial raw material. The economic and social growth of developing countries like India, China, Indonesia, etc., hugely depends upon the growth of the agriculture sector [1-2]. Also, the agriculture sector is the prime source of employment. However, plant disease caused due to adverse climate conditions, less or excess water, pest, viruses, and insects decreases the quality of food and agricultural products [3-5]. Manual disease detection is tedious and inefficient because of various factors such as being prone to error, less accurate due to inadequate knowledge of expert/farmer, less understanding due to vision problems, etc. The leaves of the plants show the disease symptoms reflected in leaf color variation, texture variation, spots on the leaf surface, and damage to the leaf. Various automatic computer vision-based techniques are used for PLDD using ML and DL [6-10].

The CNN-based deep learning architectures are widely accepted for many computer vision-based applications. Various deep and transfer learning-based PLDD systems have been presented in the past few years. Mohanty et al. [11] investigated GoogleNet and AlexNet for disease detection of 28 classes, resulting in an accuracy of 99.34% and 99.27%, respectively. Sladojevic et al. [12] explored fine-tuned CNN framework for PLDD of 13 plants, giving an accuracy of 96.30%. Ramcharan et al. [13] proposed transfer learning based on GoogleNet (InceptionV3) for paste damage and disease detection in cassava plants. Further, Funes et al. [14] developed faster R-CNN for PLDD, resulting in 83% accuracy. Ferentinas et al. [15] explored various DL frameworks for PLDD, such as

AlexNetOWTBn and VGG. It provided 99.53% and 99.49% accuracy for 58 diseases for VGG and AlexNetOWTBn, respectively. Hammou and Boubaker

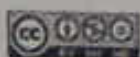
The proposed article presents deep learning-based PLDD. The major contributions of this article are summarized as follows:

- PLDD uses DCNN to improve the feature distinctiveness of the plant leaf image features.
- Performance evaluation of proposed PLDD using various performance metrics for the tomato plant.

The remaining article is structured as follows: Section 2 provides a detailed description of the proposed DCNN-based PLDD. Section 3 elaborates on the experimental results and findings from the results. Further, section 4 depicts the conclusion and future scope of the work.

2. Related Work

The tremendous global population growth leads to a huge demand increase for food sources and industrial raw materials. The agriculture sector is the prominent source of food and industrial raw material. The economic and social growth of developing countries like India, China, Indonesia, etc., hugely depends upon the growth of the agriculture sector [1-2]. Also, the agriculture sector is the prime source of employment. However, plant disease caused due to adverse climate conditions, less or excess water, pest, viruses, and insects decreases the quality of food and agricultural products [3-5]. Manual disease detection is tedious and inefficient because of various factors such as being prone to error, less accurate due to inadequate knowledge of expert/farmer, less understanding due to vision problems, etc. The leaves of the plants show the disease symptoms reflected in leaf color variation, texture variation, spots on the leaf surface, and damage to the leaf.





Design, Analysis & Optimization of Muffler for Four Stroke Petrol Engine Motorcycle

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Abstract: *Objective:* The exhaust pipe is subjected to several stresses, most of which are due to vibration. Particular attention should be given to gas forces which will induce vibration. These vibrations will then induce a fatigue life to the system. It is therefore necessary to study the fatigue behavior of the exhaust pipe by analyzing the vibration modes and the response of vibrations by its sources.

Methods: The vibrations of silencer are affecting the performance of silencer and it is uncomfortable to operators. So, it is necessary to analyze the vibrations which would further help to minimize cracks, improving life and efficiency of silencer. The main goal of this project will be to design a new automobile exhaust pipe muffler (silencer) is to increase the durability of its life. Decrease the weight, and reduce the manufacturing cost with efficient working condition. design, analyze the model using ANSYS workbench static structural and model analysis for vibration study. If muffler or silencer part impacts high vibration, or stress then topology will be conducted to solve the high stress concentration and vibrational impacts.

Keywords: Automobile exhaust system; muffler; noise; vibration and modal analysis.

I. INTRODUCTION

One of the objectives when designing a new automobile exhaust pipe is to lengthen its durability period, which can be measured in terms of its life span and mileage. The exhaust pipe is subjected to several stresses, most of which are due to vibration. Particular attention should be given to gas forces which will induce vibration. These vibrations will then induce a fatigue life to the system. It is therefore necessary to study the fatigue behavior of the exhaust pipe by analyzing the vibration modes and the response of vibrations by its sources.

The vibration of a system involves the transfer of its potential energy to kinetic energy and of kinetic energy to potential energy, alternately. If the system is damped, some energy is dissipated in each cycle of vibration and must be replaced by an external source if a state of steady vibration is to be maintained.

A. Overview

The main goal of this project is to study the vibrational impact caused due to the vehicle moving on irregular road surface and also due to exhaust gas pressure variations in two-wheeler muffler. Mufflers is an important component in vehicle, without muffler or silencer one can't assume an engine.

After expansion in the engine exhaust gas produced containing harmful gases is exhausted in a long hollow pipe called muffler at back side of the vehicle.

For time being these mufflers have been optimized in different shape, size, and material etc. the main goal of this project will be to design a new automobile exhaust pipe muffler (silencer) is to increase the durability of its life. Decrease the weight, and reduce the manufacturing cost with efficient working condition.

In this project I'm going to design, analyze the model using ANSYS workbench static structural and model analysis for vibration study. If muffler or silencer part impacts high vibrations, or stress then topology will be conducted to solve the high stress concentration and vibrational impacts.

Vibrations are measured in 3 different phases which are classified as: Frequency, amplitude and Phase are the three major characteristics which are used to describe a oscillation in the part or component (or vibrations).

There are 3 types of Vibration:

- Free or Natural.
- Forced and.
- Damped Vibration.

Comparison of Barrel Vaults

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Abstract - This study compares the performance of barrel vaults made of reinforced concrete (RCC) and steel grid structures. Barrel vaults are commonly used in the construction of large span structures such as airports, sports arenas, and exhibition halls. RCC and steel grid structures are two of the most popular construction materials used for barrel vaults. This study examines the structural performance and cost-effectiveness of these two materials using statistical analysis. The analysis is based on data collected from case studies of several barrel vault structures constructed using RCC and steel grid materials. The results show that RCC barrel vaults have a lower cost per unit area than steel grid barrel vaults, but steel grid barrel vaults have a longer service life and require less maintenance.

Keywords: Barrel vault, RC barrel vault, Double Layer Grid, Slab type barrel vault, cost- effectiveness.

1. Introduction

Now a day the growth of construction is increased and required maximum space and large span. The barrel vault is the best for large span structures. The popularity of barrel vaults is partially due to the economy of these structures. At the same time, their cylindrical shape provides a great deal of volume under the roof, a distinct advantage for railway stations, or for large span warehouses, providing a welcome increase in their storage space. Barrel vaults are lightweight and cost-effective structures that are used to cover large areas such as exhibition halls, stadium and concert halls. These structures provide a completely unobstructed inner space, and they are economical in terms of materials compared to many other conventional forms of structures as explained by Makowski [11].

2. Space Frame

Space frame is a sophisticated structural system that combines elegance and efficiency to achieve large, uninterrupted spans. Its unique geometric configuration allows for both structural strength and aesthetic appeal, making it a popular choice for a variety of architectural applications. Space frames offer significant advantages over traditional structural systems, including lighter weight, reduced material consumption, and faster installation times. With its striking

visual impact and impressive engineering capabilities, space frame continues to push the boundaries of modern architecture.

- 1) Flat Lattice
- 2) Lattice Dome
- 3) Barrel vault

Flat Lattice

A space frame is a structure system assembled of linear elements so arranged that forces are transferred in a three-dimensional manner. In some cases, the constituent element may be two dimensional. Macroscopically a space frame often takes the form of a flat or curved surface. It should be noted that virtually the same structure defined as space frame here is referred to as latticed structures. A latticed structure is a structure system in the form of a network of elements (as opposed to a continuous surface). Rolled, extruded or fabricated sections comprise the member elements. Another characteristic of latticed structural system is that their load-carrying mechanism is three dimensional in nature. Flat lattice is composed of planar unit which connected with unit beams space plane covers. These spatial structures are composed of planar substructures. Their behavior is similar to that of a plate in which the deflections in the plane are channeled through the horizontal bars and the shear forces are supported by the diagonals. Flat lattices can have one, two, three or even multiple layers, but they are widely used in the form of two layers. Double-layer lattices consist of two parallel plates which are jointed together by elements.[1,2,12]

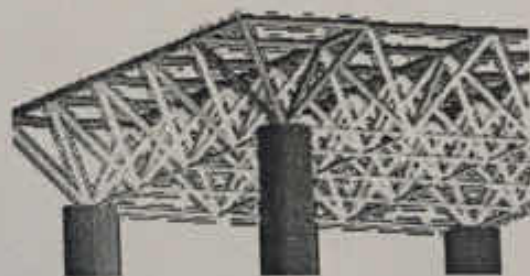


Figure 1: Double Layer Grid Flat Lattice

Lattice Dome

Dome is a lattice has curvature in two directions. Domes are structures with high rigidity and are used for very large



Identify the new medicine target to anticipate repositioning targets using bioinformatics

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ABSTRACT

In universities and the pharmaceutical sector, bioinformatics techniques should be increasingly important in integrating clinical research. The major factors in the clinical development process are resolved through statistical manipulation of the increasing amounts of data collected during the production stages. We should review some of the areas where bioinformatics tools and methodologies have been developed to facilitate the process of medical development. Massive data warehouses, bioinformatics methods to assess 'massive data' that uncover potential treatment goals. And diagnostics, programmers to evaluate objective controllability, and forecast of repurposing possibilities that employ licensed medications to treat multiple conditions.

Keywords: Bioinformatics; Medicine; Anticipate Repositioning Targets; Drug development process

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1. INTRODUCTION

The goal of delivering improved pharmaceuticals to suffer in a timely fashion would be to reduce the expenses and period required of the many processes in the clinical research pipeline. Enhancing the knowledge obtained through fundamental research [1] was a technique that has the power to enhance the productivity of the medicine development process. Transformational medicine detection is the process of effectively translating discoveries to basic biology but also chemical research development of novel medications and treatment managements to sufferers [2]. Transformational techniques have the added benefit of allowing new medicines and education knowledge to reach the patient subpopulations they were designed, informing improved clinical testing structure, and assisting in the reduction of a treatment's often adverse side impacts [3]. Various techniques are used to examine malignant, genetic, and contagious disorders to ailment bioinformatics techniques of transformative medicinal development, depending on the requirements of ailment investigation. Malignant cells show a wide range of heredity and epigenetic alterations, and chromosome fragility.

A major operator of malignancy for each individual could be identified using bioinformatics techniques. As a result, they offer the ability to facilitate a more tailored approach to malignant treatment, paving the way for new and remanufactured medications that identify particular molecules, destroying or incapacitating the infected tissue.

2. RELATED WORKS

Recipe Detection of Image Using Deep Learning

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Abstract - Food is necessary for human existence, and people are always trying out new, tasty dishes. People frequently select food products from grocery stores that they don't even know the names of or that they don't immediately recognise. It's crucial to understand which elements may be combined to create delicious cuisine recipes. For a beginner chef, picking the proper recipe from a list of items is really challenging. Even for specialists, it may be a challenge. Machine learning is constantly being used in our daily lives. One such instance is object recognition using image processing. Even though there are many different food items involved in this procedure, traditional methods will result in a higher risk of error. ingredients. Deep learning and machine learning techniques can be used to overcome these issues. In this research, we constructed a model for identifying food ingredients and created an algorithm for recipe recommendation based on identified ingredients. We created a unique dataset with 9856 photos divided into 32 types of food items. We used a Convolution Neural Network (CNN) model to recognise food items, and machine learning to generate recipes. We had a 94% accuracy rate, which is extremely helpful.

Keywords: Deep Learning, CNN, Indian Food, Picture recognition, MAX pooling, Convolution filters, Convolution layer, Convolutional Neural Networks

1. Problem Statement

The server will house the Indian Food Classification application. As a consequence, a user or visitor can utilize image processing to look for recipes in the application. A user or visitor can use image processing to look for recipes in the application.

2. Introduction

People nowadays are more careful of their food and nutrition in order to avoid either approaching or present ailments. Because people rely on smart technology, the availability of an application that automatically monitors an individual's nutrition is beneficial in a variety of ways. It raises people's awareness of their eating habits and diet. Throughout the last two decades, research has concentrated on automatically recognising food and nutritional information

learning algorithms. It is crucial to accurately estimate food's caloric content in order to analyse dietary consumption. The majority of individuals overeat and don't exercise enough. Today's busy and stressed-out society makes it simple to neglect to maintain track of their food intake. This simply highlights how crucial it is to classify foods correctly.

Lately, the number of intelligent applications for smartphones, including Android and iPhone models, has greatly expanded. They have the power to balance consumers' eating patterns and alert them to harmful meals. Smartphones' processing capability has risen as a result of developments in the many technologies that are employed in them. They have the computational ability to analyse real-time multi-media data, but standard mobile devices cannot. As a result, photos are sent to high-processing servers, increasing transmission costs and delays. Given that modern cellphones can also handle high-quality photographs, the development of real-time apps that take photos and rapidly train machine learning models is the main goal of research on classifying foods. To prevent illnesses like diabetes, high blood pressure, and other issues, preventive is key.

Self-reporting and manually recorded equipment are used in several of the current dietary evaluation techniques. The problem with these methods of evaluation is that participants often underestimate and underreport their food intake, which leads to bias in the participant's judgement of their caloric intake. Improvements to the existing techniques are needed in order to boost accuracy and lower bias. A mobile cloud computing system, which utilises tools like cellphones to collect nutritional and caloric data, is one such potential option. The next stage is to automatically analyse the caloric and diet data using cloud computing power for an impartial evaluation. Users must still manually enter the data, though. Many attempts have been undertaken in the last several years to conduct research and create visual-based dietary and caloric information analysis. The effective extraction of information from food photographs, however, is still a difficult problem.

Convolutional neural networks have been used in this article to attempt to categorise food photos for further diet monitoring applications (CNNs). The CNNs have been used for the purpose of classifying foods since they can handle enormous amounts of data and can estimate the attributes

Fuzzy Logic-based automatic Energy Efficient Irrigation Management

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Abstract - Traditional farming is time-consuming, and farmers may find the need to constantly monitor crops to be a hardship. Wireless Sensor Networks (WSN), and Internet of Things (IoT) technology and. Furthermore, in real-life situations, using timers to manage the pumps in a traditional irrigation system is not persistently viable. This study provides a framework for using advanced fuzzy logic to manage an irrigation time based on various real-time soil and ambient variables, with sensors serving as the system's major component and contributor. The output of the irrigation system depends upon the various sensor's output, thus an optimized node placement strategy based on Energy Efficient Coverage Aware Particle Swarm Optimization (EECA-PSO) algorithm is suggested for the deployment of the sensor nodes over the agriculture field. The effectiveness of the proposed node placement scheme is compared with conventional node placement scenarios which indicate that the proposed node placement strategy provides superior network lifetime, reduced delay and optimal selection of nodes for the irrigation management.

Keywords - Agricultural Field Monitoring, Irrigation Management, Fuzzy Logic, Precision Agriculture, Internet of Things.

INTRODUCTION

The tremendous growth in the global population leads to needing for ample food sources. The agriculture sector is the prominent source of food. The elevation in food demand causes various issues regarding agriculture such as air and water pollution; global warming; greenhouse gas emission; degradation in quality and nutrients in food; etc. Agriculture sector is the focal source of raw material needed for numerous industrial products. Thus, the economical, cultural, and social growth of any country majorly depends upon the prosperity of the agriculture sector [1-3].

The WSN is a collection of sensor nodes distributed over the surface in a structured or unstructured way. Each sensor module includes a transducer, signal conditioning unit, central processing unit, transmitter, receiver, and battery. As the sensor modules are battery-operated devices, the lifetime of the network is limited. Depending upon the deployment surface, the WSNs are categorized into terrestrial, underwater, and aerial/mobile WSNs. WSNs plays important role in precision agriculture for various activities such as irrigation management, crop monitoring, agriculture land protection, crop disease detection, soil analysis, etc [4-5]. The deployment of the sensor nodes over the agriculture field is challenging because of various parameters such as soil type, environmental factors, wild animals, swarms, intruders, etc. the agriculture productivity and quality depend upon proper watering, fertilizers, and pesticides. There is a need for efficient irrigation management due to the decline of underground water levels and uncertainty in rain, the automatic irrigation system helps to minimize human efforts and to save water. However, efficient node placement will help to minimize the deployment cost of the network and select the potential positions that can cover the maximum agriculture field with minimum energy requirement [6-7].

The IoT devices can collect the different agriculture field conditions such as humidity, moisture, and temperature for irrigation management to improve crop productivity and water conservation. The IoT is becoming more popular in many industrial, commercial and agricultural monitoring systems. Currently, many farmers require manual labor for the intensive monitoring and control of the agricultural/crop activities and cattle monitoring which leads to wastage of resources and time. These disadvantages can be overcome by implementing the automatic agriculture monitoring using the combination of WSN, IoT, and soft computing algorithms such as irrigation management, node placement, cattle monitoring crop disease monitoring, etc [8-10].

The proposed scheme provides an energy-efficient node placement strategy for sensor node deployment and irrigation management to improve agriculture productivity. The contributions of the proposed work are summarized as follows:

- Implementation of energy-efficient and coverage-aware node placement scheme using Particle Swarm Optimization for the deployment of sensor nodes over the agricultural field.
- To investigate the irrigation management based on Fuzzy logic for agriculture productivity improvement and water conservation.

The rest of the article is arranged as follows: Section 2 provides a brief discussion of the various strategies employed for agricultural automation. Section 3 gives detailed information regarding the proposed PSO-based node placement strategy and Fuzzy logic-based irrigation management scheme. Further, section 4 provides various simulation results and experimental evidence for the performance evaluation of the proposed schemes. Lastly, section 5 depicts the crisp conclusions and shows the future direction for enhancement of the proposed research work.

JARVIS: Voice Controlled AI for Help Human

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Abstract - This Paper considers an overview of speech recognition technology, Software development, and its applications. The first section deals with the description of speech recognition process, its applications in different sectors, its flaws and finally the future of technology. Later part of report covers the speech recognition process, and the code for the software and it is working. Speech recognition is the process of automatically recognizing a certain word spoken by a particular speaker based on individual information included in speech waves. In this project, we will use algorithms for the speech recognition which will implement on JAVA for platform independent facility this system can be used for any security system in which the person authentication is required.

Keywords: Speech recognition, signal processing.

1. Introduction

Speech Recognition is the process of automatically recognizing a certain word spoken by a particular speaker based on individual information included in speech waves. This technique makes it possible to use the speaker's voice to verify his/her identity and provide controlled access to services like voice based biometrics, database access, services, voice based dialing, voice mail and remote access to computers. In this project, we will use algorithms for the speech recognition which will implement on JAVA for platform independent facility. This system can be used for any security system in which the person authentication is required.

Speech is the most natural way to communicate for humans. While this has been true since the dawn of civilization, the invention and widespread use of the telephone, audio-phonetic storage media, radio, and television has given even further importance to speech communication and speech processing.

The advances in digital signal processing technology has led the use of speech processing in many different application areas like speech compression, enhancement, synthesis, and recognition humans. While this has been true since the dawn of civilization, the invention and widespread use of the telephone, audio-phonetic storage media, radio, and television

has given even further importance to speech communication and speech processing.

The objective of the current research is

- To understand the speech recognition and its fundamentals
- Its working and applications in different areas
- Its implementation as a desktop Application
- Development for software that can mainly be used for

- 1) Speech Recognition
- 2) Speech Generation
- 3) Text Editing Tool for operating Machine through voice.

2. Problem Statement

In this 20th century everything is based on Computer. As we can see there are lots of enterprises which are developing so advanced technologies that can true shape the future of our world that we are living in. Nowadays we use several different technologies that make our life easy.

So we required various software for making our life quite a bit easy. We required software for protection and security of our machine, developers use eclipse for making programming easy, we use Google engine for searching etc. In short we are surrounded by software.

3. Proposed System

In Today's world we use keyboard and mouse for operating our computer normally. This is where our software comes into practice. Using this software we can fully operate our computer with our own voice. Its sounds a quite hi-tech and quite impossible but it's true, this can happen.

Today various company our working on it to make advance into this Speech Recognition System technology. Cause the system will fully reduce the use of the keyboard and just. Just you will require a Mic or Bluetooth device from which we can give a voice input to the system.

It's all in one technology as for security mechanism you will use your voice as a security password you will operate the computer with our voice and perform the entire task that do by

Online Voting System Using Cloud Computing

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Abstract - In this investigation work, Voting is commonly related to politics and is finished with often taking advantage and manual approach where voters stand to vote for his or her decisions. In the new era of advanced technology where online system improve work speed, reduces mistakes and encourage the generation of accurate results, having manual election system becomes a misfortune. A public election system add up to the backbone of a democracy where the people have to elect their state's leader. India currently uses a manual election system, which source several kinds of problems. Due to this papape tally used election system, some problems are faced by voters before or during elections and others are faced by the management before and after the voting. An online system, which involves procedures like booking voters, vote casting, vote counting, and declaring results would constitute a good solution to replace current system and put forward system in this thesis will be helpful for the voters by using any resources like their own system or arranged by executive. Moreover, the put forward stem will also decrease the risk for corruption. The system is put forward after interviewing officials of two departments, the Nation Database and Registration Authority India (NADRA) and the Election task of India (ECP). NADRA has an online archive of the citizens of India, and is providing the Computerized National Identity Cards (NIC) and also hold up different organizations with their online system. So, by using NADRA's system it becomes easy to register all voters of the age 18 or above, and furthermore to verify and secure their data. Our system is also provide with a chat bot that works as a support or guide to the voters, this helps the using the voting process.

Keywords: Online Voting System, Cloud Computing, and put forward system in this thesis will be helpful for the

I. INTRODUCTION

In the new period of trend setting innovation where online framework supports work an incident Introducing new technology is always a complex undertaking, and has many different aspects. These aspects are partly technical, partly social, political, organization and legal, and partly behaviour. This is also the case for information and communication technologies, and we see the study of these dimensions in various disciplines. In most cases, the research then aims at

bringing forward practical knowledge about design, development and implementation of ICT's, and at the same time at contributing to the theoretical knowledge of the discipline involved. As a sequel, multidisciplinary research is the characterisation of the social research related to technological change, and this paper is not different.

Of the aims our study has is to inform practical development and use of ICT's for politics, but also to learn fundamental things within the disciplines involved. Here we focus on one of the important dimensions, that is the role of social and socio-psychological factors. Experiments with Internet technology in real life situations may inform us about various things, all studied by different disciplines. However, taking the design, the development, the implementation and the use of new technologies as point of departure, all these disciplinary approaches in studying Internet voting should inform the designer

This is what we call 'design oriented research', in which we try to produce results that inform the scholarly debates as well as the practical discourse. In the research project on which this paper is based, these many things are in fact done: first of all designing and building a prototype. Secondly, testing the automation in real situations; experimenting with the 2 prototype in order to find out one political, organizational, administrative, legal contains. And finally, experimenting with the prototype in order to learn about the acceptance, use, usability, evaluation, trust by the individual voter, and the implications for the vote.

II. LITERATURE REVIEW

Distributed computing is make use for information putting away in circulated condition and these information can be gotten to effectively from anyplace whenever. E Voting can be consideration of as Good Governance in India. Current E-Voting substructure has a few issues of including votes, fraud in making sham votes and pool of security. In any case, to settle such issues give out computing offers quantities of chances, yet the development of distributed computing advances are still at diaper days organize. In this paper, we speak to the general of distributed computing, survey of various techniques make use for cloud based E-Voting framework over the adharcard, SMS and Traditional System.

A Survey Paper on Smart Human Activity Detection Using Yolo

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Abstract - A simple operational model could allow one person to monitor all around us to ensure security and privacy, while maintaining cost and performance of management and getting it right. This inspection with real-time video monitoring function can be sent to hospitals or living homes for the sick and elderly, as well as various people working in important area such as airport. In we decided to use the YOLOv4 (You Only One See One) algorithm, which is the newest and fastest of the total algorithms for fast analysis of actions and accurate results when dealing with complex human behaviour. This method uses a bounding box to indicate the action. In these cases, we collected 4,674 different data from different hospitals or different cases, making the most accurate use of one of the largest datasets used in this type of project. When we research, we divide our actions into three different classes: standing, sitting, and walking. Model can control and analyse the activities of many patients or other normal people, and support can monitor the activities of many. After completing three projects, the model achieved an average accuracy of 94.6667.

video frames using a computer to find human activities without manual operations automatically. In this paper, we will be using the YOLO (You Only Look Once) library to build a system that will detect human activities. YOLOv4 is four-time faster, and not only that, we can change between faster speed and better accuracy by just changing the amount and data for the model, without any additional retraining of data required. Human Action Recognition is an area of computer vision research and applications. The goal of Human Action Recognition is to identify and understand people's actions.

II. MOTIVATION

Understanding human activity and their interaction with surrounding objects are crucial for developing an intelligent system. Human action recognition is a field that deals with the problems generated in the integration of sensing and reasoning to provide context-aware data that can confer personalized support across an application. Several issues still plague human action recognition. Such as privacy concerns regarding continuous monitoring of activities, difficulty in performing HAR (Human activity recognition) in real-time, and lack of entirely ambient systems able to reach users at any time. Human activity recognition is a very critical monitoring system. Human action detection aims to inspect exercises from video successions or still pictures. The continuous improvement of artificial intelligence and deep learning algorithm helps us transmit and get vital physiological signs to the medical personnel and simplifies the quantification. As a result, it raises the efficiency of the patient monitoring system. A human activity recognition system can enhance the patient's experience in the medical sector.

Additionally, we can use the technology in many other fields. The active or innovative system can use HAR technology to monitor its residential area for better security. Our research aims to offer medical support, well-being services, and health benefit to older adults and other security purposes for critical infrastructure. It was exciting because we were about to create an intelligent system that would detect human activity and monitor that activity intelligently. That's why we decided to take the challenge.

Keywords: YOLOv4, DarkNet, Nvidia GPU Driver.

I. INTRODUCTION

Human activity recognition is the study that includes correctly identifying activities performed by humans, tested in different ways. Human activity is the continuous flow of single or distinct action essential in progression. Some human activity specimens are a sequence of steps in which a subject enters a room, walks forward, sits down, stands up, etc. Human activity recognition can widely apply to some real-world applications like patient monitoring, surveillance of essential locations; activity-based search, etc. You can perform it at various abstract levels. Students, engineers, and students have studied human activity recognition in every part of the world for a long time. The Machine Learning-based activity recognition uses Computer vision techniques like YoloV4 and DarkNet to recognize activities performed by humans. We will mainly be focused on the various activities and detect these actions through video. The Human Actions