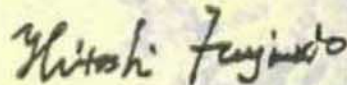**Kumamoto University**

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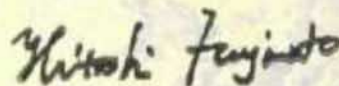
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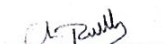
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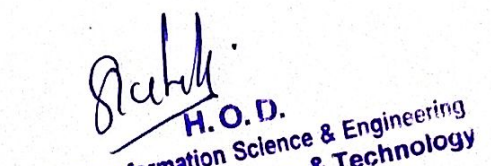
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A Review of Blockchain-Based Supply Chain Management: Applications, Challenges and Research Opportunities

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Abstract: *Blockchain technology has the potential to transform supply chain management by providing traceability, transparency, efficiency, and security. This review paper aims to provide a comprehensive overview of the current state of research on the application of blockchain in supply chain management, and to identify the main challenges and opportunities of using blockchain in this context. The review is based on a selection of IEEE papers on the topic, including "A Framework for Blockchain-Based Supply Chain Management" by B. Zhang, J. Huang, and X. Liu, and "A Review of Blockchain Technology in Supply Chain Management" by Y. Guo, J. Zhang, and C. Zou. The review also highlights the main topics and contributions of the selected papers, and proposes a research agenda for future work.*

Keywords: Blockchain technology

I. INTRODUCTION

Supply chain management involves the planning, coordination, and control of the flow of goods, services, and information from the source to the customer. It plays a critical role in the global economy, as it enables the efficient and timely delivery of goods and services to meet the demand of consumers. However, traditional supply chain management systems are often inefficient, opaque, and vulnerable to risks and disruptions, due to the complexity and diversity of the supply chain network, the reliance on manual processes and centralized databases, and the increasing demand for transparency and sustainability.

Blockchain technology, with its decentralized, distributed, and immutable ledger, has the potential to transform supply chain management by providing traceability, transparency, efficiency, and security. The decentralized and distributed nature of blockchain ensures that the supply chain data is stored and replicated on multiple nodes, which makes it difficult to alter or delete the data without the consensus of the network. The immutable nature of blockchain ensures that the supply chain data is tamper-proof and permanent, which can provide a reliable and auditable record of the movement and status of goods and assets. In addition, the use of smart contracts can enable the automation and execution of transactions and processes in the supply chain, which can reduce the need for manual intervention and reconciliation, and increase the speed and accuracy of supply chain operations.

II. PROBLEM STATEMENT

The use of traditional supply chain management systems is often inefficient, opaque, and vulnerable to risks and disruptions, due to the complexity and diversity of the supply chain network, the reliance on manual processes and centralized databases, and the increasing demand for transparency and sustainability.

2.1 Objectives

The main objective of this proposed project is to,

- To review the current state of research on the use of blockchain technology in supply chain management.
- To identify the potential benefits and challenges of using blockchain in supply chain management.
- To identify the research opportunities for blockchain-based supply chain management.

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Automatic Image Segmentation for the Detection of Illness in Cash Crops Extended Data Set Method & Deep Learning

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Abstract: *The economy of our country heavily depends on agrarian produce. This is the driving force behind Recognizing unhealthy leaves is the key to preventing crops from declining and yield from declining. It required a tremendous amount of labour, knowledge of the leaf diseases, and a tremendous lot of time. As a result, methods for image processing are used to find and identify unhealthy plant leaf conditions Automatically identifying plant leaf diseases is helpful because it reduces the laborious task of observing in large farms and identifies disease symptoms right away. The stages of image acquisition, image pre-processing, picture segmentation, feature extraction, and classification are involved in the detection and identification of plant leaf diseases. The methodologies for pre-processing images, picture segmentation algorithms for automatic recognition, and research on potential plant leaf disease classification algorithms are all included in this work*

Keywords: Image processing; segmentation; Support Vector Machine; Decision Support System.

I. INTRODUCTION

India is one of the developing countries wherein majority of population of country is depends on agriculture and agricultural production [8]. Studies show that the plant leaf disease reduces the quality and quantity of agricultural products. Therefore detect and identify disease at early stage is important task for farmers. Detection of disease at early stage can save the whole crops from a disease. The identification and recognition of plant leaf disease by open naked eye is quite difficult task for farmers and consult scientist or expertise person is very costly for farmers in our developing countries like India. However, illnesses are a significant factor in India's declining agronomics. In order to control crop diseases, farmers must deal with a number of challenges. In the agricultural industry, illness detection is crucial, and doing so requires careful diagnosis and the right kind of surveillance to prevent catastrophic losses.

Therefore, consider for quick, low cost and precise way to automatically recognize and identify disease from the leaf of plants is of pragmatic significance for large farms. The present Decision Support Systems (DSS) are establish on call center need that the farmers have to convey details about plant leaf through orally. DSS based on image processing can be useful to improve the production of agriculture.

II. LITERTURE SURVEY

[1] Plant Leaf Disease Classification Using Efficient Net Deep Learning Model Ümit ATİLAa, Murat UÇARb:

Deep learning techniques have lately gained popularity for pattern identification and image processing. The PlantVillage dataset's plant leaf images from 39 classes were to be classified using the EfficientNet deep learning architecture, which was proposed in this work. The effectiveness of the suggested design was evaluated in comparison to cutting-edge deep learning architectures utilised in the literature for plant leaf disease detection. Both the original and the expanded versions of the PlantVillage dataset were used for experimental experiments.

[2] Development and Validation of a Deep Learning Algorithm for the Recognition of Plant Disease Sijiang Huang, Wenjie Liu:

We discovered that various plant diseases, such as tomato scab and speck, had poor recognition performances in the experimental results of this paper. In order to improve the efficacy of these diseases' recognition, we will expand our

A Brief Study on Human Action Recognition

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Abstract: *Human action recognition is the process of labelling image sequences with action labels. Robust solutions to this problem have applications in domains such as visual surveillance, video retrieval and human–computer interaction. The task is challenging due to variations in motion performance, recording settings and inter-personal differences. In this survey, we explicitly address these challenges. We provide a detailed overview of current advances in the field. Image representations and the subsequent classification process are discussed separately to focus on the novelties of recent research. Moreover, we discuss limitations of the state of the art and outline promising directions of research.*

Keywords: Human action recognition.

I. INTRODUCTION

We consider the task of labelling videos containing human motion with action classes. The interest in the topic is motivated by the promise of many applications, both offline and online. Automatic annotation of video enables more efficient searching, for example finding tackles in soccer matches, handshakes in news footage or typical dance moves in music videos. Online processing allows for automatic surveillance, for example in shopping malls, but also in smart homes for the elderly to support aging in place. Interactive applications, for example in human–computer interaction or games, also benefit from the advances in automatic human action recognition. In this section, we first discuss related surveys and describe the most common datasets and algorithms. Also, we outline the main characteristics and challenges of the field as these motivate the various approaches that are reported in literature. In its simplest form, vision-based human action recognition can be regarded as a combination of feature extraction, and subsequent classification of these image representation.

II. SURVEYS

Recent Advances in Video-Based Human Action Recognition using Deep Learning: A Review [1]

Di Wu, Nabin Sharma, Michael Blumenstein [1] Video-based human action recognition has become one of the most popular research areas in the field of computer vision and pattern recognition in recent years. It has a wide variety of applications such as surveillance, robotics, health care, video searching and human-computer interaction. There are many challenges involved in human action recognition in videos, such as cluttered backgrounds, occlusions, view point variation, execution rate, and camera motion. A large number of techniques have been proposed to address the challenges over the decades. Three different types of datasets namely, single viewpoint, multiple view point and RGB-depth videos, are used for research. This paper presents a review of various state-of-the art deep learning-based techniques proposed for human action recognition on the three types of datasets. In light of the growing popularity and the recent developments in video-based human action recognition, this review imparts details of current trends and potential directions for future work to assist researchers.

Action Recognition for Surveillance Applications Using Optic Flow and SVM [2]

Somayeh Danafar, Niloofar Gheissari [2] Low quality images taken by surveillance cameras pose a great challenge to human action recognition algorithms. This is because they are usually noisy, of low resolution and of low frame rate. In this paper we propose an action recognition algorithm to overcome the above challenges. Author used optic flow to construct motion descriptors and apply a SVM to classify them. Having powerful discriminative features, significantly reduce the size of the feature set required. This algorithm can be applied to videos with low frame rate without scarifying efficiency or accuracy, and is robust to scale and view point changes. To evaluate our method, author used a database consisting of walking, running, jogging, hand clapping, hand waving and boxing actions. This grayscale database has

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FOR PRESENTING PAPER

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Dr B Satyanarayana
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Dr M Janga Reddy
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CMR Institute of Technology, Hyderabad

A REVIEW ON VOICE CONTROLLED WHEELCHAIR WITH OBSTACLE SENSOR AND THERAPY UNIT

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Abstract: This paper presents the design of an automated wheelchair with voice control. The main objective of this campaign is to promote voice control of wheelchairs for individuals who need it. The system's safe mobility is enhanced by additional features including obstacle identification that reduce the likelihood of accidents while travelling. This gadget also features a component for therapy that helps the user's limbs avoid becoming numb after extended rest.

Keywords-wheelchair, voice, obstacle, disability, therapy

I. INTRODUCTION

Inspiring and admirable effort has been done by many researchers to make patients' life as simple and independent as possible. The fact that physically challenged patients can hardly move and must use a wheelchair is one of their major limitations. A controller is now built into certain wheelchairs, making them more modern. This type of wheelchair can be useful for patients who have functional upper limbs but little control over their bottom limbs. In today's world, speech recognition is a hot topic. Speech recognition has a wide range of uses that improve the quality of our lives. However, for wheelchair remained a notable barrier. As a result, an intelligent wheelchair system based on voice recognition is suggested. The voice-activated wheelchair is built with safety features to prevent collisions with obstacles and can be operated via voice commands. The primary goal of this system is to be able to recognise speech as accurately as possible. Speech recognition is the process of turning spoken words into forms that computers can understand. This intelligent wheelchair incorporates speech recognition, so when a command is given verbally, the system will carry it out as instructed. It has a therapy machine to help the crippled person's limbs and prevent numbness from being brought on by prolonged rest. Through this approach, disabled people can receive some therapies alone. Through the use of their voice commands, those who are physically disabled or socially isolated will be able to move around freely and independently like other members of the community. This paper discusses the creation of a system that uses an infrared sensor, Raspberry Pi, Google Assistant, servo motor, and an Android handset as a microphone.

II. LITERATURE SURVEY

[1] Muhammad Azlan Alim, et al. In this proposed system, a voice-activated intelligent wheelchair device for those with physical disabilities who are unable to steer with their limbs. This innovation uses voice commands to control the wheelchair's mobility in various directions. The Android device serves as a microphone to connect to the Google Assistant before the Raspberry Pi processes the data. The servo motors will subsequently be given the appropriate instructions by the Raspberry Pi. Through the employment of an infrared sensor, this technology provides automated obstacle detection and assists the operator in applying the temporary stop button when the impediment is detected. The trial findings of more than 90% accuracy and a reaction time of less than 1.2 seconds confirm that it is a trustworthy system for usage by disabled individuals. The dual-controller mode further highlights its importance for users who have limited control over one or both of their lower limbs. This wheelchair also has a user-friendly mechanism since it doesn't require any special training or user restrictions to use.

[2] Ms. Cynthia Joseph, et al. In this proposed system, The device is built on a design that incorporates manual operation to let physically challenged persons use voice activation. Voice recognition software and an Arduino microcontroller have been utilised to facilitate wheelchair mobility. An improper spoken command does not cause the wheelchair to move. The Arduino controls the wheelchair directions in accordance with the instructions provided by voice and gesture. Obstacle detection is performed via ultrasonic sensors. The prototype's layout makes it possible to utilise it effectively and without much effort on your own. It helps consumers save time, money, and energy. Ultrasonic sensors are effective at detecting any obstruction. The prototype begins to move as soon as the user turns it on, and any impediment that is anticipated to be within a specific range will be picked up. Older because of their independence. [3]M.Senthil Sivakumar, et al. In this proposed system, They suggest a wheelchair, speech module, and navigation module for the Intelligent Home Navigation System (IHNS). An older person or someone with physical limitations can easily move around the house using their method. The wheelchair is controlled automatically or manually in the suggested system

A Review: IOT Based Real Time Monitoring and Control System for Mushroom Farm

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Abstract - In recent years, technology in agriculture has grown and some of them have used information technology based on Internet of Things (IoT). The general objective is to combine the cultivation and agriculture using IOT technology. This study is based on cultivation of milky mushrooms with help of automated technology as they have good selling values and require special conditions, namely a humid environment at a temperature range of 20-25° C and also relative humidity level between 85 and 90%. The use of IoT systems in mushroom farms is common for providing effective agricultural solutions. The Arduino used to control the signals based on temperature and humidity and also a GSM module to send the real-time data to an app over the internet. The employment of sensors in a variety of agricultural industries has a significant positive impact on crops and aids in lowering and raising operating costs.

Key Words: Arduino, Temperature, Humidity, GSM module.

1.INTRODUCTION

The milky mushroom (Calocybe indica) is now India's third most widely used commercial fungus. The attractive, sturdy, white sporocarps, extended shelf life, sustainable yield, delectable flavor, distinctive texture, and cholesterol-free foods have all contributed to the mushroom's rapid rise in popularity. They also have essential medical benefits, such as an antiviral impact. Mushrooms are a very good source of protein, vitamins, and minerals. They also have enticing flavors and are devoid of cholesterol. They also have a number of significant therapeutic benefits, including an antiviral effect. Furthermore, a great source of thiamine, riboflavin, nicotinic acid, pyridoxine, biotin, and ascorbic acid are milky mushrooms [1]. Agriculture is one area that needs to be enhanced for the production of food, particularly the growing of oysters and milky mushrooms. Because they are minimal in calories, carbs, fat, and sodium, mushrooms are a popular and valuable food. They include vital minerals and don't contain cholesterol. Lack of temperature and humidity management causes farmers who grow mushrooms to frequently fail, which leads to subpar mushroom yield. By regulating the atmosphere's temperature and humidity, one can increase the production and quality of mushrooms. Regulating these factors and upholding a controlled environment is extremely difficult, yet doing so enables growers to produce good crops and turn mushroom cultivation into a lucrative industry. The use of sensors in a range of agricultural sectors has a good effect on crops and helps to both reduce and increase operating costs. Being heterotrophic organisms, mushrooms are frequently employed in a range of processed foods, medications, and other products. Fungi, a different class of creatures, including mushrooms. They rely on dead and decomposing organic things to develop because they lack the chlorophyll that plants have. They obtain their sustenance from these decomposing substrates with the aid of very small, thread-like structures (mycelium), which penetrate the substrate but are typically not visible on the surface. In India, Milky mushrooms are produced seasonally and in climate-