



Criterion II – Teaching Learning and Evaluation

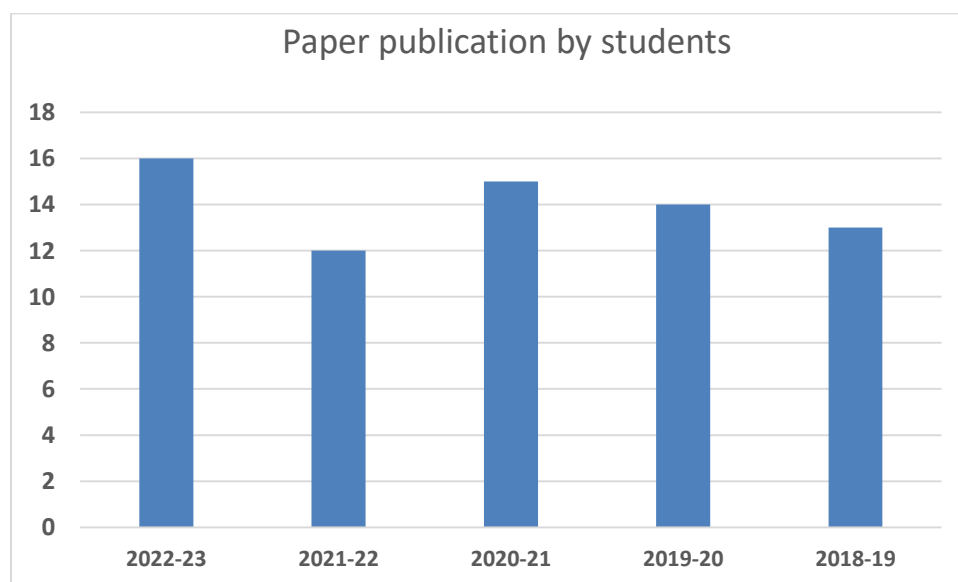
2.3.1.: Student centric methods, such as experiential learning, participative learning and problem-solving methodologies are used for enhancing learning experiences and teachers use ICT- enabled tools including online resources for effective teaching and learning process

Participative Learning

Paper Published by Students

Paper Published By Students (Department)	2022-23	2021-22	2020-21	2019-20	2018-19
E&TC	4	4	3	8	4
COMPUTER	10	3	12	6	7
IT	2	5	-	-	2
Total	16	12	15	14	13

Grand total = 70



4.6.3 Participation in inter-institute events by students of the program of study

Academic Year 2018-2019

Projects/ Paper Presentation

Sr. No	Name Of The Student	Class	Name Of The Event	Subject	Organized By
1.	Sourabh Nidhi Yadav Aakash Bhadoria	SE E&TC	Paper Published In International Conference ICRIEECE	Innovative Security system for centralized examination to enhance security	KJJI Bhubaneswar Odisha during July 27 th & 28 th 2018
2.	Nidhi Yadav Sourabh	SE E&TC	Paper Published In International Conference ICRIEECE	E-Rickshaw Present Past and Future with Reference To Current Transportation in India	KJJI Bhubaneswar Odisha during July 27 th & 28 th 2018
3.	Shipra Saumyakanta Khatua	SE E&TC	IEEE International Conference on Innovations in Power and Advanced Computing Technologies, i-PACT 2019	Scope of Internet of Vehicles on India Roads	VIT, Vellore during 22 nd & 23 th March 2019
4.	Saurabh Nidhi Yadav	SE E&TC	2 nd AICTE-ECI-ISTE Chhatra Vishwakarma Award 2018	Mosquito Detector, Counter & Alerter	AICTE-ECI-ISTE

Innovative security system for centralized examination to enhance security

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Abstract— Examination plays a vital role in education system. The exam is a real test of student's capability, preparedness, eligibility and his skills during pressure situation. In past years there have been many exam paper leakage scandals which spoiled the immense hard work of students in their subjects. An interfaced IOT based system inserted on metallic briefcase sent by exam controller to exam-in charge could enhance the security to exam papers. The IOT system consists of electronic switch, which on pressing will give internal power to briefcase. Android application will interlink exam-in charge and exam controller for enhanced security. The exam controller and exam-in charge will exchange the predefined security code of briefcase on Android application. The system will use MSP5529LP TI microcontroller for sending message and matching security code through string matching function. Hence, devised system will enhance the standard of security and will contribute in avoiding paper leakage scandals. It will also minimize the cost of conduct of exam, reduce the burden of authorities. This IOT based system could be implemented in exams which involve physical distribution of papers like government common entrance exams, competitive exams, board exams where printed papers are to be required.[1]

Keywords—: 4*4 hex pad, IoT, MSP5529LP Texas instruments microcontroller, CC3100 Boost TI wifi module, servomotors, embedded C/C++ programming, Android Application, python.

1. INTRODUCTION

An examination is the assessment planned to measure the skills, knowledge, aptitude, preparedness, eligibility of candidate for particular job. But exam paper leakage leads towards the selection of incapable candidate for particular job. Exam creates and even destroys the future of a youth. Examination is like a driving force which motivates students to work hard in every extreme condition in order to succeed,

but these types of case degrade the dignity of pure word examination. Each and every year we hear news about postponed/cancelled exam due to paper leakages in the newspaper or on television. Sometimes the university itself doesn't have any idea about whether there is leakage of any information content related to question papers. Thus paper leakage results in some student getting good marks in minimum time with less effort. The increases the stress level on students. This aspect will create negative effect on students and demoralize the growth of society.

Hence we thought and build an IoT interfaced security system cheap enough to insert on brief in which exam papers are kept. The E-briefcase will consist of Electronic switch, MSP5529LP Texas instruments microcontroller, CC3100 Boost TI wifi module, servomotor, 4*4 hex-pad as hardware. The platform used for hardware and software interfacing python, embedded C/C++, Android application, MS-Excel.[3]

A. RECENT SITUATION:

In recent time centralized and common entrance examinations are conducted in different centers which involve physically distribution of question paper. The papers are sent in a large metallic box to respective centers for distribution. High security is provided to exam papers. The metallic box consists of number of locks whose key is given to exam-in charge on respective time. Then box is opened in front of external and then papers are kept in packets for distribution. This whole system is highly good but its time-consuming; require a lot of attention & expenditure and lack of security. Bank authorities, exam controller and lot of people are involved in this process. Hence a IOT interfaced system which connect exam-in charge and exam controller is a better solution to problem. [4]

E-RICKSHAW PRESENT PAST AND FUTURE WITH REFERENCE TO CURRENT TRANSPORTATION IN INDIA

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Abstract- This paper presents study of past present and future of E-rickshaw. Rickshaw an important means of transportation contributing to the huge percentage in public transport. With a need for motorized system of transportation the rickshaw has evolved over the years. It has evolved from hand pulled rickshaw to electric rickshaw that is e-rickshaw. It is a cheap and environment friendly source of transport in the times of urbanization and when pollution rates are alarmingly high. Study of socio-economic impact of e-rickshaw on the industry and society is done which includes the present system, its structure and also the earning data with some statistics is taken into consideration. Along with that environmental impact are also given a view. Some of the government initiatives and laws are also been highlighted. E-rickshaw with its evolution resulting features with some issues are also given weightage in the study. E-rickshaw is slowly becoming more popular in some cities of India. It can be referred as a best option for a pocket friendly transportation. Still e-vehicle market share is less than 1 percent. Adding to this it has become a highly dependable mode of communication in the years to come and has established itself as a lucrative profession choice for people of rural India or people in cities belonging to low income category. "Petrol and diesel are past, e-rickshaw is the future" Thus observing the shift towards technology with more efficiency and being ecofriendly that is the "e- technology" and with taking a relook on past, going with present, socio-economic impact of e-rickshaw and giving a thought for future study of this paper is done in different manner.

above definition e-rickshaw can be defined as "electricity powered vehicle". It is a three wheeled vehicle which is pulled by an electric motor which ranges from 650-1400 W. They are mostly manufactured in India and China, only a few other countries manufacture these vehicles [1][2]. 75%-80% share is shared by road transport in total passenger proportion and in India the passenger mobility has increased from 35% to 85% in last 60 years. Thus rickshaw play a vital role in passenger mobility so in order with need of sustainable energy to reduce pollution e-rickshaw is the best option [8].

Due to less human effort and cost of fuel E-rickshaw is a good option if compared with auto rickshaw and human pulled rickshaw. The pollution coming out from E-rickshaw is immensely less and it provides last mile connectivity that means it provides door to door service. Recently in India battery operated E-rickshaw have arrived. Its comfortable and economic mode of transport has gained E-rickshaw popularity in India[8].

Keywords- E-rickshaw, technical, social, future

1. INTRODUCTION

Word rickshaw originates from Japanese word "jinrikisha" (jin-human, riki - power or force, sha- vehicle) which literally means "human powered vehicle". Now referring to the

Scope Of Internet Of Vehicles On Indian Roads

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Abstract— Currently Internet of Vehicles is one of the emerging fields associated with Internet of Things. This has become one of the most active research fields in network and intelligent transportation systems. As an open converged network, Internet of Vehicles plays an important role in solving various driving and traffic problems by advanced smart technology. Features such as immobilization of the vehicle in case of theft, alerting the owner at any unintended vehicle movement etc. will be seamlessly enabled. Such applications can also deliver vital information regarding the vehicle such as oil level, tire pressure, mileage and battery charge alerts etc. In past few years, some Indian organizations have already launched vehicles circled with connected car technologies. This paper advocates the connecting model of the Internet of Vehicles based on technologies used to integrate Vehicles, including its approach on current technologies, all focused on India's progress ahead covering all corners.

Keywords— Internet, vehicles, network, India.

1. INTRODUCTION

The Internet of Vehicles (IoV) is mainly composed of vehicles that has the ability and is trained to communicate each other and with public networks through V2V (Vehicle to Vehicle), V2O (Vehicle to owner), V2D (Vehicle to Device), V2I (Vehicle to infrastructure) and V2P (Vehicle to Pedestrian) interactions, which enables both the collection and the real-time sharing of vital information about the condition of network of the road [1]. IoV expands on this concept to turn every vehicle into a smart mode on the roads, with its own smartness, storage and networking capability, which is much more similar to the small gadget which is very popular in today's world that is smart phone [2], [3], [4]. In the IoV sequence, each automobile is treated as a smart object connected with a powerful different type of sensors, communications technologies, controlling units, IP-based connectivity to the Internet and to other vehicles either in a direct manner or an indirect manner [5], [6], [7]. In addition, a vehicle in IoV is visualized as a model which communicates multiply, and upholds the interactions between intra-vehicle components, vehicles to vehicles, vehicles to road, and vehicles to people [8], [9], [10]. Moreover, it has feature of processing, computing, sharing and secure release of information in the information platforms [11], [12], [13]. Based on this data, the system can efficiently guide and oversee vehicles, provides large number

of multimedia and mobile Internet based services [14], [15], [16]. The main contributions of this work include a discussion on how IoV can help to achieve a sustainable intelligent transportation system and bring considerable benefits to drivers and passengers, society, service providers and manufacturers [17], [18].

The rest of the paper is systemized as follows. This paper is systemized as follows. Section 2 traces the overview of IOV which includes the concept and components of IoV with future challenges in India. Section 3 presented the standardization related to IoV. Section 4 depicted IoV with respect to India. Section 5 provides some of the safe and efficient navigation methods. Section 6 discusses how security solutions can be deployed to address some of the security and privacy challenges in IoV.

II. OVERVIEW OF IOV

IoV is an extension of Internet of Things. IoV uses real time data from vehicles to connect them and ensures customer satisfaction and safety. It uses various sensors and actuators to examine the situations and surrounding conditions, hence it sends real time data to the client with a client server system which enables either the client to make appropriate decisions or in emergency conditions the artificial intelligence incorporated in it can also come into action to make decisions [1].

A. Concept and Components of IoV

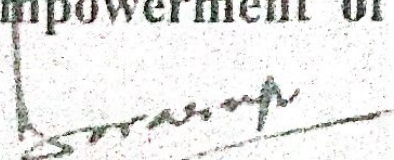
The modern spin of the Internet of Things is driving the progression of traditional vehicle networks in the IoV. Being a generation which is full of gadgets and networking world, there is a need to stay in safe and hassle-free environment. According to recent predictions, 2.5 billion "things" will be connected to the internet by 2020, of which vehicles will comprise a significant portion. Connected vehicles and networks are integral components of the IOV concept which is a mobile system which allows information exchanges involving Vehicle to Vehicle (V2V), Vehicle and Roadside, Vehicle and Device, Vehicle and infrastructure, Vehicle to Person (V2P) and Device to Device (D2D) [2]. However, automobile can be treated as a better platform to realize the full concept of the Internet of everything that exists in nature. In an automobile, the people, data, processes, and things can be drawn in faultless relation in their own ecosystems, with



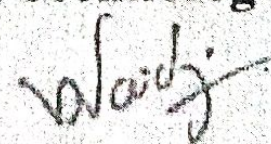
AICTE-ECI-ISTE Chhatra Vishwakarma Awards-2018

WINNER INSTITUTE OF NATIONAL CONVENTION


This is to certify that team from Army Institute of Technology
participated in the "National Convention" of 2nd AICTE-ECI-ISTE "Chhatra Vishwakarma Awards-2018" held on 20-21 January 2019 at All India Council for Technical Education (AICTE), New Delhi. The project Mosquito Detector, Counter & Alertter has scored the First position by presenting an innovative solution / prototype under the theme of "Empowerment of Villages Through Technologies".


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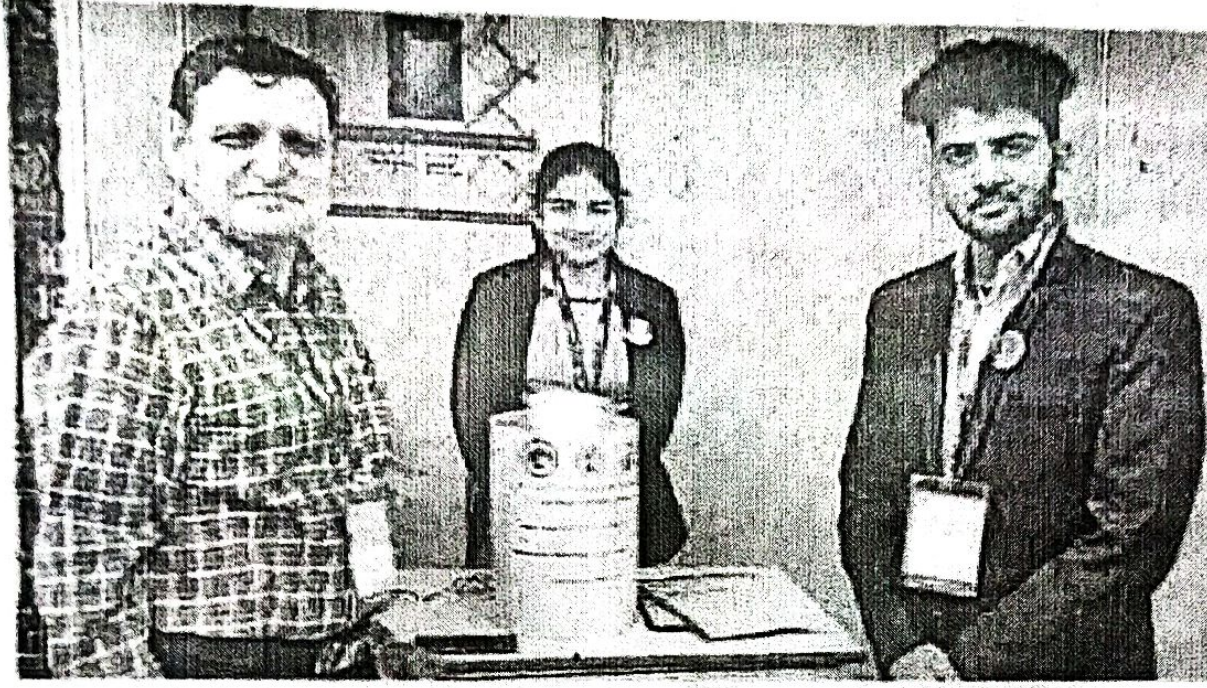

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पसरवणारे घातक डास शोधणारे यंत्र वि

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वर निधी
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**'मॉस्किटो डिटेक्टर-काउंटर अँड अलर्टर' या उपकरणासमवेत निधी
यादव आणि सौरभ सिंग.**

आणि टेलिकम्युनिकेशनच्या दुसऱ्या वर्षाला शिकतात. 'टाटा ग्रँड आयओटी' या स्पर्धेसाठी त्यांनी हे संशोधन केले आहे.

'आफ्रिकेतील एक जमातीला रंग, आकार आणि शरिररचना यावरून डासांच्या धोकादायक प्रजाती ओळखण्याचे ज्ञान अवगत असल्याचे

वाचनात आले. त्या वेळी डासांबाबत सुरू असलेल्या संशोधनाचा आम्ही अभ्यास सुरू केला. डासांच्या पंखांच्या हालचालींच्या (विंग बीट फ्रिक्वेन्सी) आवाजाचा वेध घेऊन त्यांच्या प्रजाती ओळखण्यासाठी आम्ही प्रयत्न सुरू केले. त्यासाठी स्टॅनफोर्ड विद्यापीठातील मोठा डेटाबेस वापरण्याची संधी आम्हाला

मिळाली. उपकरणाकडे डास आकृष्ट झाल्यानंतर त्यांच्या पंखांच्या हालचाली टिपण्यासाठी अतिउच्च क्षमतेचे मायक्रोफोन वापरण्यात आले आहेत. डेंगी, मलेरिया, चिकुनगुनिया, पिवळा ताप पसरविण्यास कारणीभूत ठरणाऱ्या एडिस, अॅनाफोलिस आणि क्युलेक्स या तीन प्रजातींबाबत आम्ही संशोधन केले.

या संशोधन स्पर्धेत द्वि भारतीय त कौन्सिल सोसायटी आम्हाला गौरविण्या निधीने दि

डास दिसताच उपकरण पाठव

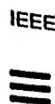
'मॉस्किटो डिटेक्टर - काउंटर अँड अलर्टर'मध्ये प्रजातीचे प्रमाण दिसताच संबंधित परिसरातील व्यक्ती पाठवण्याची सोय उपकरणामध्ये करण्यात आली. कोणत्या प्रकारचे औषध फवारून डासांना प्रतिबंध करता येईल, याची माहिती नागरिकांना देण्यात येणार आहे. साथीच्या रोगांचा प्रादुर्भाव थांबून नागरिकांचे आरोग्य निरोगी राहण्यास मदत होणार आहे. या उपकरणाचे पेटंट मिळवण्यासाठी आम्ही प्रयत्न करत आहोत. त्यानंतरच याचे मोठ्या प्रमाणावर उत्पादन करण्यास उद्योजक पुढे आल्यास त्याचा समाजात फायदा होईल,' असे सौरभने सांगितले.

4.6.3 Participation in inter-institute events by students of the program of study

Academic Year 2019-2020

Projects/ Paper Presentation

Sr.No	Name of The Student	Class	Name of The Event	Subject	Organized By
1.	Saumyakanta Khatau Jay Kumar Das Rohan Dalal Snehashish Pradhan	TE E&TC	2019 IEEE Pune Section International Conference (PuneCon)	Comparative Study Of Binders For Super-capacitor.	IEEE
2.	Anshu Banerjee AnanyaTewari	BE E&TC	International Journal of Innovative Technology and Exploring Engineering (IJITEE)	Secure Radio Frequency Transmission for Paperless Voting System	IJITEE
3.	Abhishek Kushwaha Deepak Kumar Nawab Alam	BE E&TC	International Conference on Communication and Electronics Systems	Wi-Fi Cloud server based User Operated Billing System in Mall	PPG Institute of Technology Coimbtore, Tamilnadu
4.	Swati Jha Uma Kumari Ashwini Patil	BE E&TC	International Journal of Research-Granthaalayah	Smart municipal solid waste management	IJR
5.	Shipra Saumyakanta Khatua	TE E&TC	2019 International Conference on Nascent Technologies in Engineering (ICNTE)	Scheme for providing electric energy for electric vehicles.	IEEE
6.	Saumyakanta Khatua	TE E&TC	2019 International Conference on Power Electronics Applications and Technology in Present Energy Scenario (PETPES)	Electrode electrolyte compatibility for superior performance of Super-capacitor	IEEE
7.	Saumyakanta Khatua Amar Barik Roshan Nikam Subhash Kumar Pal Parthraj Singh Gohil	TE E&TC	2019 5th International Conference On Computing, Communication, Control And Automation (ICCUBEA)	Scope Of Implementing Humanoid Robots At Educational Institutes In India's Perspective	IEEE
8.	Saumyakanta Khatau Shipra	TE E&TC	2019 Innovations in Power and Advanced Computing Technologies (i-PACT) DOI:10.1109/i-PACT44901.2019.8960186	Scope of Internet of Vehicles on Indian Roads	Researchgate



All



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With increase in demands of electronic devices there is a spike in the field of power management and efficiency. For this development of low power consuming devices with maximum efficiency is necessary. One of the major components of major electronic devices is capacitor. To enhance the charge storing capabilities we use super-capacitors instead. Though this holds a major drawback of high resistance. Researches are being carried out to increase the efficiency of super-capacitors. This paper presents the effect of various binders on the working of super-capacitors. Binders play roles of binding active material and conductive agent together and also cohering with electrode. The role of the binder should provide enough strengthen during the electrode formation and appropriate pore sizes. Hence effects of various percentages of binders on capacitance and equivalent series resistance values is studied in this paper.

Published in: 2019 IEEE Pune Section International Conference (PuneCon)

Date of Conference: 18-20 Dec. 2019

INSPEC Accession Number: 19669857

Top Organizations with Patents on Technologies Mentioned in This Article

ORGANIZATION 4

ORGANIZATION 3

ORGANIZATION 2

ORGANIZATION 1



Secure Radio Frequency Transmission for Paperless Voting System



Anshu Banerjee, Ananya Tewari, Renuka Bhandari

Abstract: In any democracy, elections play an important role. If the traditional Electronic Voting Machine (EVM) is secured by encryption, it could be made more reliable. Traditional voting process provides security through the use of a paper audit trail which is not environment friendly making it unfit for use in the long run. This paper proposes the use of Blowfish algorithm for encryption along with secure transmission using radio frequency and verification of the cast vote. In this approach, the cast vote is encrypted using Blowfish encryption algorithm and transmitted to the server through radio frequency. At the server, the data is decrypted and sent back to be displayed on the screen of the EVM, eliminating the paper audit trail. This approach will account for a considerable amount of cost reduction without compromising on the security and sanctity of the election process.

Keywords: Blowfish Algorithm, Encryption, Radio Frequency, Decryption, Cloud

I. INTRODUCTION

Elections are conducted using electronic voting machines (EVM).^[1] They have been developing over the past two decades and have replaced the process of voting through ballot papers, thus making the election process much easier by avoiding manual tallying of ballot papers.^[2] EVMs are fast and reliable, and save lot of time and manpower. However, there are many security loop-holes and threats, which may lead to tampered results in the election. Security and privacy are main concerns in the EVM. An implementation of secure voting system has been proposed that improves the security.

II. HISTORICAL BACKGROUND

Voting in India was conducted using ballot boxes till 1982.^[2] Ballot boxes had many major security concerns. Apart from that, they were difficult to transport and required specific storage conditions. Ballot boxes were then replaced by EVMs.^[2]

A. Electronic Voting Machines (EVM)

Electronic Voting Machine (EVM) is a device that is used to record votes electronically. It is made up of two Units – a Control Unit (CU) and a Balloting Unit (BU). A five-meter cable joins these two units.^[2] There exists a Presiding/Polling Officer who watches the CU while the voting compartment houses the BU. Instead of issuing the ballot papers, the Polling Officer who is in-charge of the CU releases a ballot by pressing the Ballot Button on the CU. The voter then casts his vote by pressing a blue colored button on the BU against the candidate and symbol of his choice. In this way, the possibility of casting an invalid vote is completely eliminated as opposed to paper ballot system where invalid votes were cast in large numbers. This has enabled EVMs to reflect a more authentic and accurate choice of people. EVMs, also reduce the printing of millions of ballot papers needed for every election, and make the counting process very quick (result can be declared within 3 to 5 hours as opposed to 30-40 hours, on an average, under the conventional Ballot paper system).^[2]

B. Voter Verifiable Paper Audit Trail (VVPAT)

Voter Verifiable Paper Audit Trail (VVPAT) or Verifiable Paper Record (VPR) is an independent system attached to the EVM. It facilitates the voters to verify that their votes are cast as intended. After a vote is cast, a paper slip is printed containing the serial number, name and symbol of the candidate. It is shown through a transparent window for about 7 seconds. After this period of time, the printed slip falls in a box that is sealed. This process is automated. This process helps detect malfunction or possible election fraud and the electronic results can be audited.^[2]

III. THE PROBLEM

The traditional EVM is susceptible to several security threats such as: Before voting- The unit may be replaced with a fraudulent one which may be pre-programmed to transfer a certain set of the votes in the favor of a previously decided candidate. After voting- The EVM's memory can be manipulated in between the election and the counting phase. Manipulation of the data is done using an on-clip interface by swapping the vote from one candidate to another. EVM's may also be hacked with a Bluetooth device. Moreover, the VVPAT which is used to confirm the vote, unnecessarily creates infrastructural burden and large amounts of waste paper. To avoid problems such as BU manipulation, fake votes and duplication of votes, cryptography can be used to ensure security and the voter's privacy.^[3]

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Wi-Fi Cloud server based User Operated Billing System in Mall

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Abstract— In today's world due to the increasing population, the shopping malls are fully crowded and billing is a time-consuming process. The time spend for every customer for billing, because of existing billing technology at the billing counters is more. Human resource required for billing and re-checking work is more. To reduce the time in queue for customer and mall management costs, the idea called "User Operated Billing System in Mall" is originated. The proposed system consists of application software connected with the supermarket web online cloud server. The barcode on every product helps in retrieval of information associated with a particular product by scanning and displaying the same on the smartphone screen. Facility to calculate the total bill amount is done by the server. Customers are provided with the option to pay the bill at the billing counter by cash or directly pay using online payment methods. RFID tagging with each product is providing security. When the customer makes the payment for a particular product, the RFID tag of that product is disabled. But if a customer is checking out without paying for the product, then that product is detected by the RFID reader at the exit.

Keywords— Barcode, Barcode Reader, Cloud Server, Wi-Fi

I. PROBLEM STATEMENT

IoT based embedded system design prototype optimized to reduce billing time and facility of displaying intermittent total amount using Raspberry Pi 3 Model B controller and smartphone with barcode scanner.

II. INTRODUCTION

As the name "User Operated Billing System in a mall", indicates to create an automatic system for billing process in malls. This system will restrict overcrowding at the billing counters which helps in maintaining social distancing and eliminating billing time. Barcode Reader is used to scanning the Barcode which is present on every product available in the shopping mall. The customer's smartphone plays a vital role to accomplish this task. It is used to scan every product before putting it into the basket. The installed web mobile app will

make the total count of products and the total amount which will be displayed on the phone's screen and then for making payment via different online payment gateways. Local servers will be used to provide a web app to our customers for maintenance and carrying out CRUD (create, read, update, and delete) operations in the Database [2]. The security system is designed by using RFID tags and Readers to prevent shoplifting in the stores [3], [4]. This system will help to avoid long waiting time in queues and it will enhance the shopping experience of our customers [5], [6].

III. METHOD

The cloud-based Internet of Things is employed to send cart data to the cloud and that data used by our hardware [7]. For using our system each customer needs to have a smartphone that will read the barcode associated with each product. Our application uses the user's smartphone camera so customers have to allow the application to access their smartphone camera as a barcode scanner [8]. When the customer starts shopping in a mall then they have to log in to our mobile application. The system provides information about offers and discounts available on the products bought by a particular customer by their previous shopping history using Data Analytics and displays on the customer's mobile phone dashboard as recommendations [9]. Shown in figure 1 below;



ID	PRODUCT NAME	PRICE	DATE	STATUS
1001	Apple iPhone 12	1200	2021-10-01	Active
1002	Samsung Galaxy S21	800	2021-10-02	Active
1003	Google Pixel 5	600	2021-10-03	Active
1004	OnePlus 9	500	2021-10-04	Active
1005	Xiaomi Mi 11	400	2021-10-05	Active
1006	Motorola Moto 125	300	2021-10-06	Active
1007	Nokia 8.3	200	2021-10-07	Active
1008	BlackBerry KEY2	150	2021-10-08	Active

Fig.1 Server Database (cloud)



SMART MUNICIPAL SOLID WASTE MANAGEMENT

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DOI: <https://doi.org/10.29121/granthaalayah.v8.i4.2020.17>

Keywords: Waste Management, Wet Waste, Weight of the Garbage, Database, Electronic Circuitry, Garbage

Abstract

Municipal Solid Waste generated by India in urban areas is 62 million tonnes. Only 70% of the total waste is collected and 20% is treated. Most of the solid waste is dumped in landfill sites. This paper targets the reduction in the size of the solid, particularly wet waste. Similar problems have been tackled in other parts of the world. We propose a solution that fits the Indian context. The key idea of Smart Municipal Solid Waste Management system (SMSWM) is to allocate a weekly garbage limit per household in a residential society. The DSS (Decision Support System) designed for this purpose allows the authenticated user to access the smart dustbin. The smart dustbin is equipped with the electronic circuitry where the weight of the garbage in the bin is measured and the value is updated in the database. The database of the families will be created and maintained by the municipality. A web portal gives the involved people and authorities access to the related information. A house is



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Introduction of Electric Vehicles (EVs) as a main means of transport forms a major initiative globally amidst the concerns of continuing availability of conventional fuels, pollution levels and long term sustainability. Providing reliable and assured levels of energy for charging a huge population of EVs is the main challenge to be faced when shifting from conventional fuel based vehicles to EVs. Charging EVs without putting burden on grid is main challenge. This paper presents an assessment of the possible means of providing power to individual EVs along with a comparison of different related aspects. A special case is sought to be made for using fuel cell based system from among the alternatives for structuring a localized power supply system. An exercise in estimating the inputs and the costs involved in creating a plant with 600 Kw systems as an example is presented.

Published in: 2019 International Conference on Nascent Technologies in Engineering (ICNTE)

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Abstract:

Super-capacitor is an emerging energy storage device and it has high potential to meet energy storage requirements for many applications in combination with batteries. Super-capacitors can be charged at faster rate than batteries and its output current delivering capacity is much greater than other energy storage devices. The storage in super-capacitor is much higher in terms of capacitance in comparison to traditional capacitor. But, the efficiency of current super-capacitor is less so there has to be high level of research in this field. In presented paper, electrode materials like Norit, Vulcan, PICA and YP50F and electrolyte materials like Potassium Sulphate, sodium sulphate, hydrochloric acid and lithium sulphate has been tested. The combinations of the above super-capacitors have been taken to make super-capacitor and then the supercapacitor giving the optimum result has been tested.

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Scope of Implementing Humanoid Robots at Educational Institutes in India's Perspective

7

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Abstract— The current technological advancement in the field of robotics is very vast. Emerging technologies of robots has enabled them to interact with humans. With the current pace of development in this field soon there will be many robots deployed into the market. Humanoid robot is a kind of robot that resembles human and are trained to act like same. These robots are integrated with modern developing technologies like artificial intelligence and machine learning to interact with humans. Applying this emerging technology into the field of education will generate great results. India is still a developing nation, introduction of these features into it will show great response. This will reduce the workload and consumption of resources. Not only this, but it will make error less knowledge transfer to the next generation from their own personalized robot.

Keywords— Humanoid robots, education, India

I. INTRODUCTION

The world is growing towards technological advancement. In recent years, there is a large advancement in the field of Robotics. Humanoid robots are one of the major advancements. Humanoid robots can be considered as a social robot for children and can be used to help them in their studies. Robots soon will be part of people's daily activities, this change is inevitable. Current rural areas are very underdeveloped in India, they need proper guidance to develop which the current system is unable to provide them [1-5]. Developing infrastructure and introducing new teachers and maintaining them is a great task. Robots can work 24/7 without any salary.

Inclusion of robots in academic fields will soon be taking over a huge market. This will change the literacy rate of the upcoming generation and their way of pursuing knowledge. The current field on robotics is working in a proficient way to produce many robots to assist humans [6-9]. Robots that are currently launched in markets are being equipped with machine learning and artificial intelligence (AI), hence it enables them to learn from their surroundings [10-14]. The robot human interaction when will meet the necessities of educational fields it will add a lot towards its development. This paper describes about the human-robot interactions in educational field, and further possibilities of its application in Indian schools [15-18]. All the humanoid robots been developed follow some particular algorithm in order to react properly. This may include personal information [19-21].

This paper is organized as follows, section II describes about the current education system of India, section III briefs about humanoid robotics in this field, section IV tells about the scope of implementation of these humanoid robots in India. Section V describes various challenges and recent developments in this area.

II. EDUCATION IN INDIA

A. Current Statistics

Most of the Indian population still lives in rural areas. With an estimated 43 crore/ 430 million children in the age group of 0-18 years, India has the largest population of children in the world. As children are the steppingstones towards a nation, so they should get a means to embrace their talents and realize their potential. A modernized education system can channelize efforts in this direction.

The 7:5 is the massive ratio of rural-urban school enrollments. Nearly 60 percent of students in rural areas, up to the age of ten doesn't know how to read properly. Similarly, there is increase in Pupil Teacher Ratio (PTR) from 32 in 2009-10 to 24 in 2015-16. Still the country's major concern is the single teacher schools. According to a survey in India there are almost 97,273 single teacher schools. The result of these obstacles is poor quality of education which also contribute to high dropout rates. In a village of Arunachal Pradesh there is a school educating almost 300 students in class X which means each class contains nearly 100 students. Hence, a single teacher is not sufficient to look after the children. Even if they want to, they will not be able to teach properly or address them properly [1-3].

According to survey 2019, more than 60% of the Indian population resides in rural areas so their education is very important for the development of the country. A survey named, the Annual Status of Education Report (ASER), shows that more number children are attending school and the numbers are increasing every year, but still there are many students of higher grades who cannot solve simple mathematical problem or are not able to read a second grade textbook properly [4-7]. The level of reading and math is declining. The reason cited for this problem in surveys is the increasing number of single classrooms to educate students from more than one grade.

Conference Paper

Scope Of Internet OF Vehicles On Indian Roads

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DOI: [10.1109/I-PACT44901.2019.8960186](https://doi.org/10.1109/I-PACT44901.2019.8960186)

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4.6.3 Participation in inter-institute events by students of the program of study

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Projects/ Paper Presentation

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1	Akhilesh Singh Pranay Agrawal Ranvijay Singh	BE E&TC	Paper Published In International Conference ICRESEARCH 2021 ISBN/ ISSN No: 978-93-5473- 898-2.	Implementation of OFDM system and Analysis of BER using Lab-View	AarupadaiVeedu Institute of Technology, Chennai on 4,5th June 2021
2	Arjun Dogra	BE E&TC	3rd International Conference on Recent Trends In Engineering & Technology	IOT Based Smart Warehouse Inventory Management System.	Vishwakarma Institute of Technology, Pune
3	Shipra Priyanka Singha Divya Singh	BE E&TC	International Conference on innovation & research	Deep learning watershed algorithm to calculate cardiac stroke volume	

Implementation of OFDM System and Analysis of BER using Lab-View

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Abstract— Wireless technology is one of the most interesting domains in the communication domain. We can send information from one place to another using air as medium. It is extremely fast technique. However, in wireless technology reliability of transmission is always a worrying factor because of various objects interfering with signal thus causing fading. Thus, it becomes important to study techniques which improve the reliability and reduce interference. One of the techniques used is OFDM (Orthogonal Frequency Division Multiplexing) which aims at preventing frequency selective fading thus improving the reliability of the system. It allows transferring of data in parallel by dividing carrier signals into multiple subcarriers thus reducing bandwidth for each subcarrier and increasing the total Bandwidth to increase the data rate. The IFFT and FFT techniques used ensures overlapping of data thus keeping information in various subcarriers orthogonal and preventing the information from interference. OFDM is a key wireless Broadband Technology i.e., supports long Bandwidth. Earlier the GSM systems supported Bandwidth of 200 kHz. However, OFDM supports Bandwidth of 20 MHz implies data rate becomes fast with OFDM in 3G and 4G systems. Not only cellular standards, if we look at WIFI or WLAN networks e.g.: 802.11 a/g/n/ac, they all enable high data rate because are based on OFDM. Implementing OFDM with actual hardware will require more investment of money, time, and effort. The performance of system is released if different realistic environment and parameters change to study the change in performance parameters of the systems.

Keywords- Orthogonal Frequency Division Multiplexing (OFDM), Laboratory Virtual Instruments Engineering Workbench (LabVIEW), Fast Fourier Transform (FFT), Inverse Fast Fourier Transform (IFFT), Inter Symbol Interference (ISI), Inter Block Interference (IBI), Bit Error Rate (BER).

I. INTRODUCTION

Communication system is a system in which there exists information exchange between two or more points. Process of transmission and reception of information is called communication. Communication system involves transmitter, channel, and receptor [1]. Depending upon signal specification communication system can be classified as analogue or digital communication system. Depending upon communication channel communication system can be classified as wired or wireless channel. Electromagnetic transmission and reception of information between two or more points that are not connected by an electric conductor is called wireless communication. Most used technology in wireless communication is radio waves [2].

For any SDR system, all the processes which happen in a given wireless communication system are defined by software, like the process of modulation, demodulation and then all other signal processing. While in the hardware realm many specific hardware components are being used for all the above-mentioned processes here the software does it all, which will help in reducing the time and components required in the developmental stage. It also provides greater flexibility to researchers and developers for the implementation of new protocols, methods, or techniques. SDR technology is open source which means everyone can build, develop, and modify their systems.

In this project, we will be implementing orthogonal frequency division multiplexing (OFDM) using

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4.6.3 Participation in inter-institute events by students of the program of study

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Projects/ Paper Presentation

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1.	Swapnendu Chakrabarti	SE,E&TC	Paper Presented in International Conference For Advancement In Technology (Iconat)-Ieee Bombay Section Dt 21-22 Jan 2022	Development Of Electric Vehicle-Photovoltaic Integration Model For Zero Running Cost Transportation	Rajaramabapu Institute Of Technology-IEEE
2.	Swapnendu Chakrabarti Yadhu Krishna P	SE,E&TC	Paper Presented in International Conference On Industrial Electronics Research And Applications (ICIARA-2021)-IEEE-Delhi Section Dt- 22-24 Dec 2021	Development Of Electric Vehicle-Photovoltaic Integration Model For Zero Running Cost Transportation	Department Of E&Tc Engineering At Maharaja Agrasen Institute Of Technology, New Delhi
3.	C Khusi Bharat S	TE,E&TC	Paper Published in Global Conference For Advancement In Technology (Gcat)-IEEE Dt-1-3 Oct 2021	IoT Based Smart Traffic System Using Mqtt Protocol: Node_red Framework	Nagarjuna College Of Engineering And Technology
4.	Bharat S C Khusi Ritu R Shuvendu Maity M Manoj Kumar	TE,E&TC	Paper Published in International Conference On Artificial Intelligence And Machine Vision (AIMV 2021) Dt 24-26 Sept 2021	IoT Based Sorting Machine Using Mqtt Protocol And Mysql	Pandit Devdayal Energy University
5.	Bharat S	TE,E&TC	Paper Published in International Conference For Advancement On Advances In Computing, Communication, Embedded And Secure Systems(Access) Dt-2-4 Sept 2021	IoT Based Smart Switch with Bluetooth Speaker using MQTT protocol: Node-red Framework	Adi Shankar Institute Of Engineering And Technology, Kerala

Development of EV-PV Integration Model for Zero Running Cost Transportation

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Abstract—This paper put forwards a formula which correlates the area of solar panels required with the battery capacity of electric vehicles for the purpose of charging it. This work will reduce use of over rated or under rated solar panels. It will also remove need of having net metering associated with PV energy. It is extremely useful in crowded cities where solar energy charging of EV is implemented. It will also take us to completely green vehicle concept. In future EVs with PV panels could be sold where only one time investment will be required with zero running cost for vehicle.

Index Terms— Energy, Solar, Vehicle, Photovoltaic

I. INTRODUCTION

There are two main types of natural resources, which are essential for sustenance of life on earth. These two categories are renewable resources and non-renewable resources. Renewable energy resources are those which are abundant in nature and can be reused. These include wind, solar, hydro, tidal waves, biomass, and biodiesel, geothermal whereas non-renewable energy resources include oil, gas and coal. It is not possible to have more of the energy from non-renewables forever because it gets exhausted once it is used. It is predictable that by the advent of next century the global energy demand could boom to five times of current energy demand [1]. Currently fossil fuels fulfil three-fourth of global energy demand. Fossil fuels and rare minerals are examples of non-renewable resources. Utilization of non-renewable resources is mostly through combustion of fossil fuels, resulting in release of large amounts of greenhouse gases and other toxic compounds. These harmful gases cause smog and deterioration of human health and plant health. Accumulation of these gases in the atmosphere leads to global warming, which further result in increased temperatures across the globe, melting of polar ice caps and drastic changes in climate. As renewable resources aren't utilized in this fashion, they aren't associated with release of such emissions. Problematic reduction in quantity of fossil fuels, issues in security of energy and surroundings lead societies to operate various energy sources [2]. In this context renewable energy resources are used for electricity production as many countries around the world are facing scarcity of traditional energy producing sources.

An electric vehicle abbreviated as (EV) uses electric motors for its propulsion. They comprise the collector system, which is powered by electricity either by external sources or by a battery [3]. Compared to conventional vehicles, EVs provide a host of benefits, the most significant one being that they release no carbon emissions. The rapidly growing transportation sector consumes about 49% of oil resources available. Following the recent trends of oil consumption and depletion of crude oil sources, the world's oil resources are predicted to be depleted by 2038 [4]. Therefore, replacing the non-renewable energy resources with renewable energy sources and use of suitable energy-saving technologies seems to be mandatory [5].

On a larger scale, for every EV that replaces other cars on the roads, the overall petroleum consumption by transportation industry reduces, thus decreasing dependence on it. These cars can be fuelled for very low prices, and EV companies offer great incentives for individuals to get money back from the government for going green. Electric cars are also a great way to save money from one's pocket [6]. EV's are also growing in popularity in recent times as they are nearly three times more efficient than cars with internal combustion engine. Rise in popularity brings new types of vehicles in the market. Two major trends in energy usage that are expected for future smart grids are a) large-scale decentralized Photo Voltaic (PV) systems. b) Emergence of battery Electric Vehicles (EV) as the future mode of transport[7]. The design and operation of the solar panels has also been extensively studied [8]-[10]. Charging systems used for photovoltaic charging have also been investigated by various researchers [11],[12]. Extensive study of various batteries and other components for integration of photovoltaic system and electric vehicles has been carried out [13],[14]. A lot of research work has also been carried out on solar panels to get a correct estimate of its output power by considering various factors such as humidity, temperature, etc.[15]-[17].

The research gap found is that there is no method of finding out the requirement of the number of solar panels for charging specific EV. Nowadays, the manufacturers of solar panels recommend their products based on vague thumb

IIOT BASED SMART TRAFFIC SYSTEM USING MQTT PROTOCOL: NODE-RED FRAMEWORK

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Abstract—This paper suggests a novel idea to implement a smart traffic management system in which real-time data are processed and stored in the database. A network of ultrasonic sensors are used to track traffic congestion at intersections on the road all day long. The information on traffic density is used to determine the set time of a signal, unlike the conventional way of the predefined set time. Internet of Things (IoT) technique is used to send the data from sensors to node-red through Message Queuing Telemetry Transport (MQTT) protocol where primary decision making is done. This system can be used in four-way or two-way junctions with few code amendments. A significant amount of waiting time is saved through the model.

Keywords: traffic congestion, Internet of Things, ultrasonic sensor, flow management, MQTT

I. INTRODUCTION

With the ever-growing global population and people working around the clock, time management has become a very important amenity in everyone's life. Furthermore, advancement in technology has made transportation easily available, cheap, and accessible by nearly 1.42 billion vehicles spread across the globe, and the number keeps on increasing every passing year. People's mobility has become a vital part of everyone's day to day life as their livelihoods demand long-distance traveling for work or to get services which leads to a large number of vehicles of different shapes and sizes coming onto the roads making the roads congested. Road congestion can be a source of a lot of other problems such as delay of movement in emergency cases causing the death of a person, sound and air pollution risking life's of approximately 3.5 million, loss of time impacting the economy in a large way, accidents, and mental health issues [1], [2]. Even though hybrid vehicles are gaining large popularity in both the developing and developed countries, studies have shown that traffic will produce a large amount of greenhouse gases [2]. Road congestion is the sixth main reason for deaths in India, mostly targeting the working population and is predicted to raise the number to nearly 1.9 million per annum by 2020 [1]. Expanding the road infrastructure is not the final solution

to road congestion as land is a limited, expensive resource and time taking process, but we can reduce the damage to an extent by improving the traffic management system. Our traditional way of managing traffic is inefficient as this method doesn't depend upon the external conditions and the signal keeps switching after a fixed time span. The density of traffic in a lane keeps on changing accordingly to various situations, for example, there are fewer vehicles on the road during the late nights and early morning, and hence the frequency of switching between the signals should be different from the evening hours of traffic when most of the vehicles are on the road [2]. India is a country with a large population, and frequent traffic jams, countless traffic signal junctions and drastically changing weather conditions makes the development of a road management system that is expensive and limited to particular weather conditions difficult. This creates the need for real-time data on traffic density to manage the traffic; a smart traffic management system that can work for 24 hours every day in any weather condition with minimum power consumption, portable and is cost-effective. The system should be able to prioritize the need of the hour and should switch the signals accordingly [3].

There have been a few solutions proposed for the management of traffic by installing cameras near the traffic signal using big data to collect and use to identify the vehicles through deep learning methods, but this way may become problematic during the rainy season and night as it would need to have proper street lighting. Similarly, in [4] closed-circuit television (CCTV) footage is used to detect the traffic through Open Computer Vision (OpenCV) methods i.e., Canny edge detection. Another method in [5] was to use an infrared sensor to detect the presence of a vehicle across the road so that the traffic density could be estimated, but since external environmental conditions could interfere with infrared waves, this method could not give correct results. The author of the paper [6] has analyzed the difference between the time-based and sensor-based system using the data from simulation results and has concluded that sensor-based system has

IoT Based Sorting Machine Using MQTT Protocol and MySQL

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Abstract— The growing demand for faster production while maintaining the quality of the product has given scope for technology to take over the materialistic industry. One such technology used is the internet of things to automate, connect and exchange data with other devices. Our project uses this technology to create an automatic colour sorting machine that not only sorts the objects according to their colour but also stores and exchanges data with devices. The colour sensor is used to detect the colour; servo motors are used in the segregating process. Node Micro Controller Unit (NodeMCU) coordinates the sensor, actuator which also sends the data to the cloud through its inbuilt Wireless Fidelity (Wi-Fi). The user is provided with an interface by which he can easily visualize the data at any time of the day. The sorting machine is made in a way that it sorts items with minimum power and time consumption. The machine has high reliability and compatibility, making it ideal for both small and large scale industries. This method saves time and money in a drastic amount without the need for human intervention.

Keyword— Internet of Things, MQTT, segregating objects, servo motor, sorting machine

I. INTRODUCTION

In this new era of the world, everything seems and happens to be automatic, making it possible for people to continue doing their work from home during this pandemic. These inventions or advancements have brought humankind from foot to cars/ planes in the context of travelling, from cave to well-structured houses for a living. These were just a glimpse of advancements that our race has made in all these centuries, where the automatic era has almost taken down the manual or physical task era. But there are still simple, repeated processes yet to be automated, one such is the sorting of objects based on

their physical traits in many manufacturing industries.

Here are some facts that are addressing the concerns we want to talk about and remove as much as possible.

According to a survey [1] it has been found that nearly 50 per cent of the time consumed in the process of sorting items is taken by walking and manually picking orders.

A similar survey [2] whereupon it has been found that the average order picker can pick between 60-80 picks per hour, in comparison to a pick-up rate of up to 300 pickups per hour when using sorters and conveyor belts.

A survey in [3] revealing that one of the largest challenges that are being faced by developing midscale and small-scale industries or factories is related to picking and handling equipment. This challenge covers 34 per cent of the sum of all the challenges being faced.

Labour costs account for an average of 65 per cent of the operating budget of most warehouses [4]. To name some more such problems, we would now take the concept of industry 4.0 instead of going on numbering some direct shortcomings. For a quick recap of what industry 4.0 stands for-

Industry 4.0 is nothing but an idea or we can say a procedure that makes it possible to gather and analyze data across machines, enabling a faster, more flexible, and more efficient process to produce higher-quality goods at reduced costs. It aims to increase manufacturing and logistics

IoT Based Smart Switch With Bluetooth Speaker Using MQTT Protocol: Node-red Framework

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Abstract— This paper suggests a novel idea to implement a smart switch where users can control the appliances using a mobile app that is developed using kodular tool. A series of push-button was installed in the system. Users can turn on or turn off the appliances by pressing relevant buttons, which will send a message through Message Queuing Telemetry Transport (MQTT). Users can also set timer to turn on or turn off appliances after a certain time. This scheduled time will store in the database and continuously process to turn on/off the appliances at a user-specified time using the node red framework. Also, this system has Bluetooth based receiver module and speaker to hear songs which have a good amount of range to receive signal. Also, users can operate or set time intervals using mobile phone app anywhere in the world. This system will save time and gives comfort to the user to operate from anywhere.

Keywords: smart switch, Internet of Things, Bluetooth speaker, push button, MQTT

I. INTRODUCTION

Internet of things is a system that connects devices together as things and helps to communicate between them. Internet of things made life easier by communicating with devices from smartphones elsewhere. Internet of things improves accuracy, reduces energy consumption, and improves a sustainable environment. Integrating the internet of things with our daily life will bring high-quality promising advantages. A decade ago, smart home automation seems to be a dream for all innovator, but current technology fulfils the automation technology. It is estimated that more than 30 billion devices will be connected through internet of things at the end of 2021 [1]. A switch is a component where we can control our devices by connecting or disconnecting the power supply [2]. A switch is widely used in every application. In real life, a switch plays a major role to communicate between users and appliances. The switch box contains series of switches to operate various appliances in the home. But present switch boxes will not let the user operate from outside the home.

In [3], authors developed a smart switch for home automation using long range Wi-Fi technology where they can control their appliances using mobile applications using simple GUI technology.

In [4], the authors designed smart plug system to design home automation. They used temperature sensor, current sensor, and IR-emitter. Users can control the required devices by plugging into the device and control it remotely and, also able to retrieve sensors data from smart plug system which made users very comfortable to use.

In [5], the author designed home security system which operates home appliances based on Bluetooth. They used short range transceiver module Bluetooth to command door to open and close. Through this system, user can lock, unlock or view the status of the door where the security device is installed. While sending commands to security system through mobile phone, it receives command and send back confirmation to the android phone.

Part from Wi-Fi and Bluetooth, there are vast number of communication system which used to control appliances of day to day life. [6] discussed the use of web camera and motion detector sensor. This device will help to surveillance home remotely using mobile device. Whenever motion sensor set off, live streaming will enabled and videos will be seen through mobile device. This also controls home appliances.

The system proposed in this paper will let the user operate appliances that are present in the home or industry through their smartphones with easy interfaces. The ordinary switch box will not let the user set timer to turn on or turn off the appliances. But this system, we can set time or interval to turn on or turn off our appliances through a smartphone or smart switch box. This system will reduce unwanted energy consumption. We can control our appliances anywhere through a mobile app. And

DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION**Academic Year 2022-23(Sem-II)****Appendix C: Projects/ Paper Presentation**

Sr. No	Name Of The Student	Class	Name Of The Event	Subject	Organized By
1.	S B Abrish Aaditya	SE	Paper presented in International Conference on Computer, Power and Communications (ICCCPC)	Comparative Study of Vertical and Horizontal Asymmetric Supercapacitors	IEEE
2.	Swapnendu Chakrabarti	TE	Paper presented in International Conference on Computer, Power and Communications (ICCCPC)	Comparative Study of Vertical and Horizontal Asymmetric Supercapacitors	IEEE
3.	S B Abrish Aaditya	SE	Paper presented in International Conference for Emerging Technology	EV Charging Infrastructure Development Using Machine Learning	IEEE
4.	S B Abrish Aaditya	SE	Paper presented in International Conference for Emerging Technology	Investigation of Fork Shaped Electrodes for Asymmetric Supercapacitors	IEEE
5.	Abhishek Kumar Singh	BE	Paper presented in 3rd International Conference on Intelligent Technologies (CONIT 2023)	Remote Health Monitoring System using Secure Communication Techniques 23-25 June 2023	IEEE
6.	Anubhav Banerjee	BE	Paper presented in 3rd International Conference on Intelligent Technologies (CONIT 2023)	Remote Health Monitoring System using Secure Communication Techniques 23-25 June 2023	IEEE
7.	Ayush Tiwari	BE	Paper presented in 3rd International Conference on Intelligent Technologies (CONIT 2023)	Remote Health Monitoring System using Secure Communication Techniques 23-25 June 2023	IEEE

Comparative Study of Vertical and Horizontal Asymmetric Supercapacitors

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Abstract—There is a need for research in energy storage in general, particularly in electrical energy storage. Energy is necessary for machines to work as per human needs. Availability of energy is uncertain in many scenarios. Energy can be of various forms such as solar energy, wind energy, hydro energy, geothermal energy, etc. However, utilization of energy depends on the applications required, type of energy converters, source of energy and most importantly the type of energy storage system. Some energy storage devices store energy in various forms and supply it to the load as and when required. Batteries, fuel cells and supercapacitors are some examples. However, there is a need for better electrical energy storage devices that meet specific requirements of energy density, power density which is decided by the parameters of electrode and electrolytes. Asymmetrical supercapacitors are currently gaining a lot of popularity due to their high energy density and long life cycle. Asymmetrical supercapacitors will be able to replace some of the fore mentioned electrical energy storage devices in the times to come. Modelling of asymmetrical supercapacitors could play a significant role in achieving the desired characteristics. However, vertical and horizontal electrode configurations can itself make a huge difference in their performance characteristics. Analysis of horizontal and vertical configuration of asymmetrical supercapacitor with binder free electrode material has been presented in this paper. The two types of horizontal configurations have also been compared.

Keywords— *Asymmetrical, Supercapacitor, Electrode, Horizontal*

I. INTRODUCTION

There is a constant increase in energy demand. Electrical energy is derived from renewable energy sources such as solar, hydro and wind that require efficient storage systems such as batteries and supercapacitors [1],[2]. The pressing need for this renewable energy provides a scope for developing newer devices for energy storage and becomes a key element for incorporating new technologies. The constant growing energy demand has facilitated the requirement of designing new devices capable of fast energy storage.

Enormous efforts are being made in the field of energy storage to identify and implement designs for the devices that are more promising than the previous ones in use till date. Batteries for that matter take ample time to charge.

Supercapacitors provide better results with regard to various parameters [1]-[6]. Super capacitors are classified into EDLC (Electric double layer capacitors) and pseudo capacitors based on charge storage mechanisms [7].

Pseudocapacitors provide several times greater capacitance and energy density over the EDLC due to occurrence of faradic reaction at the electrode-electrolyte interface based on research carried out worldwide. Supercapacitors have high energy density, which can provide repeated current pulses as required in electric vehicles. Extensive research work has been carried out on electrodes of electrical energy storage devices like supercapacitors [2]. The use of environmentally stable and easy to handle aqueous electrolytes can be implemented but it suffers from narrow operational voltage window. Combinations of different materials are being studied to find improvements in the performance of hybrid super-capacitors [7]-[13]. For this asymmetrical supercapacitor can be prepared by combining a pseudocapacitor anode and an EDLC cathode. The activated carbon cathode becomes a preferred option for the current collector [14]-[16]. Various structures, binders, electrode materials, electrode-electrolyte compatibility have been studied in recent past [17]-[20].

Research has been carried out on variation of capacitance of supercapacitors with respect to electrode configurations. It has been established that the horizontal configuration of supercapacitor has a superior performance over the vertical configuration [21].

In this paper, we have carried out experimentation on asymmetric supercapacitors in horizontal and vertical configuration. Here, the vertical configuration of electrodes has spilling of carbon which decreases capacitance by 50% as per the experimentation done for this paper. This has led to further investigation by changing the orientation of electrodes. In the work carried out here, we have experimentally verified the results by keeping the electrodes in vertical orientation. We have used commercially available activated carbon of lab grade as cathode of asymmetrical supercapacitors which increases its commercial viability and manganese dioxide as anode and have experimentally

EV Charging Infrastructure Development Using Machine Learning

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Abstract— In the recent years, electric vehicles have emerged as not just an alternative but a replacement for internal combustion engine vehicles. In a few years, most vehicles, both private and commercial will be electric. Considering this, reliable predictions need to be made regarding many different factors, so as to smoothly facilitate the shift from internal combustion engine vehicles to electric vehicles. This paper presents a machine learning model that will predict the possible number of electric vehicles that could arise in localities previously dominated by conventional means of transport, so that the EV charging stations can be installed in the right place. This Paper can be used by anybody who is planning to invest in EV charging infrastructure at any place as well as administrative/governing bodies.

Keywords—machine learning, charging station, electric vehicle

I. INTRODUCTION

A mix of technological advancements in agricultural productivity, sanitation and medical facilities has reduced mortality which has caused an exponential population growth. This population growth resulted in causing climatic change, global warming and pollution. The contribution of humanity towards deterioration of Earth's biosphere is massive. Hence, to judiciously utilize the resources, Sustainable Development needs to be adopted. The United Nations in 2015 adopted seventeen Sustainable Development Goals to direct global efforts for the betterment of Earth and life on it. The main agenda focused on entirely reversing climate change and protecting the planet.[1]

Due to this growth in population the needs of the people including transportation quality is increasing. More and more people prefer private means of transportation for their daily chores. As a result there is a significant increase in the number of vehicles being manufactured. Taking into account the environmental issues associated with more number of vehicles being manufactured like climate change, global warming, etc. there is an urgency to switch to using Electric Vehicles (EVs). Continuous advancements in technology allow us to harness clean and renewable means of energy which can power the EVs. Use of clean energy will have a great positive impact on the environment as it will help it mitigating most of the environmental issues caused by burning of fossil fuels. The United States Environment Protection Agency (EPA) in 2019 in their annual report "The Inventory of Greenhouse Gas Emission and Sinks" estimated

that twenty-nine percent of greenhouse gas emissions came from the transportation sector caused by burning of fossil fuels by cars, trains, ships etc.

The conversion of IC engine vehicles into EVs is the key solution to reducing emission of greenhouse gases. But there are many challenges for this transformation to get implemented successfully. Some of the hindrances include popularity, range of travel, charging infrastructure and reliability. EVs are gaining popularity recently due to constant efforts put forward by nominal number people and companies. Range of travel and other peripherals provided by EVs depends on the performance of the battery used in the specific EV. The integral part of an EV is its battery and its management system. Battery motor technology is a field with constant influx of innovation which is a driving factor for boosting up the notion of EVs being the best amongst the people. Charging infrastructure is one of the most challenging factors in the successful advent of EVs. Efforts are being made to establish more electric charging infrastructure in the near future, at appropriate places where there is necessity, usability and profitability. The hindrance which arises in opening electric charging infrastructures is that they are less likely to yield high profits. Whereas in case of opening a gas station, profitability is assured as the high number and density of IC engine vehicles that needs to be refuelled.[2]

Installing EV charging station seems to be a more risky business due to the less number of electric vehicles prevalent now.[3] [4] Also, low number of EVs means low requirement of recharging and as a result, installing more EV charging stations decreases profitability. In addition to that, installing an EV charging station is a cumbersome task. Hence in order to minimize the risk of installing an EV charging station a more calculated decision about where to set up the recharging station should be adopted rather than establishing recharging stations randomly on a vague basis. Machine Learning models can be developed using different algorithms to predict the possible number of electric vehicles that could arise in an area previously dominated by conventional means of transport. Also, these ML algorithms can be employed in finding out the regions where an electric charging station must be installed.[5]

The research gap found is that there is no method of finding out the relationship between the number of electric vehicles present in an area and the number of electric

Investigation of Fork Shaped Electrodes for Asymmetric Supercapacitors

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Abstract— Electrical Energy can be easily converted to other forms of energy like heat, light, sound, etc. Electrical energy storage devices are necessary because electrical energy created after conversion of primary energy source is not consumed immediately. There are several electrical energy storage devices like batteries, fuel cells, and supercapacitors. Asymmetric supercapacitors are the newest innovation in the field of electrical energy storage devices. Asymmetric supercapacitors are pulse current devices that have high power densities and long-life cycles, making them a candidate that have the potential to replace conventional energy storage devices. The intent of this research work arises because most electrical energy storage devices have rectangle shaped electrodes but since there is no binder material that is electrically conductive, it hinders the performance of the device. Research has been previously conducted on performance of asymmetric supercapacitors with binder free rectangle shaped electrodes with respect to electrode configuration. In this paper, fork shaped electrode structure of asymmetric supercapacitors are compared alongside generic rectangle shaped electrodes of asymmetric supercapacitors in terms of specific capacitance (mF per sq. cm) and its variation over time.

Keywords— asymmetric; supercapacitor; electrode; structure; energy storage

I. INTRODUCTION

Electrical energy is one of the most useful forms of energy for humans. Since electrical energy is derived from primary energy sources like hydropower, solar power, wind power, etc., and not immediately used, it presses for the need to develop electrical energy storage devices like batteries and supercapacitors [1]. The demand for energy is rising day by day. This presents an opportunity to improve the performance of existing energy storage devices.

Since the advent of Asymmetric Supercapacitors (ASCs) is a recent phenomenon, it has been subject to extensive research. ASCs have an edge over batteries as they take less time to charge, have higher power and energy densities and have long life cycles [2]. Supercapacitors are classified as Electric double layer capacitors (EDLC) and pseudocapacitors based on charge storage mechanisms [3].

Pseudocapacitors offer greater capacitance and energy density than EDLC. Extensive research has been carried out on electrode, electrolyte and separator parameters of ASCs [4-5]. Study of the effect of binders used in the construction of electrodes of ASC has been observed to impact the performance parameters of ASCs [6-7].

With clean energy making headlines these days, research has been conducted to construct electrodes of ASCs with biodegradable materials and their performance parameters are optimized leveraging deep learning [8-10]. Performance of supercapacitors and ASCs that do not use binders in the construction of their electrodes have been evaluated. They have been experimented with respect to their electrode configurations [11-12]. It has been found that ASCs with horizontally configured binder free electrodes have a stable performance with time. This is solely attributed to the fact that ASCs with vertically configured binder free electrodes experience detachment of electrode material with time due to the absence of binders. This effect is minimized in the case of horizontally configured electrodes of ASC, making their performance stable with time. It was proposed that the conventional electrical energy storage devices with vertically configured electrodes were to be replaced with binder free horizontally configured electrodes for stable and improved performance with time.

Research has been carried out on various electrode shapes of supercapacitors [13]. The separators used in supercapacitors have been subject to research [14]. Statistical modeling of electrode parameters of ASC has been carried out to uncover the hierarchy of electrode parameters that contribute towards the performance of the ASC [15-17]. Use of nanomaterials and composites for the construction of electrodes of ASC for better performance is a relatively new area undergoing extensive research [18-20]. The research gap observed is that asymmetric supercapacitors with a fork shaped electrode have not been studied. Fork shaped electrodes are particularly chosen as they get snugly fit against the separator walls and perform the functionality of binders.

In this paper, experimentation is conducted on ASCs with fork shaped positive electrodes and rectangle shaped negative electrodes that do not use binders. The fork shaped

Remote Health Monitoring System using Secure Communication Techniques

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Abstract— Heart related diseases causes elevation to the fatality rate across the world especially post-Covid. Furthermore, high security cryptographic algorithms are used to provide confidentiality and availability to sensitive data collected from imbedded medical devices. To escalate the rapid and prior diagnosis of cardiovascular diseases especially if a person has a history of heart related ailment, an effective solution is to bring Machine Learning Models and Data Analysis for operative decision making and precise cum accurate prediction. In the proposed work, encountering numerous challenges around the machine learning models along with a sound and lightweight encryption technique to provide added security to the sensitive medical data of the patient for careful analysis by both the model and prescriptive doctor-patient interface using an IoT based cloud environment running in the background has been used. The sensor data will be used in two fronts - on one end the data will be uploaded to the ThingSpeak IoT platform where it will provide the analytics of the patient health status (both past and present) and a likelihood of chance of experiencing any heart-health abnormality to the patient there and then along with on the other end it is stored on the Fire-Base Cloud Storage space which is stored with encryption protocols to enhance the security of the patient's sensitive health data which can be reviewed by an expert doctor. Experimental outcomes show us that K-nearest neighbor algorithm achieves the best results among logistic regression, support vector machine, random forest tree and voting classifier with accuracy of 88.5% and 88%, 86%, 85.2% and 86.88%. Therefore, the suggested model is successful is achieving an effective accuracy by secure IoT data in cloud based IoT platforms.

Keywords—Cryptographic Algorithms, Machine Learning, Cloud

I. INTRODUCTION

Heart attack is one of the fatal causes of death worldwide and in India. 52% of all cardiovascular deaths in India occur before the age of 70, with demising one person in the country every 33 seconds according to Times of India. Also, the threats to using and involving technology in healthcare sector is much

higher than ever. One of the most common threats today is digital theft to sensitive data such as medical data of patients. As reported from 2007 to 2021, the total number of individuals affected by healthcare data breaches was 249.09 million, out of which 157.4 million individuals were affected in last five years alone. Since this sector is still so much unexplored and various insurance companies have been researching on it and different results are there to showcase big of a problem it is. Using sensor technology in the form of a wearable medical device enriches the opportunity for smart remote health monitoring systems. Along with IoT platforms to provide careful real-time machine learning induced analysis and past diagnostic comparative analysis using cloud technology to back up the medical data with the authentication and privacy inculcation of patients using an application interface where on one end is the patient reviewing their own medical data in a layman's term while also given the feature to consult with an available doctor for another opinion so that time which is an essence in saving a patient suffering cardiovascular disease can be saved and utilized optimally. Thus, using encryption security techniques seems to be the necessity for a safe and secure medical and health data management in this critical system. On combining the hardware-oriented sensor data with software encryption blocks and IoT and cloud-storage we increase the efficiency of detecting cardiovascular diseases in a patient by the absolute use of machine learning prediction models thus becoming a go-to handy critical system for people who have had a history of heart-anomalies. Using handy data mining methods and inputting the sensor data in the format of csv (comma-separated-values), the data is put through supervised machine learning algorithms including random decision forest and support vector machine(SVM) and estimator algorithms like voting classifier which aggregates the findings of each base estimator. Thus, in summary, the proposed system consists of three main components: the sensor node, the gateway, the analytics platform and the cloud server. The sensor node is responsible for collecting the heart rate data and transmitting it to the gateway. The gateway is responsible for encrypting the

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National /International Papers Published by Students during 2021-2022

Sr. No.	Name of Conference/Journal	Title of the Paper	Authors	ISSN/ISBN	Volume, Issue, Page Numbers	Year
1.	Jordanian Journal of Computers and Information Technology (JJCIT)	Comparative study of machine learning and deep learning algorithm for face recognition	Nikita Singhal, Vaishali Ganganwar, Menka Yadav, Asha Chauhan, Mahender Jakhar Kareena Sharma	-	Vol. 07, No. 03	2021.
2.	Journal of algebraic statistics	Automated Subjective Answer Evaluation System	Prof. Sharayu Lokhande Udit Chaudhary Akash Singh Pranay Gaikwad Himanshu Guleria Prof .Shilpa Pawar	1309-3452	Volume 13, No. 3	2022
3.	International journal of creative research thoughts (IJCRT)	Facial Image Generation of Anime characters	Yogita T Hambir, Pranav Bhaskar, Rohit Kumar, Sourabh Kumar, Tirth Patel	ISSN: 2320-288	Volume 9, Issue 6	2021

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COMPARATIVE STUDY OF MACHINE LEARNING AND DEEP LEARNING ALGORITHM FOR FACE RECOGNITION

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ABSTRACT

In the present world, biometric systems are used to analyze and verify a person's distinctive bodily or behavioral features for authentication or recognition. Till now, there are numerous authentication systems that use iris, fingerprint and face feature for identification and verification, where the face recognition-based systems are most widely preferred, as they do not require user help every time, are more automated and are easy to function. This review paper provides a comparative study between various face recognition techniques and their hybrid combinations. The most commonly used datasets in this domain are also analyzed and reviewed. We have also highlighted the future scope and challenges in this domain, as well as various Deep Learning (DL)-based algorithms for facial recognition.

KEYWORDS

Face recognition, Local binary pattern, Convolutional neural networks, Principal component analysis, Histogram of oriented gradient.

1. INTRODUCTION

With the evolution of humans in every field of technology, there is a need to control who can access the place, machinery or information; so, we require an authentication system. There are many human authentication systems, such as signature, password, pin and biometric systems that have been developed. Face authentication systems have become popular as they doesn't disturb the privacy of the individual and there is no requirement to get in physical contact with the system, which helps in controlling the spread of diseases like viruses. Face authentication is defined as giving access to the authorized person; i.e., face identification problem. It is a two-step process; firstly face detection, which is the detection of the human face in the frame of the image or video and highlighting it by making a square around the face discarding the surrounding and secondly Face Recognition (FR), which means the face detected in the above step has to be verified with those present in the database and if there exists a match, then the person is authorized by the system; if not, then the owner can take the necessary measures. There are many factors the affect the FR algorithm, including physical factors (e.g. illumination, occlusion) as well as facial features (e.g. twins, relatives, pose and aging factor). The methods addressing all these issues have been surveyed in [1] by Mortezaie et al. To achieve the best results for FR, we also require expertise in the subject of psychology, so that we can study the feature characteristics of the face. Lots of work has been done on the FR from the standard algorithms, like Principal Component Analysis (PCA), Local Binary Pattern (LBP) to the latest DL methods, like Convolutional Neural Networks (CNNs).

The organization of the paper is as follows. In Section 2, we provide the main steps involved in the process of FR. In Section 3, we summarize the various FR algorithms based on ML and DL. In Section 4, we provide open challenges and directions for future scope and in section 5, we conclude the work.

2. STEPS INVOLVED IN THE PROCESS OF FR

FR can be considered as a way of authentication and verification. In this sence, a new unknown face is matched with various other faces present in the database which all have known entities. After this

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Automated Subjective Answer Evaluation System

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ABSTRACT

In this paper, we have studied LSTM (Long Short- Term Memory) network and presented a siamese adaptation of it for labelled data composed of variable-length pattern and pairs. Our model first takes in right answer and then assesses semantic similarity between the right answer and the given answer. In order to accomplish these we use word embedding vectors which are supplemented with synonymic information to the LSTMs. These vectors encode the expressed underlying meaning of the sentence which is of fixed size. The wording and syntax are also taken care of. We limit subsequent operations that rely on the simple Manhattan metric. The model's learned sentence representations are compelled to a highly structured space. The geometry of this space represents complex semantic relationships. Our results show that LSTM's can be really powerful language models and are especially suited to tasks which require intricate understanding.

Index Terms—RNN, LSTM, NLP

I. INTRODUCTION

Examining and evaluating answer sheets are time-consuming testing tools for assessing academic achievement, integration of ideas, and recall; however, manually generating questions and evaluating responses is costly, resource-intensive, and time-consuming. Manual evaluation of answer sheets takes up a notable number of instructors, a lot of valuable time and so it is a high-cost task. Also, different security concerns regarding paper leakage is one of the other challenges to conquer. The goal of this project is to create an automated examination system using machine learning, the natural language toolkit (NLTK), and the Python environment, Recurrent Neural Networks and web technologies to provide an inexpensive alternative to the



Facial Image Generation of Anime characters

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Abstract: Back in 2014, Ian Goodfellow dreamt up the idea of Generative Adversarial Networks (GANs), since then a lot of work has been done in the field of Automatic facial image generation. There are already some papers regarding the anime character generation using different GAN algorithms with good results but not so efficient. In this work, we explored the StyleGAN2 for training our clean and well-suited data-set and obtained an efficient and promising result. For public convenience, we built a website that will allow users to obtain required anime character by giving few characteristics.

Index Terms – Deep Learning, Generative Model, Anime

I. INTRODUCTION

The automated generation of cartoon/anime characters allows for the development of custom characters without the need for technical skills. It will easily provide cartoon designers or anime character designers with their custom design. It will save a lot of time. A clean data set from the anime characters database and STYLEGAN2 model is used in order to obtain the promising result. Generative Adversarial Networks (GANs) offers a very powerful unsupervised learning. It consists of a system of two competing neural networks and is able to analyse, capture and copy variation within a data set. Some applications of anime character generator includes manga, magazines, anime series etc.

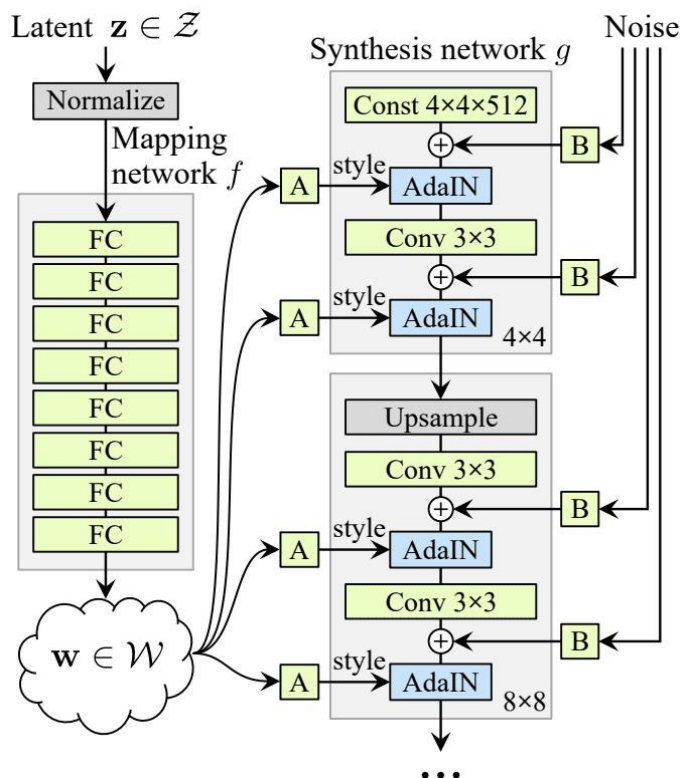


Figure 1. StyleGAN Generator Model Architecture

Taken from: A Style-Based Generator Architecture for Generative Adversarial Networks.

II. LITERATURE SURVEY

GAN since their introduction in 2014 have shown outstanding results in various fields from image generation to feature transfer. It can be broken down into three parts :

Generative : To build a generative model, which is nothing but a probabilistic model that explains how data is produced.

Adversarial : The teaching of a model takes place in a competitive setting.

Army Institute of Technology

Department of Computer Engineering

National /International Papers Published by Students during 2018-2019

Sr. No.	Name of Conference/Journal	Title of the Paper	Authors	ISSN/ISBN	Volume, Issue, Page Numbers	Year
1.	Springer's International Conference on Data Communications Technologies and Internet of Things (ICICI 2018)	Disrupting Insurance Industry using Blockchain	Somesh Mehta, Kartik Joshi, Pridhvi Krishna Meduri	978-3-030-03145-9	26(7) 1068-1075	2018
2.	IEEE's International conference on Smart Systems and Inventive Technology (ICSSIT 2018).	Mixed Reality in Smart Computing Education System	M. V. Pridhvi Krishna, Somesh Mehta, Shubham Verma		4(3), 56-64	2018
3.	IEEE's 3rd International Conference for Convergence in Technology (I2CT 2018)	Smart Underwriting System: An Intelligent Decision Support System for Insurance Approval & Risk Assessment	Aman Dubey, Tejisman Parida, Akshay Birajdar, Ajay Kumar Prajapati	978-1-5386-4273-3/18	3(5), 1-6	2018
4.	International Journal of Advance Research, Ideas and Innovations in Technology - 2018	Machine learning based classifier model for	Ashu Yadav Naveen Sharma Yadvendra	2454-132X	Vol.- 4, Issue- 3	2018

		autonomous distracted driver detection and prevention	Yadav Jasaram Choudhary			
5.	Advances in Intelligent Systems and Computing (Springer Nature Singapore Pte Ltd. 2019)	Hybrid CAT Using Bayes Classification and Two-Parameter Model	Amitoz Sidhu, Ajit Kumar Shailendra Pratap Sengar Tutu Kumari		Page Numbers 206-212	2019
6.	International Research Journal of Engineering and Technology (IRJET- 2019)	Lane Segmentation for Self-Driving Cars using Image Processing	Aman Tanwar, Jayakrishna, Mohit Yadav, Niraj Singh	e-ISSN: 2395-0056 p-ISSN: 2395-0072	Vol.- 06 Issue- 03 3076-3080	March-2019
7.	Cosmic Journals Group	Contemplation of Cash inflow in ATM's using Big Data based on Hadoop Architecture	Pankaj Saurabh Singh	e-ISSN: 0976-8491 p- 2229-4333	Vol.-10 Issue- 02	April-June 2019

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Conference paper | First Online: 21 December 2018


pp 1068–1075 | [Cite this conference paper](#)



[International Conference on Intelligent Data Communication Technologies and Internet of Things \(ICICI\) 2018](#)
(ICICI 2018)

[Pridhvi Krishna Meduri](#) , [Somesh Mehta](#), [Kartik Joshi](#) & [Sagar Rane](#)

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 Chapter

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Mixed Reality in Smart Computing Education System

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Abstract— One of the technologies that has been showing possibilities of application in educational environments is the Mixed Reality (MR) comprising of both Augmented Reality(AR) and virtual Reality(VR), in addition to its application to other fields such as tourism, advertising, video games, among others. The primary reason for this research work is to depict and condense trials with production training and education applications utilizing mixed reality gadgets. The entry of new and further developed mobile devices opens up more opportunities for the applications to develop and be circulated. This paper tries to build upon the current state of mixed reality and its application in education. The first segment describes basic structure of mixed reality and its different parts. Following segments give a definitive structure of some experimental applications that were developed for the mixed reality, with the inference taken from the data of experiment done by the National university of Columbia on secondary school students and lastly, the paper shows the benefits of those applications over the traditional teaching methods and the basic user reactions to them.

Index Terms—Mixed Reality, Augmented Reality, Virtual Reality, Mobile Devices, High-End, Teaching-Learning Processes, Virtualization.

I. INTRODUCTION

Mixed Reality (MR) which includes Augmented and Virtual Reality (AR and VR) is an emerging technology and that is being driven and included in modern Education. The most noteworthy purpose behind the applications is that individuals discovered MR plays a basic and fundamental part in making the experience of any object virtually. In any case, MR gadget was excessively costly as of not long ago, the MR equipment is sufficiently cheap enough these days to be connected all the more widely [6]. Mixed reality is the result of blending the physical world. Mixed reality is the next evolution in human computer interaction (HCI) and hence unlocks possibilities by advancements in mobile technologies and new mixed reality devices. The term *mixed reality* was originally introduced in a 1994 paper by Paul Milgram and Fumio Kishino, "A Taxonomy of Mixed Reality Visual Displays." Their paper introduced the concept of the *virtuality continuum* and focused on how the categorization of taxonomy applied to displays. Since then, the application of mixed reality goes beyond displays but also includes environmental input, spatial sound, and location [4]. In real time applications, users concentrate on the both real and virtual conditions. Compared to the existing approaches, virtual reality compelled in the virtual environments. These interactions mimic our natural behavior

of interaction, such as objects getting bigger as you get closer and the changing of perspectives as you move around an object [3].

II. REALITY-VIRTUALITY CONTINUUM

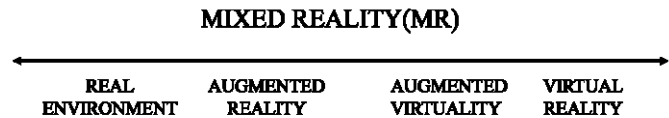


Fig. 1. Mixed Reality (MR)

Augmented reality (AR) is an emerging technology that is being driven and included into different environments education. In the Horizon 2017 report, which reported that performs to identify and describe emerging technologies that will have an impact on learning, teaching and creative research in education, the reality is highlighted increased as a key trend since 2016 for improve digital literacy. Augmented reality innovation has been utilized as a part of a few fields, for example, pharmaceutical, mechanical autonomy, fabricating, machine repair, flying machine reenactments, diversion, gaming and training. Enlarged the truth is an innovation that interfaces the PC world to the human world. Other than that, increased the truth is additionally characterized as an innovation that enables clients to see this present reality with PC created objects superimposed. As indicated by, at first, the enlarged the truth was utilized for military reason to build up a propelled pilot training program. These days, enlarged the truth is additionally executed in the instruction field [2].

A few investigations demonstrate that expanded the truth can improve the instructing and learning background. Coordinated increased reality in the instruction field draws in the student to investigate this present reality by utilizing media components, for example, writings, recordings and pictures as supplementary components to lead examinations of the surroundings. Increased the truth is likewise ready to expand the coordination of this present reality with advanced learning assets in three measurement (3D) frame. For instance, the utilization of expanded reality empowers student to learn troublesome logical wonders in Chemistry, for example, synthetic bond. Science is a reasonable subject that requires dynamic ideas for inside and out comprehension.

Smart Underwriting System: An Intelligent Decision Support System for Insurance Approval & Risk Assessment

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Abstract—Over the past years, insurance industry poses many challenges, one of them is maintaining the data either in legacy systems or in paper files for underwriting transaction. Most of the insurance companies are automating their data collection process. Traditionally, information of the client (such as personal details, medical records etc.) who needs insurance is sent to the underwriter through an email and after proper analysis, underwriter sends the quickQuote back to the agent based on his intuition and experience. Generally, quickQuote consists of insurance approval conditions and insurance plan name. Due to enormous amount of diseases and medicines, complexity in underwriting process has been increased. In a nutshell, an improved and optimized way of underwriting process is required. Introducing Artificial Intelligence can help to transform the traditional underwriting process to smart one. Usually data given to the underwriter is in unstructured format. Using Natural Language Processing and by training numerous statistical machine learning classifiers over the unstructured texts, important features were extracted out from unstructured emails. Main challenge is to exploit the information embedded in emails using automated tools, because of noisiness, uncleaned and unstructured data. Based on the features extracted, a model was trained and tested for unseen mails to get the proper insurance plan name and advice. This data was drafted to a template and sent back to the agent through an automated email reply. Main Objective of the project is to handle dynamic situations efficiently and to automate the underwriting task.

Index Terms— *Information Extraction, Machine Learning, Underwriting, Mining of Text, Natural Language Processing*

I. INTRODUCTION

Underwriting is one of the most crucial task for any insurance company. Over the years, data is maintained either in legacy systems or in paper files for underwriting transactions. Main driver for better performance is to grow beyond simple calculations into the realms of business intelligence and analytics [1]. Traditionally examination aspect of underwriting is coupled with data to enhance the capabilities of predictive analytics which can be used for transforming insurance business. Complexity of underwriting process has been increased with the increase of data. An AI based decision support system is required which can act as underwriter and it should be capable enough to take decisions based on the trained data.

Initially, agent will record and draft the personal information of client in text format and send it to the underwriter using email [7]. This data will be unstructured and needs cleaning, so that important features can be extracted out and based on it, proper results can be given. In the mail, apart from personal information of client, medical text is also present. These medical texts can carry important information about previous and current medical record, symptoms as well as any judgement given by physicians[2]. NLP techniques were used for the data of medical text to perform tasks which are important, like, preprocessing, detection of features as per context and entity extraction [3][5][9]. These features could be any type of disease, medication, bad habit, symptom, surgery, procedure or any past medical history and it should be unbiased, relevant to the context and contribution comprehensive. Natural Language documents are considered as bags of words (which is a count for number of term occurrences) and refining those to bag-of-concept from bag-of-concepts model to extract highly probable or richer concepts from health records[8]. Some pre-processing is required to extract information which includes structure analysis of document, tokenization, part-of-speech tagging, spell checking, disambiguation of word sense, sentence splitting and parsing. During feature extraction, situation dependent features like negation and subject identification plays a vital role. For feature extraction, techniques like pattern matching based on symbolic rules, or based on statistics and machine learning can be used [4][11]. After knowledge extraction, relation between information and standard terminologies were checked which can be further used for analysis purpose. This will give the training feature set which will be further given to the classifier we are using. All the steps will collectively help the decision support system.

Following is the organization model of the paper: section II explains the design of the system. Section III discusses the approach and working of the system. Section IV is the result of experimentation. Section V concludes the paper. Finally, section VI is the acknowledgement followed by important references which were used in the research work.



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Machine learning based classifier model for autonomous distracted driver detection and prevention

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ABSTRACT

Recent researches and surveys have provided us with the evidence that distracted driver is a major cause of vehicle crashes all around the world. In-vehicle information systems (IVIS) have raised driver safety concern and thus, detecting distracted driver is of paramount importance. The project (or paper) shows a method of real-time distraction detection and initiates safety measures. In the realization of this project we have used Web-Cam, Raspberry Pi (a low cost, small size computing device), along with concepts of deep learning and convolutional neural networks. We classify drivers into multiple categories of distraction, some of them are texting, drinking, operating IVIS etc. Web-Cam feeds the classifier with real-time images of the driver of a particular vehicle. The system also constitutes a buzzer alarm which rings once the distraction is detected.

Keywords: Machine Learning, Convolutional Neural Network, Classification, Hyper parameters.

1. INTRODUCTION

Distracted driving is characterized as a movement which redirects a man's concentration or consideration from his fundamental errand of driving. These sorts of exercises incorporate utilizing a cell phone, eating and drinking, discussion with co-travelers, self-preparing, perusing or watching recordings, modifying the radio or music player and notwithstanding utilizing a GPS framework for exploring areas. Among the greater part of the above, cell phone utilization is said to be the most diverting component. Diverted driving has been distinguished as an essential hazard factor in street activity wounds. Cell phone use has formed into an essential wellspring of driver diversion as it can prompt drivers to take their consideration off the street, consequently making vehicle tenants more helpless against street crashes. The utilization of cell phones while driving causes four kinds of commonly non-selective diversions – visual, sound-related, subjective and manual/physical. While visual diversions make drivers turn away from the roadway, manual diversions require the driver to grasp their hands off

the guiding wheel; sound-related diversions cover those and Sounds that are critical for the driver to hear while driving and intellectual ones incite the driver to consider an option that is other than driving.

A system with web-cam integrated to raspberry pi running python classifier can be used to capture the image and classifying it into either distracted state or safe driving state. If the driver is in a distracted state, a buzzer alarm is generated. For classifier, we have obtained the dataset of drivers driving in different states. This is fed in as our training data set and with an open source machine learning python library Scikit-Learn a classifier is generated to predict the distracted state of the driver. Following states of the driver is to be predicted: texting, talking to co-passengers, phone call, looking left or right, reaching back seat, self-grooming, operating IVIS and eating or drinking. We aim at building an integrated system of webcam and classifier model based on Convolutional Neural Network which would classify images based on different states of the driver. The training set used for building the model has been taken using a static driving

Hybrid CAT Using Bayes Classification and Two-Parameter Model



Nikita Singhal, Amitoz S. Sidhu, Ajit Kumar Pandit,
Shailendra Pratap Singh Sengar and Tutu Kumari

Abstract Much research and implementation has been done in the field of adaptive learning, while many such platforms exist almost none of them have tackled the problem of maintainability of such high demand systems. This paper proposes a new system using naive Bayes classifier and two-parameter model of IRT to develop a low cost, easy to maintain, self-evolving test platform. The proposed model harnesses the knowledge of the community while implementing powerful test theory. The paper discusses in detail the major modules of the system along with the related theory. The proposed model incorporates machine learning and IRT to provide a state of the art system while still being a community powered platform. The scope of the proposed model is visited. This paper provides a direction and precedent for the development of a new breed of low maintenance high capability test platforms.

Keywords Item response model • Naive Bayes model • CAT
(Computer adaptive Test) • Two-parameter model • Recommendation system

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Lane Segmentation for Self-Driving Cars using Image Processing

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Abstract - Technology is advancing day by day, more advanced cars are being built every year but still we are not able to reduce the no. of road accidents. Approximately 1.35 million people die each year as a result of road traffic crashes. Road traffic crashes cost most countries 3% of their gross domestic product. More than half of all road traffic deaths are among vulnerable road users: pedestrians, cyclists, and motorcyclists.

When the vehicle is four-wheeler and an accident occur than the chances of serious injuries or even deaths increases. We need more efficient systems which can prevent the accidents and help us to reduce them. One of the most common mistakes committed by human driver is talking on phone while driving or not paying attention on the road. Sudden change of the lanes leads to accident.

A lane detection system can be built and which can identify the lanes and indicate the driver on sudden alteration in the lanes. Most of the car companies have ongoing projects on these technologies. This can be done with the help of image processing.

I. INTRODUCTION

A lane segmentation system is built using image processing. Image processing can be done with help of the python library like OpenCV. OpenCV provides various functions and tools to work on frames captured by the camera. With the help of OpenCV many complex calculations can be done easily.

For making a prototype we need a camera, a bot and a raspberry pi. The camera will be mounted on the top of the bot and the raspberry pi will be fit on it. The raspberry pi will be operated with the help of a battery. The camera will capture the live events and provide them to raspberry pi. The camera captures frames which are then passed to the raspberry pi which does further processing on the frames. We can even control the frame rate too. We need to import NumPy library in our code which provides a high-performance multidimensional array object, and tools for working with these arrays.

For better efficiency and good outcome, we need powerful cameras.

The model architecture is shown in figure 1.

A. Morphological Transformations:

Morphological transformations are operations which are performed on the images on the basis of their shapes. The image is first converted in binary form and then the transformations are applied. Two inputs are given to the function. First is the original image and second is the kernel or the structuring element which decides the nature of the operation. There are many types of morphological transformations. The two basic types are Erosion and Dilation.

COMPARISON OF EFFICIENCIES OF LINEAR REGRESSION AND GAUSSIAN BELL CURVE FOR CASH INFLOW MANAGEMENT OF ATM'S

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Abstract

Management of Cash inflow is an essential operation of banks for the ATM machines on day to day basis. So, Estimation of cash inflow is required in a very precise manner hence the need arises that we use the best possible methodology to garner optimum results. Therefore, either the best single methodology or the combination of methodologies in an appropriate manner is needed to be sought.

Index Terms- Linear regression, Gaussian bell curve, Time series analysis

1. INTRODUCTION

Comparison of efficiencies of linear regression and Gaussian bell curve for cash inflow management of atm's involves:

1. Finding out the linear regression efficiency.
2. Finding out the Gaussian bell curve efficiency.
3. Finally, comparing the efficiencies and finding out the best suitable algorithm.

Automated Teller Machines (ATMs) are 24-hour self-service machines that enable bank customers conducting their financial transactions without visiting the bank branch. In spite of online banking facilities expansion, need for ATMs transactions remains high over years and makes ATMs an irreplaceable devices in everyday life. In order to meet growing cash needs of bank clients, banks have to increase continually the number of their ATMs in different location to make cash available.

1. While supplying ATMs with cash, Bank faces with minimizing of total costs. Total costs are consisted of 3 basic parts:
 1. Cost for unwithdrawn cash in the ATM itself (cash freezing);
 2. Cost for transport from the branch to the ATM.
 3. Cost for insurance of the cash in the ATM.

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National /International Papers Published by Faculty during 2019-2020

Sr. No.	Title of Paper	Author Names (Faculty/Student) (Write all names of authors which are included in paper)	Name of Journal	ISSN No	Vol/ Issue No.	Page No.	Month/Year of Publication	Indexing of Journal (SCI/SCIE/Web of Science/ Scopus Indexed journal/UGC approved)	Paper Accepted / Published
1	Text Summarization Using Neural Networks	Anant Kaulage, Rupali Mittal, Simran Sharma, Asmiriti Kumari Geetika Chuphal	International Journal for Scientific Research and Development	ISSN 2321 - 0613	Vol. 7, Issue 03	474-478	1 June 2019	UGC approved	Published
2	Smart KYC Using Blockchain and IPFS	Nikita Singhal, Mohit Kumar Sharma, Sandeep Singh Samant, Prajwal Goswami , Yammanuru Abhilash Reddy	Advances in Cybernetics, Cognition, and Machine Learning for Communication Technologies , Lecture Notes in Electrical Engineering, Springer Nature	1876 - 1100, 1876 - 1119 (electronic)	643	77-84	April 2020	Scopus Indexed	Published
3	Person Identification using Deep Learning	Vikas Manhas, Saurabh, Kumar	International Research	2395 -	7	88-95	May 2020	UGC approved	Published

		Varun, NK Bansode	Journal of Engineering & technology	0056 , 2395 - 0072					
4	Decentralized Logging Service using IPFS for Cloud Infrastructure	Sagar Rane Salil Gautam Nishant Gore Anirudh Murali Thomas Koshy	Elsevier's International Conference on Communication and Information Processing (ICCIP 19)	NA	NA	1	July 2019	Scopus Indexed	Published
5	A non-intrusive approach for drowsy and drunk driving using computer vision Techniques.	Madhu, Khushbu Mishra Dr. S.R. Dhore	International Journal of Advance Research, Ideas, and Innovations in Technology.	2454 - 132X	Vol.5	88-93	June 2019	UGC Approved	Published
6	Analysis and Prediction of CIBIL Score using Machine Learning	Dr. S.R. Dhore Kirtree Kushwaha Pankaj malik Param Satyam Pandey Shivam Mishra	PROTEUS JOURNAL	0889 - 6348	Vol 11, Issue 6	61-65	June 2020	Web of Science	Published

Prof S. R. Dhore
HOD Computer

Text Summarization Using Neural Networks

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Abstract— There are various news/articles which cannot be read completely in the hush of our daily schedules. Thus, summarization comes into picture. This paper focuses on summarizing a text using neural networks which creates a summary containing the important key points of the text/article. This summarization will be done using neural networks (word2vec model). It will focus only on English articles. The input given will be in .txt format. Thus it will make a lot easier to get a quick summary of the long articles and derive the conclusion about what is there in the articles and whether they are relevant for a user according to their interest.

Key words: Word2vec, Neural Network, Abstractive, Extractive, LSTM

I. INTRODUCTION

As the amount of information on the web is increasing rapidly day by day in different format such as text, video, images. It has become difficult for individuals to find relevant information of the interest. When user queries for information on the internet he gets thousands of result documents which may not necessarily be relevant to his concern. To find appropriate information, a user needs to go through the complete documents which results in information overload problem which leads to wastage of time and efforts. To deal with this situation of dilemma, automatic text summarization plays a vital role [6]. Automatic summarization compresses a source document into meaningful content which reflects main thought in the document without altering information. Thus it helps user to grab the main notion within short time span. If the user gets effective summary it helps to understand document at a glance without checking it completely, so time and efforts could be saved. Text summarization process undergoes in three steps analysis, transformation and synthesis. Analysis step analyzes source text and select attributes. Transformation step transforms the result of analysis and finally representation of summary is done in synthesis step.

In an abstract summary, the summarized text is an interpretation of an original text. The process of producing involves rewriting the original text in a shorter version by replacing wordy concept with shorter ones[9].

II. RELATED WORK

A. Types of Summarization

A large document is entered into the computer and recapitulated content is returned, which is a non-redundant extract from the original passage. Automatic text summarization process model can be divided into three steps. First is the preprocessing of source text, second is interpretation of source text representation and source representation transformation to summary text representation with an algorithm and in the final step, summary text generation from summary representation [10].

Feature extraction for Wikipedia articles is done using ten different feature scores which is fed to the neural network and the neural network returns single value signifying the importance of the sentence in the summary[8].

There are two distinct types of features: non-structured features (paragraph location, offset in paragraph, number of bonus words, number of title words, etc.) and structured features (rhetorical relations between units such as cause, antithesis, condition, contrast, etc.) [2]

1) Extractive Method:

Extraction is mainly concerned with judging the importance, or indicative power, of each sentence in a given document [1]. Extractive text summarization involves the selection of phrases and sentences from the source document to generate the new summary. Techniques involve ranking the relevance of phrases in order to choose only those most relevant to the meaning of the source. Extractive summarization is basically just picking up the words from the text as it is which are important and putting them in the summary. No interpretation of the text is done in this process. We also anticipate that short sentences are unlikely to be included in summaries[3].

There are four major challenges for extractive text summarization as follows: identification of the most important pieces of information from the document, removal of irrelevant information, minimizing details, and assembling of the extracted relevant information into a compact coherent report[5].

2) Abstractive Method:

Abstractive text summarization involves generating entirely new phrases and sentences to capture the meaning of the source document. This approach is commonly used by humans for getting the summary but it proves to be a challenging approach. Classical methods operate by selecting and compressing content from the source document. Abstractive summarization techniques tend to copy the process of 'paraphrasing' from a text rather than simply summarizing it. The abstractive method is more difficult and complex as compared to extractive. It copies the way human gets the summaries.

B. Techniques of Summarization

1) Bag of words:

This model is a simplified representation which is used by natural language processing and information retrieval (IR). A text which can be a sentence or a document is represented by bag (multiset) of its words, disregarding grammar and even word order but keeping multiplicity. In this approach, words are tokenized which are used for each observation and frequency of each token is found.

2) TF-IDF:

Tf-idf refers term frequency-inverse document frequency, and the tf-idf weight is a weight often used in information retrieval and text mining. TF-IDF weight is a statistical measure which is used to evaluate the importance of a word in a document in a collection or corpus. The importance shows proportional behaviour to the number of times a word

Smart KYC Using Blockchain and IPFS



Nikita Singhal, Mohit Kumar Sharma, Sandeep Singh Samant,
Prajwal Goswami and Yammanuru Abhilash Reddy

Abstract Know your customer, also known as know your client or simply KYC, is the process that businesses and financial institutes must employ to identify their clients and assessing any kind potential risk due to illegal intentions and foul play for the business relationship in compliance with a national regulating body. The term KYC is often used to refer the bank regulations and the anti-money laundering regulations which are in place to govern such activities. Also due to bribery and foul play, companies of all sizes are compelled to employ KYC for the purpose of ensuring their consultants, agents, or distributors follow rules set by anti-bribery compliant. With population of India around 1.3 billion, a secure and faster system for sharing sensitive information like KYC document which may contain personal document, capable of handling this vast amount of this data is of high demand. While the implementation of such a system isn't new, the present systems have drawbacks. The proposed system will replicate the functionality of the legacy KYC system. By using the immutable property of Distributed Ledger Technology (DLT) and Inter Planetary File System (IPFS), a tamper-proof system can be formed. This paper aims to address some of the shortcomings of the current system and propose implementation of innovative features to develop a more secure and comprehensive system. The proposed system will allow customer and business institute to verify and record the customer KYC document into the DLT. The proposed system will use IPFS which will greatly improve the storage efficiency of DLT.

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Person Identification using Deep Learning

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Abstract—In the present scenario, digital data generation, data consumption becoming necessary due to advancement in technology. The business process are taking advantage of the available data. The human data processing becoming important in various types of applications like person authentication, verifications automatically by the machines. One of the application is to identify the person automatically by the machine.

Face recognition technology is available for use for couple of years. The face recognition technology is limited by the use of the restricted environment. In this paper, the method for person identification in unrestricted environment is presented using deep neural network. The face recognition and body part recognition these two important steps are used to identify the person.

Keywords--Face recognition, deep learning, Person Re-identification.

1. INTRODUCTION

Identification of the individual person using various technologies becoming important due to the use of person identification in various applications like verification as airport, different unities, digital transactions, access to the restricted area or information.

The person identification problem has been studied for several years, but the human like performance for person recognition by the machine is not achieved. There are many challenges for the person identification such as size, color, orientation and occlusion. The face recognition, recently available for use in the restricted environment.

The person identification is done using face matching process. In this case, face images are stored in the face database. The unknown face image is matched with the face images available in the face database. The Face Recognition is implemented to person recognition but the constraints is the person should be close enough and also should front towards the camera. This process of face identification has limitations for real time face recognition application.

In surveillance application, person recognition becoming very important as video cameras are installed in different areas. Previous work related to the Identification of Person is done through Facial Recognition only and that in addition, when the person has to show himself in front of the camera with properly aligned face fronting camera. This approach was very tedious as each time person has to manually show himself in front of camera to mark himself present many areas. This produces large video data for the processing.

The person identification in surveillance video is challenging problem due to several issues like person orientation, scale, occlusion by other objects, lighting illumination etc. This paper the problem of person Identification using process of the person re identification is explored.

Person re-identification is the process of mapping images of the individual person captured from various cameras or in a different directions or in different situations or instances. Another way to define is allocating an identity (ID) to a person in multiple camera configuration. Generally the re-identification is limited to a minor duration and a small environment (area) covered by camera. Humans have that ability to recognize other persons by using descriptors based on the person's characteristics related to body like height, face, clothing, hair style and shade, locomotion(walk pattern), etc. and this seems to be an easy problem for humans but for a machine to solve this problem is extremely difficult.

In visual surveillance technique, it is very important to link or associate individual people across different camera orientations. Cross view individual person re-identification ensure automatic identification and structure of particular individual person-specific features or movements over huge expanded environment and it is important for surveillance used in many applications for example tracking people using multi-camera and in forensic search. Particularly, for doing person re-identification, one compares a query person (person to be identified) the image is captured by camera view against a database created of the many people captured in another view for creating a ranked list or array according to their comparison distance similarity index.

The most existing methods or approaches in order to perform ReID (re-identification) by changing visual appearance such as shape of the face, texture of the body and color of individual or multiple person's images. People's appearance is naturally limited because of the unavoidable ambiguities related to visual ability and untrust due to appearance

Decentralized Logging Service using IPFS for Cloud Infrastructure

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Abstract

In any shared space of resources it is very important to have a trustable way to record how and when the resources have been used and by whom. Similarly, in any cloud-based platform, collection of logs is an important activity required to have a trustable record of the activities performed by the users and pin point any malicious deeds performed. Forensic investigations however face a grave challenge of ensuring the integrity of the logs. The activity of collecting logs and ensuring their integrity becomes a necessity with regulations like SOX enforcing it on financial institutes. In this paper, IPFS has been employed to create a system which preserves all the meta- data of logs generated by the network activity of the virtual machine and guarantees the confidentiality, integrity and availability during any forensic investigation. The integrity of the logs is guaranteed by the IPFS system which creates a content-based hash for the logs and stores them securely. As files in IPFS are indexed by their hash, tampering with a log will result in creation of a new hash which won't exist in the index. Index will still point to the original hash, hence integrity is achieved. In previous research, the systems could guarantee whether a log has been tampered with or not, but none provided a mechanism to recover meta-data of tampered logs to their original state. Using IPFS, this paper aims to make the system more secure and takes it a step forward by providing the meta- data of the original logs for the tampered logs.

Keywords- IPFS, Cloud Forensics, Content-based hashing

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1. Introduction

With the advent of cloud servers in the IT world, more and more companies are opting for cloud servers to launch their application into the real world. With cloud servers gaining more and more users, it has lead to a necessity to increase the security of one's account and usage in the clouds. With more users comes greater difficulty in managing those customers. To better manage their resources and ensure that they are not used for malicious activities, it is important that the CSPs keep a secure and trustable logging service to map the network activities performed by their customers using the VMs provided. Currently all the CSPs have their own database and a set of parameters that are stored. And whenever there is a case where the logs are needed the CSPs provide with the logs. In the current situation, during a forensic investigation, there are three involving parties: Cloud service provider (CSP), User, Cloud Forensic Investigator (CFI). During the investigation, while referring to a log, the investigator must blindly assume the credibility of the logs and



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A non-intrusive approach for drowsy and drunk driving using computer vision techniques

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ABSTRACT

This paper presents a holistic, non-intrusive approach for drunk and drowsy detection of the driver using computer vision techniques of facial landmark detection and motion detection. The driver's continuous real-time video feed is observed with the help of a smartphone camera. A single scalar quantity, Eye Aspect Ratio (EAR) which characterizes persistent eye blinks continuously analyses this feed. Simultaneously the system checks the body and the head movements using the differential imaging technique, which operates in real-time. A severity score indicating the fitness to drive is generated cumulatively using both methods. The driver is notified with the sound of an alarm if the results are positive based on a threshold value of the severity score.

Keywords— Computer vision, Real-time processing, Motion detection, Facial landmark detection, Eye Aspect Ratio, Severity score

1. INTRODUCTION

Drunk and drowsy driving are the leading causes of road accidents across the world. Klauer et al. [1] have found that drowsiness increases the risk of an accident up to six times, which is further compounded due to nighttime conditions or in situations without prior sufficient sleep [2]. It is a well-known fact that the influence of alcohol is one of the major causes of reduced vehicular control and increased risk of accidents. Numerous studies have established that the risks of road accidents, injury or death increase exponentially under the influence of alcohol [3]. In Europe itself, there is an estimation of 10,000 deaths each year because of drunk driving [4]. Alcohol-impaired driving accidents contribute to approximately 31% of all traffic casualties in the USA [5]. In China, Li et al. found that about 34.1% of all road accidents were alcohol-related [6]. All of these studies indicate serious human lapses and avoidable causes of death, which can be prevented by proper monitoring and alerting technology. Therefore, it is

essential to develop a holistic, non-intrusive system to continuously monitor a person's physical and facial movements and to alert them at critical moments to avoid road [17] and [18]; techniques using a stereo camera [18] and [19]. Some of these techniques have also been converted into commercial products such as Smart Eye [18], Seeing Machines DSS [19], Smart Eye Pro [18] and Seeing Machines Face API [19]. However, these commercial products are still limited to controlled environments and require laborious calibration techniques. Thus, there is a long way to go before a reliable and robust commercial product is built in this category.

The existing systems based on real-time driver monitoring, using image processing techniques are largely tackling one aspect of the problem, i.e. either drowsiness or drunkenness. To accidents, thereby significantly preventing serious injury and loss of lives.

2. RELATED WORK

Existing methods use both active and passive techniques to develop real-time monitoring systems. Active methods use special hardware such as illuminators [7], infrared cameras, wearable glasses with special close-up cameras observing the eyes [8], electrodes attached to the driver's body to monitor biomedical signals, like cerebral, muscular and cardiovascular activity [9] [10]. These methods provide reliable and accurate detection. However, the cost of such specialized equipment is a major drawback hindering their popularity. These equipment are also intrusive that is, it causes annoyance to the driver's body and hinders regular driving. The unusual effect of driving in the presence of invasive instrumentation reduces the drowsiness in testing and simulation conditions. Consequently, the efficacy of such models is limited in real road conditions. Most of them are yet to be effectively introduced in the market.

Passive techniques in monitoring systems majorly rely on the standard remote camera. A set of these passive methods are

Analysis and Prediction of CIBIL Score using Machine Learning

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Abstract—CIBIL is India's first Credit Information Company founded in August 2000. CIBIL collects and maintains records of an individual's payments pertaining to loans and credit cards on a monthly basis, which is then used to create Credit Information Reports (CIR) and credit scores which are provided to the credit institutions in order to help evaluate and approve loan applications. Despite having a good CIBIL score, NPAs and bad loans are increasing. The current metric of CIBIL score doesn't include various essential parameters for its prediction and is thus clouded and provides incomplete information. This paper presents a platform by which we can get best results to reduce the cases of bad loans and can get better predicted CIBIL score by including more parameters.

Index Terms—Web development, Logistic Regression, Random Forest Classifier, Support vector Machine, Gradient Boosting Classifier.

I. INTRODUCTION

CIBIL score analysis and prediction is the act of trying to determine whether the customer is eligible for taking loan or not. CIBIL score is the important part of economy of the country and plays a vital role in the growth of the industry and commerce of the country that eventually affects the economy of the country. Both investors and industry are involved in stock market and wants to know whether some stock will rise or fall over certain period of time. The stock market is the primary source for any company to raise funds for business expansions. It is based on the concept of demand and supply. If the demand for a company's stock is higher, then the company share price increases and if the demand for company's stock is low then the company share price decrease.

The existing CIBIL System does not provide any method to calculate score for the new users, whereas, this research is based on the methods to calculate score for both the existing as well as the new users. The two most critical questions [1] in the lending industry are: 1) How risky is the borrower? 2) Given the borrower's risk, should we lend him/her? The answer to the first question determines the interest rate the borrower would have. Interest rate measures among other things (such as time value of money) the riskiness of the borrower, i.e. the riskier the borrower, the higher the interest

rate.

With interest rate in mind, we can then determine if the borrower is eligible for the loan. A credit score is a numerical expression based on a level analysis of a person's credit files, to represent the creditworthiness of an individual. It is also called as CIBIL score. A credit score is primarily based on a credit report, information typically sourced from credit bureaus.

Lenders, such as banks and credit card companies, use credit scores to evaluate the potential risk posed by lending money to consumers and to mitigate losses due to bad debt. Lenders use credit scores to determine who qualifies for a loan, at what interest rate, and what credit limits. Lenders also use credit scores to determine which customers are likely to bring in the most revenue. The use of credit or identity scoring prior to authorizing access or granting credit is an implementation of a trusted system.

Credit scoring is not limited to banks. Other organizations, such as mobile phone companies, insurance companies, landlords, and government departments employ the same techniques. Digital finance companies such as online lenders also use alternative data sources to calculate the creditworthiness of borrowers.

CIBIL score in India is a three-digit number ranging from 300 to 900, which signifies the creditworthiness of an individual based on his credit profile and past repayment track record.

II. RELATED WORK

This section briefly explains reviews related work that contributes to the discussion of prediction of CIBIL score using different machine learning methodologies.

A. Study by Wilson and Sharda

Wilson and Sharda [2] studied prediction firm bankruptcy using neural networks and classical multiple discriminant analysis, where neural networks performed significantly better than multiple discriminant analysis. Min and Lee were doing

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National /International Papers Published by Students during 2020-2021

Sr. No.	Name of Conference/Journal	Title of the Paper	Authors	ISSN/ ISBN	Volume, Issue	Page Numbers	Month, Year	Indexing of Journal
1.	Journal of Information and Computational Science	Merge Maneuver by Autonomous Vehicle using Reinforcement Learning in Dense Traffic	Akash K. Singh Abhinay Amit K. Yadav Garima	1548-7741	Volume:10 Issue:10	248-253	Oct 2020	UGC Approved
2.	IEEE International Conference on Emerging Smart Computing and Informatics	Optical Character Recognition using Tesseract and Classification	Saurabh Dome	-	-	-	March 2021	-
3.	Pensee Journal	Apparel Recommendation System using NLP and Deep Learning	Archana Saini Karandeep Bajwa Ameet Rana Avinash Tiwari	0031-4773	Volume:51 Issue:3	1-16	March 2021	SCOPUS
4.	International Journal of Creative Research Thoughts	Traffic Goggles – Real Time Traffic Sign Recognition for Driving Assistance	Abhishek Singh Akash Mall Anil Mudgal Akash Sangwan	2320-2882	Volume:09 Issue:03	697-700	March 2021	UGC Approved
5.	EAI Endorsed Transactions	A Survey of Audio Synthesis and Lip-syncing for Synthetic Video Generation	Arpit Mishra Shailesh Sahu Shubham Singh Shivam Pathak	2409-9708	Volume:8 Issue:26	1-9	April 2021	SCOPUS
6.	International Journal of Engineering Research & Technology (IJERT)	Multilabel Toxic Comment Detection and Classification	Ajay Kumar Kumar Shivam Naresh Kumar Rahul Malhan	2278-0181	Volume:10 Issue:05	1-7	May 2021	PubMed
7.	International Conference for Emerging Technology (INCET)	Video Compression Engine using Auto Encoders	Sagar Game Niket Kumar Gaurav Kumar Sidhant Singh	-	-	-	May 2021	-

8.	Journal of Information and Computational Science	Development of speech recognition model for specially abled individuals	Pankaj Yadav Robin Singh Sagar Singh Rudra Roy	1548-7741	Volume:11 Issue:05	382-385	May 2021	UGC Approved
9.	International Journal of Engineering and Management Research	Online Learning Management System and Analytics using Deep Learning	Laxman Sharma Ashok Singh Ansuman Singh Devendra Singh	2250-0758	Volume:11 Issue:02	232-238	April 2021	Other
10.	Journal of Information and Computational Science	Approaching Image Manipulation Detection using YOLOv5	Amitav Soni Sahil Saurabh Chourasia Suraj Adhikari	1548-7741	Volume:11 Issue:04	427-432	April 2021	UGC Approved
11.	International Journal of Creative Research Thoughts	Black Hole Attack, its Detection and Mitigation under AODV Routing Protocol in WSN using Expert System	Naveen Pankaj Yadav Vimal Kumar Mani Singh	2320-2882	Volume:09 Issue:05	292-298	May 2021	UGC Approved
12.	International Journal of Creative Research Thoughts(IJCRT)	Android offloading computing over Cloud	R Sonawane, Pragati Tomar Priya Pandey , Basukinath Tiwari, Rahul Singh	2320-2882	Volume 9, Issue 5	-	May 2021	-

Merge Maneuver by Autonomous Vehicle using Reinforcement Learning in Dense Traffic

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Abstract—Autonomous vehicles are good at mundane driving tasks. Merging in traffic is challenging task. Humans look for a empty slot in traffic and guess the behaviour of other drivers on road to perform the merge maneuver and avoid deadlock. This dynamic makes it even more challenging for autonomous vehicles. An autonomous vehicle cannot consider other cars on the road as moving objects; the human behaviour has also to be considered.

Keywords : Autonomous vehicle, Partially Observable Markov Decision Process, Reinforcement learning, belief, driver model.

I. INTRODUCTION

Autonomous or self-driving vehicles is rapidly developing field mainly due to developments in machine learning techniques and advantages it provides that includes improved safety, reduced congestion, lower emissions and greater mobility. A lot of research has happened in motion planning and obstacle avoidance algorithms using probabilistic methods and it remains an active area of research with developments in machine learning. While transporting passengers or goods from a given origin to a given destination, motion planning methods incorporate searching for a path to follow, avoiding obstacles and generating the best trajectory that ensures safety, comfort and efficiency.

The goal for motion planning for autonomous vehicle is to select a collision free trajectory that fulfills the mission goal, reaching the destination as fast as possible, while at the same time taking into account the effect of our own motion on surrounding traffic participants. In congested traffic, it is not always for a vehicle to progress along its route without any negative effect on other participants such as requiring them to slow down slightly.

The remainder of the paper starts with a presentation of related work (Section II). It is followed by a presentation of approach (Section III). Based on that, we present implementation (Section IV) and experiment (??). Finally, a conclusion is drawn (Section VI).

II. RELATED WORK

In dense traffic scenarios vehicle may come to a halt. With no movement at all, it freezes. Cooperation and collision avoidance models are required to prevent deadlock scenarios aka freezing robot problem [2]. Planning for autonomous

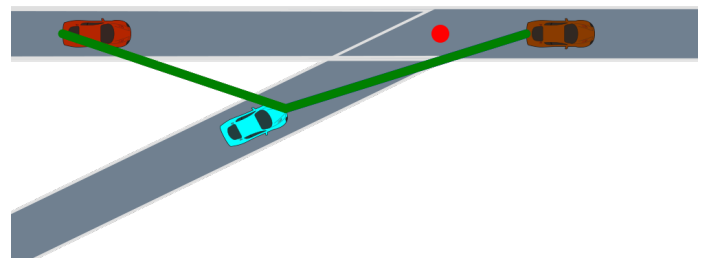


Figure 1. Merging Scenario

systems is challenging because of interactions with other dynamic systems in environment such as humans. Probabilistic interaction models for online planning address this problem [3] - [6]. Online planners take decisions in real time as they perceive the environment. And so require heavy computation when traffic is dense. Online planners take decisions or plan based on inputs from environment that it simulates upto some future time. This future time horizon is shortened due to computation complexity [4], [7]. The behaviour policy of agent depends on the environment model [8]. Policy performance increases when the planning algorithm has access to information about the driver internal state in lane changing scenarios [8].

Mutual influence between human and agent has been studied using data-driven approaches, probabilistic models, inverse reinforcement learning, rule-based methods, or game theoretic frameworks [3], [5], [6], [9], [10]. Schmerling et al. demonstrated a data-driven approach to learn the interaction model on a traffic weaving scenario involving two agents [5] but is not suitable for dense traffic scenarios where more than two traffic participants are interacting. Lane changing [11], and intersection navigation [12], [13] are two of many driving scenarios where reinforcement learning promises good results.

Here, we test a reinforcement learning agent's ability to interact with environment to successfully perform a merge maneuver in dense scenarios. There is uncertainty associated with behaviour of human driver. That leaves the autonomous system devoid of an important input that can help it perform its task efficiently. Deep Reinforcement learning can capture this

Optical Character Recognition using Tesseract and Classification

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Abstract— Optical Character Recognition (OCR) is a process or technology in which text within a digital image is recognized. It is mainly used for converting the transcribed, handwritten or any printed text to the text data that can be edited and reused. With rapid pace of technology, people want quicker, handy and reliable tools, which can fulfil their daily needs. With this moto we had gone forward and analyzed the existing tools and made up this WebApp, which provides seamless experience (No ads and easy-to-use), and great accuracy. While OCR technology was originally developed for recognizing the printed text, it can be used to recognize and verify handwritten text as well. The objective of this project is to allow automatic extraction of the information that a user wants from the paper document and using it wherever it is needed. This leads to reduction or sometimes eliminating the work of costly data entry. We also aimed to enable a way in which processing of the documents will lead to eliminate the human touches and therefore dramatically reducing the process time and the cost.

Keywords— Optical Character Recognition, Tesseract, Handwritten Text Recognition, Image to Text

I. INTRODUCTION

Optical Character Recognition is the technology used for converting the transcribed, handwritten or any printed text documents such as scanned pages, images taken by any camera or phone into the text data that can be edited and reused. [1]. In other words, OCR takes a look on the photo of the text document (therefore it is called as "optical" process) and then recognizes the different alphabets, numbers or any other characters. This sub process is called as character recognition, which is used to fetch the characters from the image, and then these characters will be converted to text sentences for further use. This mainly aims to reduce the human workload, and it achieves the same as it is handy and it also saves the time as it provides all the text that the user was supposed to be retyping [2]. Our OCR WebApp is capable of giving out the output text quickly, but the handwritten text recognition takes little longer as it uses CUDA cores the operations. Generally the process of OCR has three stages, that are: Access (Scan) the image document, Recognize the text data and then save it into any convenient format or display it directly to the user for further use. [3]. With this in our context, the paper presents the design and procedure of the OCR WebApp, which consists of three sections that are: Image-to-Text, Real-time OCR (using webcam), and Handwritten Text Recognition. In this project, OCR uses Tesseract as an engine to display the text to the user and HTR uses a Deep learning model to classify the letters and display them to the user.

Following is the Figure 1, which shows the classic workflow model of OCR system that follows nine steps (excluding first and the last step) to extract the text from the document. These steps can be classified to main five steps that are, preprocessing, segmentation, feature extraction, classification and recognition.

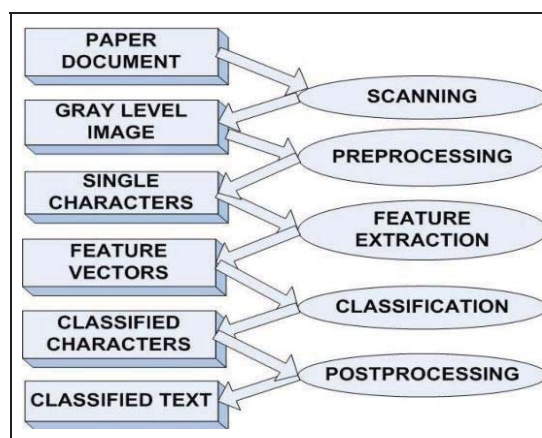


Fig. 1. Classic OCR procedure model

II. OBJECTIVES

Our project was made-up having following objectives in mind. It mainly aims to:

- To allow automatic extraction of the information that a user wants from the paper document and using it wherever it is needed. This leads to reduction or sometimes eliminating the work of costly data entry.
- To enable a way in which processing of the documents will lead to eliminate the human touches and therefore dramatically reducing the process time and the cost.
- To take an image as input and give the editable text to the user which is recognized from the image document.
- Provide the text with more than 95% accuracy for any document with standard quality.

III. ADVANTAGES

Following are some of the advantages of Optical Character Recognition:

Apparel Recommendation System using NLP and Deep Learning

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3

Abstract: Online shopping websites are growing rapidly all around the world. These websites rely heavily on recommendations systems for generating suggestions on the basis of user preferences. Most of the system proposed so far either uses the text based or image based methods. The individual techniques have certain drawbacks which can be overpowered if both the techniques are used in hybrid. In this paper, we present a comparative study of techniques proposed by different authors. Along with the techniques, the achievement and future scopes are also highlighted. Out of all the approaches, we opted for a variety of NLP techniques (bag of words, IDF, TF-IDF and word to vector) for handling the text based queries and CNN (transfer learning) to deal with image based queries.

Keywords: Natural Language Processing (NLP), Inverse Document Frequency (IDF), Term Frequency (TF), Convolutional Neural Network (CNN).

1. Introduction

In recent years, the number of users of commercial websites, like Amazon, Myntra, Netflix, Youtube etc, has increased rapidly [9]. All of these e-commercial websites make great use of the recommendation system. With immensely growing data through electronics media, the user faces challenges in accessing the most suitable information. Though, this problem can be partially resolved with the help of information retrieval systems [8]. But, this approach does not include the user's preferences or any past history. So, it is highly required to have a good recommendation system because it becomes difficult for the user to find what they require. It can assist customers in choosing products from a variety of items. A website that generates reliable recommendations can increase customer satisfaction with products and eventually increases the sales and business [7].

However, the traditional recommendation systems are still struggling with the keyword matching methods [6]. To generate more user-reliable recommendations, image based recognition is also required [3][6][8]. Thus, a combination of textual and image based recommendation methods can be encapsulated to overcome the loopholes of individual techniques.

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Traffic Goggles – Real Time Traffic Sign Recognition for Driving Assistance

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Abstract— Traffic Sign Recognition (TSR) is a crucial component of Advance Driving System Assistance System (ADAS). A TSR system helps the driver in safe driving as traffic signs provide invaluable information about the rules and regulation to follow while driving. This paper brings forth a proposal of a system that detects different types of traffic signs from camera feed in real time and provides output in audio format. YOLO v3 is used for real time recognition. The output is then converted to audio format using text to speech (TTS) API.

Keywords— YOLOv3, Traffic sign, ADAS, Machine learning, Convolutional Network, , Text to Speech, Darknet, Voice Feedback.

I. INTRODUCTION

Traffic sign detection and recognition is a very important field of computer vision which is used in Advanced Driving Assistance System (ADAS). Traffic signs or Road signs are visual cautionary representations erected at the side or above roads that give instruction or provide road guidance to road users. Traffic signs helps in maintaining order on roads and reducing accidents by provide information to motorists and pedestrians. They are the rules that are there for everyone to follow them, and they help to communicate between fellow drivers and pedestrians. They define statutory rights granted to vehicles, allow or prohibit certain actions or directions, warn about road conditions, define speed limit etc. Ignoring them is dangerous.

Most signs make use of pictures, rather than words, so that they can be easily interpreted by people who speak different languages. They consist of various shapes and colors which can be used to distinguish and classify them easily by people as well as computers. Red, blue, green, yellow are the common colors that are associated with

traffic signs and the shapes are mostly circular, triangular or rectangular.

Various methods for traffic-sign detection and recognition have been proposed. However, recognition with respect to various viewing angles, different weather conditions and factors like occlusion still remains a challenging task and is an open research problem in the field of computer vision.

In this paper, we are using You Only Look Once (YOLO) v3 for real time object detection.

II. RELATED WORK

Extensive research has been done by the computer vision and deep learning enthusiasts in this field.

[1] and [2] shows that accuracies of 99.17% and 99.65% can be achieved using the classifier which use Multi Column Deep Neural Network (MCDNN) but the networks are too large and are required to learn a large number of parameters. [3] shows that accuracy and reliability of the application which is working in real time can be improved. To achieve that, it uses the Faster R-CNN Inception-V2 model via transfer learning for traffic light detection and recognition for self-driving cars.

[4] presents a new traffic sign detection approach by integrating both the Adaboost algorithm and SVR together which achieves a detection time of 0.05 - 0.5 seconds for each image, precision of 94% and recall of 80%.

On the other hand, [5] uses YOLO v3 detector along with custom CNN based classifier to obtain a performance of 92.2% for traffic sign detection and classification. There are two types of object detection methods

1. Two stage object detection- In the first stage object

A Survey of Audio Synthesis and Lip-syncing for Synthetic Video Generation

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Abstract

The fields like Media, Education and Corporations etc have started focusing on content creation. This has led to the huge demand for synthetic media generation using less data. To synthesize a high-grade artificial video, the lip must be synchronized with the audio. Here we have compared the various methods for voice-cloning and lip synchronization. Voice cloning procedure include state of the art methods like wavenet and other text-to-speech approaches. Lip synchronization methods describe constrained and unconstrained methods. Various recent research like LipGan, Wav2Lip are discussed. The methods are compared and the best method is suggested. Apart from studying and comparing the various methods, their drawbacks, future scopes, and application are also there. Different social and ethical issues are also discussed.

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Keywords: Video Synthesis, Voice Cloning, Lip Synchronization, Video Generation Application

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1. Introduction

The project is to make media generation and content more individual-focused, personalized. We aim to make Ads personalized such as by using the targeted user's name. Sending bulk personalized congratulations videos, celebrations videos, etc. The core of our research is to do audio synthesis is the speaker's voice using fewer data. At present media-generated is generic such as Ads we see, video emails we get, etc [1]. Our project purpose is to make generic media content specific to a user. The user will be provided with premium services where each video generated will be mailed to specific clients with custom content of the user. In this kind of service. The user will have to upload a file containing email addresses corresponding to each string. The Ad industry targets many ads on us through videos we see on social networks (Facebook, Instagram, Twitter, etc), video platforms (YouTube).

Deep learning has shown its potential in various fields using machine learning. One of the major usage of Deep learning is Text to Speech(TTS) [2]. While the complete training of a single-speaker TTS model

is technically a form of voice cloning, the interest rather lies in creating a fixed model able to incorporate newer voices with little data. The common approach is to condition a TTS model trained to generalize to new speakers on an embedding of the voice to clone [3]. This approach is typically more data-efficient than training a separate TTS model for each speaker, in addition to being orders of magnitude faster and less computationally expensive. Interestingly, there is a large discrepancy between the duration of reference speech needed to clone a voice among the different methods, ranging from half an hour per speaker to only a few seconds. This factor is usually determining the similarity of the generated voice with respect to the true voice of the speaker. Apart from voice cloning, one more important feature is lip synchronization [4]. There have been many useful applications of lip syncing in making a perfect synthetic video. Generally application requires generic and speaker independent models. One more challenge which we face is different sizes of lips [5]. The audio and movement of lips go out of sync which makes an automatic generated video look absurd. Approximately, 1 sec out of sync lip movement is identified by the viewers. To remove this out of sync thing, we use lip-synchronisation technique.

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Multilabel Toxic Comment Detection and Classification

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Abstract— Toxic comments refers to hatred online comments classified as disrespectful or abusive towards individual or community. With a boom of internet, lot of users are brought to online social discussion platforms. These platforms are created to exchange ideas, learning new things and have meaningful conversations. But due to toxic comments many users are not able to put their points in online discussions. This degrades quality of discussion. In this paper we will check the toxicity of comment. And if the comment is toxic then classify the comments into different categories to examine the type of toxicity. We will utilize different machine learning and deep learning algorithms on our dataset and select the best algorithms based on our evaluation methodology. Moving forward we seek to attain high performance through our machine learning and deep learning models which will help in limiting the toxicity present on various discussion sites.

Keywords— Toxic Comments, Natural Language Processing, Machine Learning, Deep Learning, Text Classification, Multilabel Classification

I. INTRODUCTION

There is increase in number of people using internet. Internet is main invention for 21st century. According to website, the number of internet users have increased from 1100 million in 2005 to 3969 million users in 2019 which is staggering 260% increase [1]. Hence, more people are using social networking and online discussion platforms.

There is also a huge shift the way internet is used. In the initial days of the internet, people used to communicate with each other through Email. But with a platform like social media, we see that people got a way to keep in touch with their long-lasting friends, meet new peoples having same interests and hobbies. We are now more connected than ever. Not only discussion of friends and people, but social media has also evolved to support business needs. With increase in services like gaming and live streaming, more velocity of comments is added to sites. Social media has broken down many of the communication barriers between different consumer groups as well as between individuals. Hence no doubt that social media sites such as Facebook, Twitter, Reddit, etc. have become billion-dollar companies.

Over these all years we have seen lot of instances where social media have played pivot role due to toxic comments and hatred. For example, Chief Minister of Uttar Pradesh State of India blamed social media like Facebook, Twitter, and YouTube for escalating tensions during communal conflict between Hindu and Muslim community in Muzzafarnagar, India in 2013 [2]. Kalamboli police on booked a man for abusing and threatening the police via a comment on a Facebook post [3]. Another example is of Riots that took place in DJ Halli, Bengaluru, India in 2020 over a provocative Facebook post against Islam that left 3 dead and many injured [4].

On January 6, 2021 US Capitol Riots took place by supporter of Donald Trump. Many extremists had posted on Social Networking sites posts such as “occupy the Capitol”, “bring revolution”, etc. before riots [5]. Hence, it is very important to detect such threats, hatred, toxicity on online discussion platforms and social networking sites. Because not doing so can cause violence, riots, prevent good debates, make internet an unsafe place and can affect people mentally.

Let us take an example of comment present in our dataset “Just shut up and stay shut. Don't edit anymore”, it can be easily identified that the phrases like “shut up”, “Don't edit anymore”, etc. are negative and thus this comment is toxic. But it besides toxic we need to go through series of steps to classify comment using machine learning classification algorithms to verify type of toxicity of obtained results.

We will use different machine learning and deep learning models on our Data set which is made available by Conventional AI in Kaggle.com. In this paper we will use Logistic Regression and Support Vector Machine Models with TF-IDF Vectorizer, Long Short-Term Memory with Glove and Word2Vec Embedding. We have used all models on given dataset and compare their scores to find which one will be best.

The rest of the paper is arranged as follows. All the recent approaches being used for text classification and Natural Language Processing have been elaborated in

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ACCEDI



Rushali Patil

Video Compression Engine using Auto Encoders

Autori Sidhant Singh Rushali Patil, Sagar Game, Guarav Kumar Singh, Niket Kumar
Data pubblicazione 2021/5/22
Conferenza 2nd International Conference for Emerging Technology (INCET) 2021

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Development of speech recognition model for specially abled individuals

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Abstract—With the advancement of artificial intelligence and the computing community, it is now possible to efficiently diagnose depression and its severity. Speech has features that are useful for the various acoustic fields and one possibility is the diagnosis of depression. Feature selection and domain knowledge are the important aspects in designing and which also makes process time and labor consuming. Deep learned features based on neural nets have an edge over handmade features in terms of performance. In this paper, we will use deep learned features along with handmade features to effectively measure the severity of depression. We firstly built deep convolutional neural networks to learn deep learned features from raw speech waveforms and spectrograms. Secondly, we extract the texture descriptors known as median robust extended local binaries MRELBP (Median Robust Extended Local Binary Patterns) from waveforms and spectrograms. We then combine the raw and spectrogram DCNN (Deep Convolutional Neural Networks) to increase the depression recognition performance.

I. INTRODUCTION

Depression and anxiety disorders are increasing day by day. A recent study after the COVID-19 pandemic shows that 1 in 5 people developing depression. Depression is a common mental disorder. difficulty thinking coherently, sadness, loss of interest in activities, changes in appetite and sleep patterns, loss of energy and increased thoughts of suicide are symptoms of depression.

Studies suggest that detection of depression at preliminary stages can aid effective treatment in a fleeting time. According to WHO (World Health Organization) depression is the fourth most mental disorder by 2020. People avoid getting to psychologists to get support for their mental disorders.

Depression is one of the difficult to diagnose disease because till now there is no such device or machine built that can accurately measure severity. The common diagnosis methodologies are assessments that rely on clinical judgements subjective patient self-report on symptom severity.

Deep learning has been successful in various fields. Both theoretical and practical knowledge suggests that deep learning

can learn a lot of information from audiovisual sources. Deep learning has various variants such as probabilistic model, single layer learning, convolutional neural networks, and Autoencoders. So, in this work how spectrogram patterns of speech can benefit from the CNN (Convolutional Neural Network) on depression severity prediction.

In summary, first to effectively capture vocal information we develop an automated framework. Second, for estimating depression severity we find complementary characteristics between deep learned features and hand-crafted features. Third deep learned features and hand-crafted features are combined to measure the severity of depression from speech. Data augmentation is proposed to address problems with small samples.

The remaining paper is organized as follows earlier work on acoustic depression analysis is discussed in section 2, proposed framework and implementation details are discussed in section 3. Dataset and experimental results are discussed in section 4. And in section 5 conclusion, future scope and challenges are discussed. .

A. Related Work

Depression recognition sub challenge of the audio-visual emotion challenge and workshop has been the platform for researchers to publish various depression recognition approaches.

AVEC2013 and AVEC2014 datasets were used to develop regression models and AVEC2016 and AVEC2017 datasets were used for classification approaches. Recorded audio is used in these datasets.

Competitive audio-based models for measuring depression severity are described in the following section.

Researchers have used the AVEC2013 depression recognition dataset to extract audio baseline features by using the open-source openEAR (open-source Emotion and Affect Recognition) toolkit's feature extraction backend openSMILE.

Online Learning Management System and Analytics using Deep Learning

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ABSTRACT

During this pandemic we have seen rise in popularity of online learning platforms. In this paper, we are going to discuss E-Learning using analytics and deep learning focusing on mainly four objectives which are login systems for teachers and students, Gamification to engage learners, AR contents to increase the involvement of learners and learning analytics to develop competency. We will use Data Mining and Business Intelligence to extract high level knowledge from the raw data of students. To predict engagement of students we have used several ML algorithms. This study provides an introduction to the technology of AR and E-Learning systems. The main focus of this paper is to use research on augmented reality and integrate it with Business Intelligence and Data Mining(DM).

Engaging student till the end of the course became really difficult for traditional E-Learning Platform. Therefore, Gamification in E-learning is good way to solve this problem.

Keywords-- Business Intelligence in Education, Classification and Regression, Decision Trees, Random Forest, E-Learning

stars etc. Gamification helps in increasing motivation of learner by giving him sense of accomplishments.

AR Implementation in the Learning Platform

Augmented Reality (AR) have many advantages:

- Doesn't require additional hardware. So that the default device is much sufficient to perform every function such as reading and scanning data from the camera device from the provided in the device.
- Provides a better learning process for learners as in Augmented reality and virtual reality operations the knowledge comes through in holographic or as a very descriptive performance of data.
- Helps in long distance practical learning. As explained in the above point and as concerning situation of covid-19 is increasing practical knowledge can be provided very easily.
- Main advantage of augmented reality and virtual reality is that it can be applied to any level of educations regardless of any thing as it is only platform dependent

LEARNING ANALYTICS

During Pandemic of COVID-19 teacher are facing an a challenge to create and have faith in a system that could let them enable a more efficient and optimized manner of teaching. The huge chunk of data can play a huge role there. The rise in popularity in Business Intelligence and Data mining is due to Information Technology, that lead to increase in growth of business and organizational database. All the data like likelihood, habits, and patterns contains valuable information which helps in improving decision making and optimizing success rate. Humans can left some important details. Hence, this can help in automation of analysis of raw data and extraction of high level information.

BI can do a lot in education systems since there are multiple sources of data (e.g., traditional databases, web pages, offline accounting) and diverse interest groups (e.g., students, teachers, administrators, or alumni) for example there are lot of question we can answer using

I. INTRODUCTION

FRAMEWORK

The main framework could be made using any of the new technologies which provide and encourages rapid development and clean design should be open-source and can be easily accessible to everyone and should be fast and rigid when deployed. The following are the main pros of the framework:

- Ridiculously fast.
- Reassuringly secure.
- Fully loaded.
- Exceedingly scalable.
- Incredibly versatile.

Gamification in the Learning Platform

Gamification is the mechanism of giving application some game like elements like giving badges,

Approaching Image Manipulation Detection using Yolov5

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Abstract—With the rise in digital media that has led to a more connected and informed society, has also come the proliferation of digital media sources. This in tandem with the wide adoption of image modification tools has created an acute problem of verifying the authenticity of images from unreliable sources. Moreover, advancements in deepfake technology can string together many images to create entirely new videos that are extremely realistic. These factors have led to the requirement of powerful tools that can determine fake images.

Prior work on image manipulation detection has made progress and treated this problem as an image segmentation problem. We propose to consider this task as an object detection problem and create a model using Yolov5 architecture. We create a synthetic manipulated image dataset using PASCAL VOC Dataset [1] to train our model. We also document the test results on the synthetic dataset as well as the standard COLUMBIA Uncompressed Image Splicing Detection Evaluation Dataset [2] to provide a benchmark for future research in this field. Our results prove that Yolov5 can be used to learn rich features [3] to perform image forensics.

Keywords—Deep Learning, Machine Learning, Image Manipulation Detection, Deepfake Detection, Yolov5

I. INTRODUCTION

Advancements in Image modifying technologies have grown at an unprecedented rate worldwide. Software can easily be found to remove blemishes in photos, add make-up and to depict a perfect paradise.

With advancement in these seemingly benign technologies, there have also been advancements on the front of creating fake images and deepfakes. It is a matter of national security to be able to detect these malignant images and videos and prevent their spread before they can cause substantial harm. Some harmful uses of image tampering can be spreading misinformation, avoiding detection with fake ids and person impersonation by creating deepfakes depicting the person. In case of deepfakes, it is sometimes very hard to distinguish between a genuine video and deepfake by eye.

Therefore, we are interested in creating automated tools that can help us detect these tampered images. These tools have the ability to perform much better than the human eye as they can analyze images at the pixel level. They are capable of analyzing the picture contrast, saturation,

brightness, anomaly detection and other such techniques. They can also be used to augment human attention by pointing to the part of the image that is likely to be manipulated.

Various tampering tools are easily available over the internet. The most common tampering operations are splicing, copy-move and removal.

1) *Splicing*: Some part of another image is pasted in the original image.

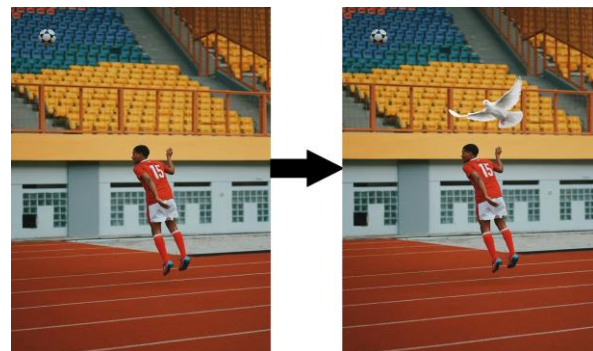


Fig. 1. Example of a Spliced Image. Here on the left is the original image, and to the right is the spliced image where a dove has been added.

2) *Copy-Move*: Some part of image is copied and moved within the image.

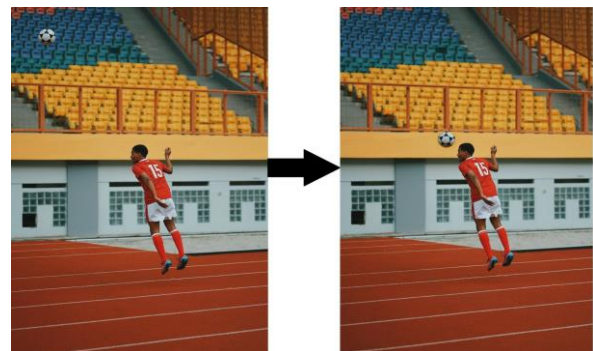


Fig. 2. Example of a Copy-Move operation. Here on the left is the original image, and to the right is the spliced image where the ball has been moved.



Black Hole Attack, its Detection and Mitigation under AODV Routing Protocol in WSN using Expert System

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Abstract: Wireless Sensor Networks (WSN) are divided into power and computer type networks that can be easily set up in remote locations with the help of mobile devices or nodes. Nodes in these Networks monitor and monitor local physical and environmental conditions and transmit this information to each other or remotely using Wireless Sensor Networks integration and integration methods. These networks play a key role in many areas such as military and civilian recruitment, health care systems and climate monitoring where manual learning is tedious or inefficient. Due to the self-configuration of wireless nerve networks or nodes related to their unprotected environment due to remote locations, various types of security attacks can occur on these networks. Black hole attacks or grey hole attacks are primarily an effective form of attack that can reduce the outflow and efficiency of the corresponding network connection which can also have a negative impact on the network. In this paper, we will understand the attacks of black holes and will review various ways to find and distinguish non-network space.

Index Terms – SDN, OpenFlow, Mininet, Blackhole attack

I. INTRODUCTION TO WSN

Wireless Sensor Network (WSN) is basically a distributed network of nodes where independent sensors and nodes are connected together in various applications. WSNs contain a number of visual channels called sensors nodes, each of which is small, lightweight and portable in construction. WSNs are twice-guided in the flow of data and their topology varies according to its corresponding system used for that. They have many important features such as: node mobility, heterogeneity, very high distribution rate, ease of use, ability to deal with node failures or attacks i.e., subsistence and more. The main function of the WSN sensor node in the WSN sensor is to detect events, perform local data processing, and send raw or used data to another places. The sink serves as the primary channel that plays a key role in the wireless environment and acts as a distributed controller. The Base station at WSN is important for the following reasons: node sensors are prone to failure so it helps to collect data better and provide a backup in case the master node fails anywhere.

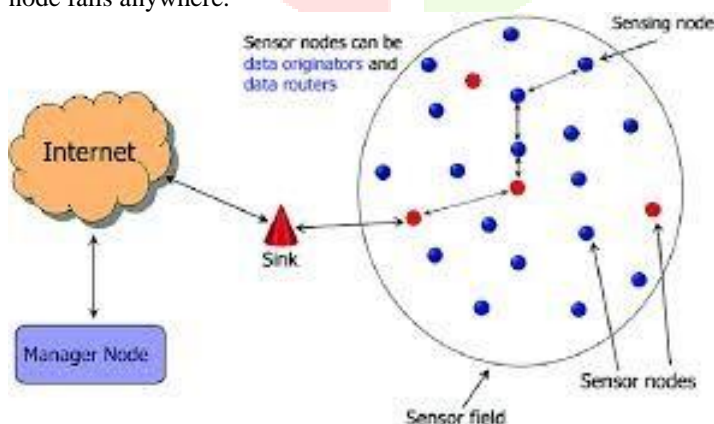


Figure 1. Design of a Standard Wireless Sensor Network

A. Features of WSN

- 1) Computer capabilities: Due to size limitations, the cost and power consumption of the battery as it is located remotely, system space and memory space for sensors and other nodes are very limited.
- 2) Battery power: Sensor signals are often inoperable and are discarded because the power is remotely located in its application.
- 3) Communication capacity: The communication range of Sensor networks is very small and continuous. And the contact distance is only tens to several hundred meters. Even the sensors can be easily affected or controlled by rain and lightning, so it is difficult to maintain the proper functioning of these networks.
- 4) Dynamic Topology: Nodes can fail due to battery fatigue or various other reasons and new nodes can be added depending on the job requirements, leading to frequent network duplication.



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ANDROID OFFLOADING COMPUTING OVER CLOUD

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Abstract: In this fastest growing world of technology, usage of mobile phones has doubled to that of PC's. But the mobile phones are restricted because of the limited resources. Limited resources include CPU, battery and processing power (memory). In this paper we are going to present a framework for offloading of those heavy tasks of mobile applications like Face Detection application on the cloud. By heavy tasks, tasks whose computation costs more in processing and time. It allows automatic offloading of heavy computation tasks to a standalone android virtual machine (cloud). Different parameters are considered here to declare whether a task has to be offloaded or not. These parameters are how much energy the task is consuming, remaining battery life of the mobile device on which application is running.

Index Terms – android, cloud, offloader

I. INTRODUCTION

Across the globe mobile phones are widely used. And with the growing usage several computation intensive applications are blooming in the market. As mobile phones are becoming smarter there is a boom in these applications but the device is still limited as we cannot increase the capacity of mobile phones beyond certain limits. So as discussed in paper [1] we are switching to Mobile Cloud Computing. In the backend we have a complete support system to overcome these difficulties of efficiently running all these applications involving heavy tasks. Google photos and Apple iOS's Siri are examples of these code offloading techniques as discussed [1]. Many frameworks have been proposed since then. But most of them are not so convenient for developers working out there. In this paper we are proposing a framework for offloading of computation intensive tasks of applications (face detection application) with the use of an already existing framework as mentioned in paper [1]. We are offloading it to a remote server. The framework does not require any changes to be made in the android device side. The static analysis is done to make the decision making more fast and light than the previous techniques. This framework will empower the application to offload its compute intensive part to the cloud via the internet after analyzing the cost of offloading over the cost of running the application on the phone itself. The analysis will be done using parameters like input size and internet connectivity. The remainder of the paper is organized as follows. In section II the existing technologies related to offloading and in section III we summarize the work done related to the idea we are working on. Section IV describes the design of the framework which we are proposing and all the architecture of our framework. The conclusion is presented in section VIII.

II. LITERATURE SURVEY

It is very vital to recognize the right technique with which we can go forward for our work.

So in this section we will be discussing some of already existing techniques about which we read in depth. There are several research works proposing different code offloading techniques for improving the application's performance and minimizing the energy usage by using resources in the cloud as done in paper [2]. They are discussed below:

1. MAUI provides method level code offloading for .NET applications. This is a realtime framework as it makes its decisions at runtime as mentioned in paper [2]. It offers energy-aware offloading from the mobile device to the remote infrastructure. The MAUI is more dependent on the hardware structure of its hosts and this leads to its drawback. Mobile devices typically have different CPU instruction architecture than desktops and servers. Processes cannot easily run on devices with different architectures when using MAUI.



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1.	Prof. (Dr.) Sunil Dhore Anshu Gupta Anjali Arya Kushwah Rohan Thakur	Comparison and Analysis of Open-Source Search Platforms	Journal For Basic Sciences		1006-8341	Volume 23, Issue 1	495-499	Jan 2023	-	6.1
2.	Prof. Sushama Shirke	Performance Analysis of Existing Storage and Processing Systems	Computer integrated Manufacturing Systems	International	1006-5911	Vol.29 No.6	196-213	12/06/2023	SCOPUS	1.288
3.	Prof. Sushama Shirke	Automated virtual Attendance Using Image Recognition Techniques (Review paper)	Computer integrated Manufacturing Systems	International	1006-5911	Vol.29 No.6	184-195	12/06/2023	SCOPUS	1.288
4.	Prof. Rushali Patil	Web Interface for Distributed Transaction System	Computer Integrated Manufacturing Systems	International	1006-5911	Vol.29 No.6	214-227	12/06/2023	SCOPUS	1.288
5.	Prof. Rushali Patil	Deep Learning Model for Abstractive Automatic Text Summarization in Hindi	Computer Integrated Manufacturing Systems	International	1006-5911	Vol.29 No.6	140-157	12/06/2023	SCOPUS	1.288
6.	Prof. Yogita Hambir	Psychological wellbeing prediction & solutions using machine Learning: A Systematic Literature Review	Journal for Basic Science		1006-8341	Vol-23 Issue-5	2125-2134	Jan 2023	-	6.1



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8.	Prof. KuldeepHule	Implementing Outcome Mapping Using Deep Learning	Journal For Basic Sciences		1006-8341	Volume 23, Issue 5	1321- 1328	Jan 2023	-	6.1
9.	Prof. KuldeepHule	UPSERVE-Restaurant Sales And Analysis System	International Research Journal of Engineering and Technology(IRJET)	International	2395-0056	Vol-10 Issue-2	297-302	Feb 2023	-	8.226
10.	Prof MangeshHajare	Image Tempering Detection using Yolov7	International Journal of Scientific Research & Engineering Development	International	2581-7175	Vol-06 Issue 3	623-628	June 2023	-	5.27

Comparison and Analysis of Open-Source Search Platforms

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Abstract - Scientific datasets are continuously growing with the amount of raw data being collected worldwide. This amount of data poses the biggest challenge to web search engines on how to retrieve them efficiently. This paper discusses how major scientific data centres are using popular open-source search platforms such as Solr to retrieve structured data stored in data sources such as relational database management systems using its import handler mechanisms. We will compare different open-source search platforms such as elasticsearch and solr. Additionally, we will also focus on how we can configure Solr to serve advanced full-text, faceted search capabilities, along with its key features, which simplify representing and delivering better performance to the scientific search interfaces. Finally, we will make a product using the above knowledge that can be used in companies to search into their databases faster and with more filters.

Index Terms – *Open-source search platforms, Elasticsearch, Solr*

1. INTRODUCTION

Scientific datasets are continuously growing with the amount of raw data being collected worldwide. This amount of data poses the biggest challenge to web search engines on how to retrieve them efficiently. And with ever increasing datasets, we need searches that are much faster than our traditional database searches. There we wanted to go and explore different open-source search platforms like solr, elastic search etc. and use them to make projects using huge datasets. By doing so, we may in turn become better data-scientists and computer engineer as whole.

2. LITERATURE SURVEY

We refer the following various research papers and blogs and after reading we prepared the comparative study as follows. Also finding during the literature review is also mentioned

Authors	Title of the Research Paper	Journal or Conference Details	Finding
Sheffi Gupta and Rinkle Rani.[2]	“A Comparative Study of Elasticsearch and CouchDB Document Oriented Databases.”	International Conference on Inventive Computation Technologies. August 2016.	CouchDB is more efficient than Elastic search during insertion, Deletion and updating operation but in selection vice versa
Mustafa Ali AKCA, Tuncay Aydoğan and Muhammed İlkuşar [3]	“An Analysis on the Comparison of the Performance and Configuration Features of Big Data Tools Solr and Elasticsearch.”	International Journal of Intelligent Systems and Applications in Engineering. December 2016.	Differences between Solr and Elastic Search with respect to their query processing indexing speed, ease and difficulty of use, configuring forms and architecture are compared and results are discussed.
Kavya Guntupally, Kyle Dumas, Wade Darnell, Michael Crow, Ranjeet Devarakonda and Prakash Giri. [4]	“Automated Indexing of Structured Scientific Metadata Using Apache Solr”.	IEEE International Conference on Big Data. December 2020.	Major scientific data centers are using popular open-source search platforms such as Solr to retrieve structures data stored in data sources such as relational database management system using its import handler mechanisms. Basic configuration of Solr is also learnt
Sahitya Tahiliani and Ayush Bansal. [5]	“Comparative Analysis on big data tools: Apache Solr Search and Hibernate Search.”	3rd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology. May 2018.	Solr search is performing better than full text searches. Fuzzy searches and wild card searches etc. while hibernate search trumped when it came to spatial searches , Range searches etc.
Rugved Deolekar and Akshay Dangare.	“Enterprise Search: A New Dimension in Information Retrieval.”	3rd International Conference for Convergence in Technology. April 2018	Comprehensive survey of the various enterprise search system in the market and their features

Table 1 - Summary of Literature Review

3. PROPOSED SYSTEM

Thorough literature review has been carried out to analyse the various open source searching platforms available in the enterprises. The proposed system focuses on doing a thorough research on open-source search platforms such as Apache Solr, Elasticsearch etc. and compare them on various factors. In it we also configure Apache Solr to serve advanced full-text, faceted search capabilities, along with its key features, which simplify representing and delivering better performance to the scientific search interfaces and make a project using a huge dataset with 5,00,000 emails to explore and utilise all features of Solr.

Performance Analysis of Existing Storage and Processing Systems (Survey Paper)

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Abstract:

Enhancing the effectiveness and scalability of present-day computer systems requires performance study and enhancement of existing storage and processing hardware, software and their connections between them in order to effectively utilize them. The performance analysis methodologies, strategies, and case studies as they pertain to storage and processing devices are covered in great detail in this survey report. The objective is to comprehend the variables affecting system performance, detect performance bottlenecks, and suggest efficient optimization techniques. An overview of the significance of performance analysis in the present-day technological landscape introduces the paper. It draws attention to how quickly data must be processed, how much data must be stored, and how effectively resources must be used. The necessity to overcome these obstacles and realize the full potential of storage and processing devices served as the impetus for this survey. In-depth analysis of the various performance measures for assessing storage and processing systems is provided in the survey report. IOPS (Input/output Operations Per Second) and other important metrics are explained in detail. The importance of workload characterization and comparison as important methods for performance analysis are also covered in the paper. Bench-marking enables systematic comparison and assessment of various devices or configurations, whereas workload characterization includes understanding the nature of the jobs and data patterns that the system processes. The performance analysis techniques are carefully analyzed. Simulators are one of these approaches; they offer a controlled and virtual environment for assessing system performance. Researchers may simulate various workloads and evaluate the behavior of storage and processing devices under different situations using simulators like MQ-Sim and Gem5. The significance of precise as well as realistic simulations is emphasized in the paper in order to produce outcomes in performance analysis that can be trusted. The study also includes case studies that highlight how performance analysis methods are applied in real-world situations. These case studies address a variety of topics, including machine learning, scientific computing, data analytics, and database management systems. The issue statement, the approach used, and the outcomes are all thoroughly examined in each case study. For system architects and developers looking to optimize storage and processing devices in their respective sectors, these insights provide invaluable lessons. In conclusion, this survey report serves as a comprehensive guide to the field of performance analysis and improvement for existing storage and processing

Automated Virtual Attendance Using Image Recognition Techniques (Review Paper)

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Abstract:

Conducting routine attendance is a very essential and obligatory task for smooth functioning of day-to-day administration. It may normally become a laborious and redundant activity, even pushing itself to inaccuracies. The rather old and traditional approach of making roll calls to determine whether the student is present or not proves itself to be a statute of many limitations since it is very strenuous to call names and maintain the records especially when the ratio of students to faculty is not good. Every organisation has its way of ensuring efficient measures for the attendance of present students to confirm highest accuracy and utmost precision. Some organisations use a document-oriented approach whereas others have implemented many digital and virtual methods such as biometric fingerprinting techniques, face identification techniques, card swapping techniques, etc.

However, these methods prove to be a hindrance as it subjects the attendees to wait in a time-consuming and tardy queue. There are multiple situations of adversity which may arise such as, consider when the student fails to bring his identity card, then he will not be able to mark his attendance, even though he is physically present. In this model, we have proposed a framework which aims at automating the process of conducting attendance of students.

In this paper we will be using an SVM classifier for taking attendance of a large audience and will be evaluating its performance.

Keywords: Face Recognition, Face Detection, Image Capture, KNN, SVM, Haar.

DOI: [10.24297/j.cims.2023.6.12](https://doi.org/10.24297/j.cims.2023.6.12)

1. Introduction

The proposed methodology is designed to apply the features of current face detection algorithms[12]. As the time is passing and research is going on there has been a lot of changes in face recognition algorithms and the other steps that are involved are face detection, feature extraction[7]. Firstly, we need to capture the image for recognition and for that we will use multiple cameras to cover the entire area[11]. The input for the system will be the images that were captured by the camera that we installed[18]. Due to the movement of the students or

Web Interface for Distributed Transaction System

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Abstract:

This research delves deep into the saga pattern, which proves to be an effective approach for managing local sequential transactions across distributed microservices. However, the problem of isolation lacking in the saga pattern can result in incorrect commits on databases due to unfinished transactions. To address this issue and further enhance existing solutions like transaction management protocols (e.g., two-phase commit), this study introduces innovative enhancements, namely quota cache and commit-sync service. These enhancements enable specific operations between database layers, effectively preventing invalid or incomplete commitments on the main databases. An experimental test was conducted to evaluate and check the effectiveness and performance of a microservices-based e-commerce system, revealing that this novel approach successfully handled both regular scenarios and exceptions, addressing isolation concerns. In the event of service failures, compensation transactions were executed to undo adjustments made solely within the caching layer. After ensuring all processes were correctly completed, the alterations were committed back into the database. Although promising results were observed, further investigation is required for optimization before widespread adoption as an industry-standard approach.

Keywords: microservices, distributed transaction, two-phase commit, SAGA.

DOI: [10.24297/j.cims.2023.14](https://doi.org/10.24297/j.cims.2023.14)

1. Introduction

When building a website using a microservice architecture, it is crucial to implement distributed transaction patterns to ensure smooth and efficient transaction handling across the system[1]. However, migrating an application from a monolith to a microservice architecture is an intricate undertaking that demands substantial time, effort, and careful consideration. It is a multifaceted process that is prone to errors, making it imperative to employ appropriate tools that facilitate and guide the decomposition process [2][3]. And hence to build a robust E-commerce website, leveraging Microservices developed with NodeJS in the backend is highly recommended REST APIs will facilitate seamless connection between these Microservices. Proper event handling, including buying, completion, and failure scenarios, requires the utilization of message queue middleware. While effective transaction management across multiple services necessitates the use of Orchestration approach of SAGA pattern [4][5]. These message queues, coupled with a

Deep Learning Model for Abstractive Automatic Text Summarization in Hindi

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Abstract:

Text summarization is a process in which long texts are compressed and condensed into smaller summaries. Only the crux ideas of the document are fetched from the main document and included in the final piece, which is cohesive. As the amount of data is soaring exponentially. The need for a tool that summarizes text specifically for Indian languages is also pertinent. Using a variety of techniques, we strive to construct both extractive and abstractive approaches for text summarization of Hindi text in this research. The abstractive method is based on seq-to-seq networks and the attention model. A summary of all Indian regional languages cannot be generalized by a single approach. This is so that each language may be treated separately because every language has unique linguistic characteristics.

Keywords: Recurrent Neural Network, long short-Term Memory, Term Frequency, Inverse Document Frequency, Word Embedding, Word Vector, Continuous Bag of words.

DOI: [10.24297/j.cims.2023.6.9](https://doi.org/10.24297/j.cims.2023.6.9)

1. Introduction

Overview

Text summarising methods may be roughly divided into two parts, extractive summarization and abstractive summarization, based on the methodologies utilised. The technique of text summarization by extractive method includes words and phrases into the newly formed summary after selecting them from the source text or documents. The text's key ideas serve as the foundation for the summary. To find the necessary phrases and sentences, extractive techniques use statistical factors including position of sentence, numerical data, grammatical subjects like nouns, topic token frequency, normalized sentence length, etc.

2. Objectives

- To design a method for summarizing Hindi text that can summarize a single document using certain Extractive and Abstractive techniques which include seq-2-seq [10] model, Page Ranking Algorithm.

Psychological wellbeing prediction and solutions using machine learning: A Systematic Literature Review

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ABSTRACT: *These days, mental health is a big problem. It is crucial to find any problems and fix them before they have a significant effect. We strive to do this with the Mental Health Tracker App. Because users may be coping with mental illness, we will need to design the app to be extremely friendly and inviting.*

The goal of our project is the development of a simple piece of machine learning software that tracks its users' progress while suggesting actions to help them improve their mental health. The user is posed with a number of questions, the application analyses their answers, proposes tasks, monitors their mental health, and displays the results on a dashboard. Machine learning was employed throughout this procedure.

KEYWORDS: Random Forest, Naïve Bayes, Support Vector Machine, Recurrent Neural Network, Sentiment Analysis, Machine Learning Algorithms, Convolutional Neural Network, Logistic Regression, Linear Regression, Mental Health, Deep Learning, Binary Classification.

INTRODUCTION

Mental wellbeing of an individual is overall perspective of that individual and additionally gives a sign of a person's general nature. Dysfunctional behaviour is a result of irregular characteristics in cerebrum science. The assessment of mental wellbeing is incredibly basic to comprehend and recommend treatments for patients with a digressed mental way of behaving. Most people are inclined to pressure while an are impacted by discouragement because of different reasons.

A managerial board of World Wellbeing Association (WHO)surveyed in 2011 that, by 2030, wretchedness will be the boss wellspring of overall infection trouble.

The mental health of a person may be used to gauge both that person's mental state and general character. Mental illness is brought on by chemical imbalances in the brain. Examining mental health is vitally necessary in order to understand and treat people with aberrant mental

SECURE CERTIFICATE GENERATION USING BLOCKCHAIN TECHNOLOGY

GUIDE:- MS YOGITA T HAMBIR

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Army Institute of Technology, Pune

Abstract

This paper proposes a blockchain-based approach for secure certifications. The system makes use of the immutability and transparency of blockchain to provide a reliable and tamper-proof way to record and verify certifications. A digital record of each certification is established as part of the system on the blockchain and linked to the certifying authority and the certification recipient. The blockchain-based system ensures that the certification records are safe and cannot be altered, making it a reliable and secure way to verify the validity of certifications. A further benefit of the system's use of smart contracts is that certifications may now be automatically checked, eliminating the need for human verification by businesses.

Introduction

Blockchain technology has revolutionized the way we think about security and trust in digital transactions. It's a distributed ledger that ensures that the transactions are secure, immutable, and tamper-proof. In recent years, blockchain technology has been increasingly used for certification and verification purposes, as it provides a secure and transparent way of storing and sharing information.

Here are some examples of Secure Certificate Generation that can be implemented using blockchain technology:

1. **Digital Identity Certification:** Blockchain technology can be used to verify and authenticate a person's identity. The identity can be stored on the blockchain and accessed by authorized parties using secure encryption keys. This can be useful for government identification programs, online authentication, and other use cases where secure identity verification is required.
2. **Academic Credentials Certification:** Blockchain technology can be used to store and verify academic credentials, such as degrees, diplomas, and certificates. This can help prevent fraud and provide a secure and transparent way for employers to verify the credentials of potential employees.
3. **Professional Certifications Certification:** Blockchain technology can be used to store and verify professional certifications, such as licenses, certifications, and accreditations. This can help prevent fraud and provide a secure and transparent way for employers to verify the credentials of potential employees.
4. **Product Certification:** Blockchain technology can be used to verify the authenticity and certification of products, such as organic food, fair trade products, and other certifications. This can help prevent fraud and provide a secure and transparent way for consumers to verify the authenticity of products they purchase.

Overall, blockchain technology can provide a secure and transparent way of storing and sharing

Implementing Outcome Mapping using Deep Learning

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Abstract: *With the rapid advancements in technology, our lives have been greatly influenced, including the evaluation of education. In India, the majority of colleges follow the AICTE's (All India Council for Technical Education) OBE (Outcome Based Education) guidelines to assess the overall performance of students across various subjects. The evaluation process involves a comprehensive analysis of Course Outcomes, Program Outcomes, and Program Specific Outcomes, with mapping of these features to each other and assignments to evaluate the extent of providing value-based education. However, this process is usually time-consuming and labor-intensive since professors are responsible for manually deriving insights from their mappings. To address this issue, we suggest developing software that utilizes Machine Learning to automatically map these outcomes and automate the evaluation process, ultimately saving time and reducing the possibility of human errors.*

Keywords: Outcome-Based-Education, Context Matching, Outcome Mapping, Machine Learning, Evaluation

1. INTRODUCTION

AICTE and the global engineering industry have widely adopted Outcome Based Education (OBE). This approach emphasizes the outcomes or results of the learning process, rather than just the inputs such as lectures and textbooks. OBE is aimed at providing students with the knowledge, skills, and values they need to succeed in their personal and professional lives. In India, OBE has become increasingly popular to align education with the rapidly changing global economy.

In India, OBE is implemented in different ways, depending on the institution and level of education. At the higher education level, OBE often involves defining clear learning outcomes for each course or program and measuring student progress towards those outcomes using assessments such as exams, projects, and presentations. The goal is to assess students' ability to apply what they have learned to real-world situations.

OBE in India also aims to provide students with a well-rounded education that prepares them for the challenges and opportunities of the 21st century. This includes traditional academic subjects as well as critical thinking, problem-solving, communication skills, and values such as responsibility, integrity, and global citizenship.

In AICTE's outcome-based education, mapping outcomes means aligning program objectives, course outcomes, and program outcomes to evaluate how well the program's educational goals have been achieved. This process breaks down program objectives into specific course outcomes, which are then mapped to program outcomes. Course outcomes describe what students should be able to do after completing a particular course, while program outcomes describe what they should achieve after finishing the entire program.

Mapping outcomes is critical in AICTE OBE, as it enables institutions to evaluate program effectiveness and make improvements where necessary. By analyzing the extent to which course and program outcomes are being met, institutions can identify areas that

UPSERVE – Restaurant Sales and Analysis System

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Abstract - In the current world of technology, we can improve everything with help of technology same is the case with restaurant systems. In restaurant we need waiter to place order, customers are not sure about what to order, restaurants face difficulties on analyzing their sales, customers many times decides what to order only to know that it is not available etc. all these problems can be solved using technology by providing both customer and restaurant a software solution/platform that will provide customer with dynamic menu, recommendation system and admin with analysis of their sales. Therefore, we propose a web application where we are offering the customer a better management service and admin an easy-to-use environment where he/she can easily operate based on the reports generated by sales analysis. This will also boost the sales of the restaurant and it will be one of the key strategies to grow in the food business.

Key Words: Restaurant Management; Dynamic Menu; Food Recommendation; Data Retrieving; Tasks Allocate; Business Intelligence

1. INTRODUCTION

The project revolves around how to improve the restaurant systems based on the current scenario. In restaurant we need a waiter to place order, customers are not sure about what to order, restaurants face difficulties on analyzing their sales, customers many times decides what to order only to know that it is not available etc. Therefore, the web application we are proposing can be mere strategy to boost the restaurant business since we are providing the customer a better UI using web development technologies and, recommendation system based on our previous sales and admin a graphical representation of sales using data analysis where he can operate on real time menu provided by the technology.

Whereas A restaurant sales and analysis system is a software tool that helps restaurants manage and analyze various aspects of their business, including sales data, inventory, menu planning, customer information, and staff management. This type of system can provide insights into restaurant performance and help owners make data-driven decisions to improve operations, increase profits, and provide a better customer experience. Some common features of a restaurant sales and analysis system include sales reporting, inventory management, customer relationship management, and Online ordering and delivery management, etc.

1.1 Features:

Here are some additional features that a restaurant sales and analysis system may offer:

1. **Sales tracking and reporting:** This feature helps restaurants keep track of their daily, weekly, and monthly sales, including revenue, sales by menu item, and sales by payment method.
2. **Inventory management:** This feature allows restaurants to monitor food and beverage inventory levels, set reorder points, and track food waste.
3. **Customer relationship management (CRM):** This feature helps restaurants track customer information, including contact information, purchase history, and preferences, and provides insights into customer behavior and purchasing patterns.
4. **Menu planning and optimization:** This feature allows restaurants to optimize their menu offerings based on sales data, customer feedback, and trends in the industry.
5. **Marketing and promotions:** This feature help restaurants create and manage marketing campaigns, including email, SMS, and push notifications, and track the results of those campaigns.
6. **Online ordering and delivery management:** This feature allows restaurants to manage online orders, including food delivery and takeout orders, and track delivery status.

These are just a few examples of the types of features that a restaurant sales and analysis system may offer.

1.2 Objectives

Our objective is

1. To provide a clean and easy to search menu system with accurate details of dishes and what it involves.
2. Real Time Menu allows to show if the following dish is available or not based on resources availability.
3. Highlights in a graphical representation the timely sales of dishes help in deciding factor of whether to keep selling or eliminate the dish and much more.

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Sr. No.	Name of Conference/Journal	Title of the Paper	Authors	ISSN/ISBN	Volume, Issue, Page Numbers	Year
1	IEEE	Ganga Water Quality Monitoring System IoT Based	Prof. Ashwini Sapkal Manish Kumar Vighnesh Tiwari	978-1-5386-7279-2	-	2019
2	International Conference on Intelligent Computing and Control Systems (ICICCS 2019)	Text Extraction from videos using MapReduce	Chanchal Kumar Roshan Rajeet Kaushal Sha Alam Shashank Rai Prof. Yuvraj Gholap	978-1-5386-8113-8	-	2019

Ganga Water Quality Monitoring System IoT Based

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Abstract—Water an important resource gifted to us in many forms. One such is holy river Ganges. Ganges water plays a major role in Indian mythology. But due to setting up of different industries in and around Ganges basin, its water quality is deteriorating day by day. And civic authorities are not able to have the real time pollutant status of water and cannot carry out a necessary raid on industries and treatment before it affects aquatic as well as human life. This paper consists of a wireless river water quality monitoring method which can be useful for monitoring Ganges water. Our proposed method is a system of interconnected cloud storage, raspberry pi, temperature sensor and a website to show real time status. Sudden increase and decrease in temperature plays a major role in affecting water resource which happens when waste is executed from an industry which consist a lot of harmful chemicals, when the water molecules come in contact of these chemicals they show a sudden rise in temperature and drastic change in pH level we can sense these changes through the sensors connected through Raspberry Pi and push them on the cloud. This paper also consists of an approach to alarm civic authorities if the concentration of pollutants increases. By this approach not only civic authority, but common man will have a pollutant status around them.

Keywords—*raspberry pi; IoT; water quality monitoring; river Ganges*

I. INTRODUCTION

India is a country which has more than 15 rivers flowing through it and catering for the needs of urban as well as rural India. Up to 60% of the human body is water [5]. One of such river is the holy river Ganga. Ganga is one of the longest river in India. Its water is used in industries, agricultural fields, for water pumps and household uses. But due to lack of responsibilities, industries are discharging their waste and untreated products directly into the river. Also Indian government lacks in real-time monitoring of river water. Traditional methods involve manual collection of river water sample from different locations and taken to the laboratory to check its quality. Traditional methods of monitoring water quality generally lacks in accuracy and real-time status also few parameters have different sensor values when measured at different time [6].

There are many factors on which water quality can be monitored like turbidity, pH, Temperature and presence of heavy metal ions, concentration of different ions, dissolved oxygen and nutrients

In this paper, we will mainly focus on sudden changes/increase in water temperature that is harmful to aquatic as well as human life. Sensor module, explained later, is changed when different parameter is to be monitored, rest of system architecture remains same. Due to the sudden change in temperature cold blooded animals like reptiles, amphibians and fishes have problem in survival and they may die. Temperature influences enzymatic reaction, different enzymatic reactions take place at a comparatively higher temperature. It affects digestion, respiration and general performance and behavior of aquatic life. Increased water temperature is an important factor of consideration if toxic substance is there in the water. Many chemical substances like cyanides, phenol and xylene exhibit increased toxicity at high temperature. On the basis of LE CHATELIER'S PRINCIPLE, temperature and dissolved gases are inversely proportional thus increase in temp will reduce dissolved oxygen levels in water. The higher the temperature lower will be amount of oxygen in water. Also high temperature favors growth of fungus. This paper consists of a cost efficient system for real time it based water quality monitoring system. In our proposed design Raspberry pi-3 acts as a base controller, which read the sensor data and transmit it to the cloud.

The rest of the paper is organized as follows. Section II consists of overview of related work in this field. Proposed system architecture is explained in detail in section III along with alarming module. Section IV consists of deployment strategy. Experiment results and setup are shown in section V. The paper is concluded in section VI with future scope.

I. RELATED WORK

For real time monitoring of water a novel approach to design a pH sensor node is explained in [1]. In this paper data obtained from pH sensors of sensing node is in the form of voltage and the voltage is comparatively low (approx. 50mV). A voltage amplifier is used to amplify the sensed voltage and level shifting using a full adder circuit for negative voltage results. The amplified data acts as input to processing unit and the results are transmitted via wireless with the help of ZigBee. Use of PIC micro controller PIC16F877 in processing is taken.

Another water quality monitoring system is explained in [2].

Text Extraction from videos using MapReduce

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Abstract—Due to recent outbursts in the number of point and shoot devices. The data generated in the form of raw video has also increased exponentially. On YouTube alone, 300 hours of video alone is added every minute. This brings up the need of coming up with a long term solutions to tackle such behemoth tasks. The solution should be flexible, robust with ability to scale up and down dynamically as and when required. Needless to say, such system have a high cost and it is also of utmost importance to consider the cost factor and feasibility. Hadoop is one such framework which met all our requirements. It provides facility to distribute a big and complex task to low as well as high end computers to achieve a common goal. Hadoop is a highly scalable storage platform, because it can store and distribute very large data sets across hundreds of inexpensive servers that operate in parallel. Another advantage of using a Hadoop cluster is that it is fault tolerance as copies of the data are made and can be used in case of failure of a node. etc

Index Terms—Text extraction, Hadoop, Distributed Computing, Image Processing

I. INTRODUCTION

With the advent of modern technology there has been a dramatic increase in the amount of video data generated. Because of this the need for a system arises that is both scalable and robust but unfortunately no current application stands up to this task. Hadoop is an open source framework designed for robust and scalable distributed computing and storage. Hadoop is composed of different components for storage as well as processing. For storage, Hadoop provides HDFS (Hadoop Distributed File System) which is designed to run

on commonly found commodity hardware; it is highly fault-tolerant and is designed to be deployed on low-cost computers. It can various applications ranging from identifying vehicles from a huge log traffic footage to processing billboards on the road, traffic signs on streets and roads etc. [12] HDFS works on a master/slave architecture. The master component is the Namenode which serves as the central manager for the file system namespace and regulates access to files by clients. Operations like opening, closing and renaming of files are performed by the Namenode. The multiple Datanodes serve as the slave nodes. A file is split into blocks and these blocks are stored in Datanodes. In this paper we have not only discussed why Hadoop is a suitable match for the need of text extraction from videos but also the problems that could arise in such a system and the solution thereof. HIPI (Hadoop Image Processing Interface) is a Hadoop MapReduce library designed to provide efficient image processing in the Hadoop distributed computation system. HIPI [8] provides a solution for storing the large number of images on HDFS while also providing integration with OpenCV [10].

After the video decomposition phase we are left with a large number of files with small size [7]. Typically a small file is described as one with size significantly smaller than HDFS block size. This results in two major problems:

1) *High access cost*: The Mapper function usually takes a block of input. When the file size is small very little work gets done in each mapper task and the number of mapper

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1	International Conference on Advance Computing and Intelligent	Survey on Algorithmic Trading Using Sentiment Analysis	Rupali Bagate, Aparna Joshi, Abhilash Trivedi, Anand Pandey, Deepshikha Tripathi	987-981-19-2225-1_22	-	2022
2	International Conference on Advance Computing and Intelligent	Survey on Accent Correction and Region Prediction	Rupali Bagate, Aparna Joshi, Narendra Kumar Yadav, Aman Singh, Gaurav Singh Dik, and Naincy Rathore	987-981-19-2225-1_33	-	2022

Survey on Algorithmic Trading Using Sentiment Analysis



Rupali Bagate, Aparna Joshi, Abhilash Trivedi, Anand Pandey,
and Deepshikha Tripathi

Abstract In recent years as the computation power and availability of the data has increased exponentially, there has been significant increase in study of human sentiment in various fields. This paper examines the use of sentiment analysis in algorithmic trading. Macroeconomic variables such as GDP, Internet consumption and various other socio-economic factors are also taken into consideration in this paper. The main aim of this paper is to determine all factors and technical indicators that would give us a proper analysis. Human sentiment affects human behaviour adversely, and thus, market is also not acquitted from its effect. This survey presents current advances in natural language processing (NLP) and prerogative positions of algorithms in market.

Keywords Algorithmic trading • Sentiment analysis • Market indicator • Machine learning

1 Introduction

Sentiment analysis is the study of reverential effect of human emotions in various domains. In sentiment analysis, human emotions are quantified to create colloquial values for evaluation which then are used in concordance with other techniques and algorithm to compute their effect in respective domains [1].

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Survey on Accent Correction and Region Prediction



Rupali Bagate, Aparna Joshi, Narendra Kumar Yadav, Aman Singh, Gaurav Singh Dhek, and Naincy Rathore

Abstract Background: In recent years, speech recognition technology has become a dominant part of our everyday lives, and as most of the future technology being developed can easily be integrated with the help of speech recognition. To make a digital future, technological advancement of everyone is necessary, and to make this technological advancement not so technical, speech recognition serves its role. Although speech recognition has made significant advances at certain languages, what has been achieved is a drop and what is left is an ocean. This technology has failed miserably in recognizing different accents of a single language or a voice disorder, and this has led to various questions on the authenticity of progress of the process. This paper documents the drawbacks of this technology and the areas where its immediate progress is possible. It talks about the limitations of various existing and popular and under radar ASR technologies with insights of their flaws which need to be considered immediately to avoid various social dilemmas and insecurities.

Keywords Accent • Region prediction • MFCC • Naive Bayes classifier • Stemming and lemmatisation

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Sr. No.	Name of Conference/Journal	Title of the Paper	Authors	ISSN/ISBN	Volume, Issue, Page Numbers	Year
1	IEEE sponsored 2021 International Conference on Innovative Computing, Intelligent Communication and Electrical System (ICES 2021)	Keyword spotting in historical document collections without segmentation using the Siamese Network	Ashwini Sapkal, Chhavi, Shashank Sharma, Pradeep Kumar Sachin Yadav	-	-	2021
2	6th International Conference on Advanced Computing and Intelligent Engineering [ICACIE 2021]	Survey on Accent Correction and Region Prediction	Rupali Bagate Aparna Joshi Narendra Kumar Yadav Aman Singh Gaurav Singh Dhek Naincy Rathore	-	-	2022
3	National Conference on Communication, Computational Intelligence and Learning (NCCCIL 2022)	Transfer learning approach for multi-disease classification using chest X-ray images	Dr Sangeeta Jadhav Vishal Savade, Wagh Shubham Sharad Sunit Kumar Jena Vivek Kumar Ray5	-	-	2022
4	National Conference on Communication, Computational Intelligence and Learning (NCCCIL 2022)	Smart attendance system	Gaurav Kumar Singh Grandhi Abhisar Vaishali Ingale Prashant Kumar Singh Jatin Kumar	-	-	2022
5	National Conference on Communication, Computational Intelligence and Learning (NCCCIL 2022)	Augmented reality-based application for interactive shopping experience	Prof. Aparna Joshi Prof. Rupali Bagate Khanra Kunal Ajay Bohra Roshan Rai Deepak Tiwari	-	-	2022

Keyword spotting in historical document collections without segmentation using the Siamese Network

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Abstract :- Keyword spotting is the method of estimating whether the text query occurs in the document or not. The query- by-example model is used in this paper to present an efficient segmentation-free keyword spotting approach that can be applied in historical document collections. For image de-noising and binarization, we use an autoencoder network in our approach. We are using a patch-based system to create patches for the binarized image, followed by a Siamese network. To determine the degree of similarity between two input word images, a Siamese network employs two identical convolutional networks. Once trained, the network can detect not only words from different writing styles and contexts, but also words that are not in the training set. The method proposed is evaluated on the Bengali Handwritten dataset..

Index Terms-Historical documents; Keyword spotting; Segmentation-free; Autoencoder; Siamese Convolutional net- work; Deep learning.

I. INTRODUCTION

Libraries and archives worldwide are digitizing their collections so as to succeed in a bigger audience in today's world. Making handwritten texts searchable and browseable will be extremely beneficial to both researchers and also the general public. Manual searching is often very hectic. Its like looking for a needle in a haystack. As a result, an Efficient search in digital records may be a must for retrieving information. Due to the deterioration of historical documents and variations in styles, using OCR (Optical Character Recognition) is inefficient for manuscripts. Word spotting is an effective method for gaining access to the contents of historical documents.

In this context, this paper proposes a de-noising method and binarization of the document image using an autoencoder network, which is a network of convolution and deconvolution layers. Once the image is binarized, patches are created for the images and using a query-by-example paradigm, we search for our query word in these patches using a convolutional siamese network.

The Siamese network will compare two input images and rate their similarity. The network will generalize to predict words from a vocabulary after being conditioned to learn image representations in a supervised manner. The results of the Bengali handwritten dataset are highly comparable to the related work.

II. RELATED WORK

Retrieval based on recognition may be done at the word or character stage. OCR stands for optical character recognition and has no restrictions on vocabulary. Character recognition in historical documents has been successful even with a limited vocabulary. Methods based on recognition frequently rely on neural network [1], and Markov model [2] learning models. Manmatha et al. coined the term "word spotting" [3] to describe OCR-free retrieval. It determines if two given words are identical to recognize a word. It accomplishes this by segmenting the words from the document images and then using pairwise distance calculations to match each word against all of the other word images. This matching can be done pixel by pixel or feature by feature [4].

Pixel by pixel matching is a technique for pixel-by-pixel comparison of two images using Euclidean distance mapping [4], Mean Squared Error(SSD) [4] or the XORing method [4]. Feature-based matching deals with extracting image features and comparing these features using Dynamic Time Wrapping, Scott and Longuet-Higgins (SLH) algorithm [5] or corner feature correspondence algorithm (CORR) [5]. Feature-based matching outperforms pixels-by-pixel matching in general, and Dynamic Time Wrapping outperforms all of these algorithms in particular.

Image features in word spotting applications are classified into two types: global and local features.

The height, width, aspect ratio, moments of black pixel distribution, and number of foreground pixels are all global features. [6]

6th International Conference on Advanced Computing and Intelligent Engineering **ICACIE 2021**



Certificate of Participation

This certificate is awarded to

Aman Singh

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6 Transfer learning approach for multi-disease classification using chest X-ray images

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Abstract

A large portion of deaths in the world is caused by thorax diseases. They are caused by fungi, bacteria and viruses. Radiologists find it hard to identify the disease just by seeing the X-ray images as a patient may have multiple diseases which may be overlapped over other diseases. The main aim of this study is to help radiologists to detect the disease with the probability of other diseases. We proposed the architecture of a deep learning (DL) model which is used for identifying the thorax diseases using the transfer learning model which would reduce the vast time and model complexity. National Institute of Health Chest X-ray dataset is used for image pre-processing which contains more than 1 lakh images of around 30,000 unique patients with 14 different types of thorax diseases, downsampled to 256*256*3 which are further augmented and fed to different neural network models pre-trained on ImageNet dataset. We prepared three different models DenseNet121, MobileNet, and InceptionV3, and we analysed the performance. We used an ensemble model – voting classifier, for combining the output from all pre-trained models. A voting classifier model named soft voting is used which gets trained on a group of numerous models, here three models. The outputs of all neural networks which are pre-trained are summed into a prediction vector by taking the mean of probabilities of all the three models and it then outputs the majority of three diseases probabilities into the final prediction vector associated with that X-ray image.

Keywords: ImageNet, DenseNet121, InceptionV2, MobileNet, ensemble model, voting classifier.

Introduction

In a year 450 million people get infected by respiratory diseases out of which 4 million people die from the disease [1]. There are quite 50 million folks who struggle with respiratory organ diseases. The respiratory organ which is vital viscous is most

7 Smart attendance system

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Abstract

Recent advancements in the performance of automatic face recognition (AFR) systems have made them widely applicable for a variety of uses, most of which are done in real-time. Face recognition in real-time for smart attendance is thus a practical application. Managing employees on a daily basis necessitates the use of a system like this. Real-time image background subtraction is still a challenge, making this operation difficult. Recognition of a human face in real time. Both basic and fast methods are used, and an analysis method known as principal component analysis (PCA) is a very useful thing that helps us with face matching while maintaining accuracy. The employee's face is used to track their attendance. Employee attendance is automatically tracked by the technology. Manual data entry into logbooks quickly becomes time-consuming and difficult. As a result, we were able to create a useful module that includes face recognition and is used to track employee attendance. There is a module that includes the employee's face. You're finished once you've completed the enrolment form. They will be photographed and stored in the database. We need some data in our system as part of the application procedure because this is a one-time event. Every worker will have a roll number, which will be their own employee id. When compared to automatic performance, manual performance was found to be inferior. The time an employee spends at work is recorded after they have been identified. There are a lot more choices with this product. With this approach, correct results are provided in a user interactive manner, as opposed to traditional systems for managing attendance and leave.

Keywords: Haar cascade, pre-processing, feature extraction.

Introduction

In all institutions, tracking employee attendance is critical for evaluating staff performance. Thus, each university takes a unique strategy. Others take attendance automatically utilising biometric technologies, while others take attendance manually using outmoded paper or file-based methods. On the other hand, employees entering the office through these routes will have to wait an extended period of time to form a line. While several biometric authentication methods are available, the most critical

14 Augmented reality-based application for interactive shopping experience

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Abstract

Advancements in new technologies such as augmented reality (AR) and virtual reality (VR), it has provided us with a new world to explore and make most applications out of it. These technologies are still developing, and many researchers are trying to develop new applications every day. Encouraged by the recent advances in augmented reality, we propose a real-world application of augmented reality which provides an interactive in-store shopping experience. The mobile application will let users see all the essential product details in his/her real-world environment in a very interactive and effective way using graphs, pie charts, 3D models. Our idea is to utilise an already present efficient convolution neural network such as AlexNet for recognising the product from the image taken and then getting all the essential product details that are stored in the database, and then project these details out in user's real-world environment.

Keywords: augmented reality, applications, in-store grocery shopping, fast image retrieval.

Introduction

Definition

Augmented reality (AR) is a way of 'Augmenting' elements of a real-world environment with the use of computer and sensor's generated information onto a user's device. In simpler terms, AR can be regarded as a new developing technology, which puts the user's experience to a whole new level of interactivity by putting virtual objects in real-world [1].

Augmented reality adds compute-generated perceptual information in such a way that users see them as a natural, non-artificial object.

Figure 14.1 shows reality virtuality continuum which demonstrates the presence of AR between real world and a complete virtual world [2].