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A New Type of Solar Energy Measurement System using PIC Controller

Anjali Kumari¹, Debabjana Das², Debarati Roy³, Mahuya Maity⁴, Plaban Mal⁵, Koushik Pal⁶, Samiran Chatterjee⁷
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Abstract: As we know solar energy is an very important aspect in respect to the present environmental situation. It is necessary to change our energy resources from non renewable to renewable sources. This project is designed to measure energy of solar panels. The current and voltage are measured so that we can monitor these parameters and get to know where to use them and what updations should be made to increase there productivity, efficiency with low maintenance. Here, the measurements are done by the help of different sensors and PIC microcontroller.

Keywords: Solar Energy, Renewable sources, PIC microcontroller

I. INTRODUCTION

In this project we will discuss about the solar energy measurement using pic microcontroller. As we know the solar energy market place is one of the most quickly growing renewable energy advertise in the whole world as now a days it is very important to use renewable energy to preserve the world from destruction. It is a major goal of todays economies to switch to sustainable resources so that the technology can grow in its pace without harming the planet. Due to which it is necessary to choose the correct place where the solar plants can be installed so that we can harvest the maximum of the energy and put it to good use. The more we will use solar energy the less our environment will be harmed. Whether we need sites pattern of solar power generation or monitoring act of accessible solar installations or superior solar monitoring .The precise measurement of voltage and current are very crucial as they can help the designing and making more developed product which will require less maintenance and will be much more efficient. In this project we are using Pic microcontroller specifically pic16f877a. Which is a very high performance microcontroller. And current and voltage sensors to take the measurements.[1]

II. OBJECTIVE

The main purpose of this solar energy measurement system project is to design a solar energy measurement system for determining the solar cell parameters like current, voltage, temperature and also light intensity through multiple sensors
The solar energy marketplace is one of the most quickly growing renewable energy advertise in the United States. Currently, we have seen an important enhancement in requirements for remote monitoring and equipment control for different applications of solar energy. Whether you are assessed a sites potential for solar power generation, monitoring act of accessible solar installations, or superior solar monitoring, consistent and precise measurements are crucial. They help in decision making, development of the product, maintenance of the system and in many other ways. General meteorological measurements with wind direction, wind speed, relative humidity, barometric pressure and rainfall, all have theyre applied in solar applications. Of course, the solar energy measurements are particularly significant and sensors are accessible for measuring all features of solar radiation[2][3].

III. METHODOLOGY

In the block diagram we can see voltage sensor and current sensor are used. These devices mainly measure the voltage and current flowing to load from solar panels as the solar panels are power sources. Liquid crystal is also used for displaying the value of current and voltage and the power of solar panels. Here 5 volt DC power is used. It provides operating voltages to microcontroller and liquid crystal display. In circuit diagram we can see that a voltage driver is used. It drives voltage lower than 5 volt as microcontroller cannot read voltage more than 5 volt. So voltage driver is used to lower voltage more than 5 volt. Then a polar and non polar capacitors are used. These remove harmonics and provide constant voltage to ADC pin of microcontroller. Here polar capacitor is used to avoid voltage fluctuations and non polar capacitor is used here to remove harmonics. LM35 temperature sensor can be used too. It is calibrated in Celsius over Kelvin as in Kelvin calibrated sensor there is a requirement. It subtracts a constant voltage from its output. With the single power supply LM35 temperature sensor can also be used. -55 to +150 is the temperature range in between which the device can be used [4][5]



Low power High Speed Design of 4BIT Ripple Carry adder using Domino logic

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Abstract

Accurate domino logic circuit keeper control can enlarge the performance, speed. Although, keeper feedback circuit is correlated with the positive feedback gain excessively delay variability is expanded. The main aim is to decrease the delay and reduce the loop gain effect, here domino clock delayed dual keeper (CDDK) circuit is conferred .During the commencing estimation phase, disabled the two keeper devices of the keeper circuit in CDDK domino structure. By decreasing the dispute current concurrently the circuit speed of operation is intensified. The carried out various metrics and outcomes are analyzed for the circuit simulations .Moreover , the simulations are accomplished on a 4-bit ripple adder using structure of CDDK demonstrate decreased characteristics of delay variability due to the domino CDDK structure smaller loop gain in opposition of domino circuit The demonstration of intensified by turn down variance current. Through the counterpart of domino logic circuits in opposition of comparison outcomes are validated. By using this tanner power consumption is around 8 micro watts. The analyzing of circuits is carried out using standard CMOS tanner tool using library of 45nm technology.

Keywords— Domino logic, delay, domino ripple adder low power consumption.

I. INTRODUCTION

Very large scale integration technology [1] is a methodology in which more number of transistors are fabricated on silicon area. In CMOS technology dynamic logic method play an important role in designating more logic circuits. By using dynamic logic method we can optimize more number of parameters related to digital engineering. Dynamic logic methodology plays an important role in VLSI. This will increase the operation of the circuits. To implement dynamic logic circuit on silicon it consumes less space when compare to the static transistor technology. By using this dynamic logic circuits to design any digital circuit it becomes more complicated rather than static transistors. And also to perform it will consume more power. Power consumption by the dynamic logic circuit is more and power delivered to the load is less, if power delivered [2] to the load is less which will decreases the circuit's efficiency. So to enhance the performance of the dynamic logic circuit, and to decrease the delay, to reduce the power consumption. To avoid all stated problems domino logic circuit arrangement is well suited. Due to low noise margin the speed of the domino logic circuit is more compared to static logic gates. In large circuit implementation domino logic circuit operation will play an important role. Which will consumes less space and increased the operation of the circuit compared to the static conventional CMOS circuit. Domino logic circuit arrangement is well suited at integration of more number of circuits on silicon.

Domino addressing a extreme impact in the essential applications of consumption of low power and high-speed [3], like as comparators, read out register the paths, programmable encrypt, memories of multiport and SRAM pre-decrypt gates, by the utilization of domino logic style the fan-in gates wide realization is astounding





A SELF-ACTIVATING PLAYFUL STEM ROBOT USING RASPBERRY PI

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Abstract: It is important to give proper education to all the children. Kids must learn properly and at the same time they must enjoy education. Due to the recent pandemic situation children cannot go outside and they are not able to relish their normal life. We have proposed an automated conversational robot toy that has an audio-visual facility in it. This paper deals with some basic components like Raspberry Pi, IR(Infrared) Sensor, OLED (Organic Light Emitting Diode) Display, Ultrasonic Sensor, Servo Motor, etc. Here, advanced facial and voice recognition is used to recognize and react to the kids. This conversational robot is used to educate children professionally. Thus, the learning experience is enhanced and will bring change to the new generation. This paper is an easier approach for learning and also it is a representation of powerful, secure technology and robotics.

Keywords: STEM, Conversational robot, Raspberry Pi, IR Sensor, Ultrasonic Sensor, OLED, RGB Light, Servo motor.

1. INTRODUCTION

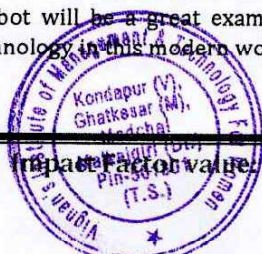
This project is about a robot toy that is playful and at the same time the user can learn from it. This is a conversational robot that is based on a STEM (Science, Technology, Engineering, Mathematics) methodology, so we can refer to this as a playful, learning STEM Robot toy [1]. It has a major feature of voice activation, which makes it more likely and friendly to use. Also, the Robot is automated thus it can respond and give output automatically.[2] The robot is best suited for the age group of 13-20 years as it includes the best learning and gaming features in it. The automated STEM robot is fully programmed using different basic materials like batteries, sensors, motors, transistors. It also includes Raspberry Pi and Arduino as major equipment in it. All these materials will be used to make these multiple featured robots. This robot will be a great example of advanced and secure technology in this modern world.

2. OBJECTIVE

The main purpose of making this conversational robot is to enhance the learning experience and as well as be playable to the users. This will work as a professional educator for the kids.[3] Proper education to the kids from the beginning is needed and the reason this robot is best for education purposes to the children. Our proposed conversational robot will allow all to learn and explore different languages. Also, as per the new education policies which say that the compulsory learning of local languages, our conversational robot is designed accordingly so that users can access any language needed. This will reflect the Indian culture which will emphasize Indian tradition to the kids [4]. Along with studies children can learn proper communication skills with others which is important. The simple features of this robot make it easily accessible to the kids. Keeping in mind the recent covid situation this conversational robot is made to reduce the loneliness of the kids and give them a playful, learning, autonomous, conversational robot.

3. LITRATURE SURVEY

In [1] the authors approached a humanoid robot called ROBITA, which will help in THE conversation between a group of people. In [2] authors have reviewed the possible verbal and non-verbal interaction between a human and a robot. Authors in [3] said about a software application-based chatbot that is made up of artificial intelligence and machine learning. In [4] authors have described a broad analysis to evaluate the human-robot system and all the general application methods. [5] is a review article that explains usability and designs of unmanned vehicles. In the paper [6] authors have proposed a system which will focus on STEM education through robotics technology. Their purpose is to develop student learning by the Constructivism and Constructionism theories. The paper [7] attempted to utilize the application of robotics in the primary education system. They have used different programming fundamentals to highlight the educational benefits of robotics. In [8] authors have discussed the



**Low Power High Speed GDI 4-bit RCA Circuit design
using 45nm CMOS Technology**

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Abstract

In Digital Engineering, if we want to design a 4Bit adder which is very essential component in an arithmetic logic circuit (ALU) and also plays a crucial role in all the computational circuits as well. In this paper, 4 bit ripple adder using a one bit full adder is designed at 45nm CMOS technology. To design a full adder, we require XOR, OR, AND logic gates, where we combine all the above logic gates to get a one bit full adder finally. The GDI (gate diffusion input) is a technique in which number of transistors required to design specific application will gradually reduce. When it is compared with the conventional circuit by using GDI not only reduces transistors count but also power consumption. The maximum power saving is of 93.04%, the delay is saved by 76.76% and coming to the overall PDP the saving is of 96.01%. By considering 4- full adders we can build a 4-bit ripple carry adder. Hence the whole designing can be done at supply voltage 1.8V as we are using 45nm CMOS technology.

Keywords— GDI Technique, OR gate, AND gate, 1 FA, 4 bit RCA, low Power consumption.

I. INTRODUCTION

Day by day electronic portable systems based on the battery usage demand is increasing, for driving the devices which are portable they require battery. In designing personally communicating devices, mobile phones, laptops and notebooks important concern is speed and power consumption. In VLSI technology [1-4] the parameter which plays important role is power consumption. For making circuitry cool we require cooling fan because of reducing battery life and increase in heating due to more power consumption. The cost of the whole system is affected and the battery life because of the more power consumption. Which discussed in the above devices and digital communication devices mostly are used in the applications such as microcontrollers, video and image processing and digital signal processing operated in the different operations multiplication, addition, subtraction. In the adder cells internally the different operations are performed like multiplication, subtraction, addition. In the digital communication devices designing more vital role is played by the one bit adder. Addition operation is performed by integrating the 1-bit full adder cells [5] in multiple of number digital communication devices frequently, the whole system performance is determined by the adder cells and adder cells is the reason which plays an vital role.

The adder circuit performance and dissipation of power is affected due to the increase in the complexity of the circuit and chip area is reduced. To reduce the power dissipation and size of chip in VLSI design the circuit is concerned in low power. In MOSFET technology the number of types of dissipation of power is two types they are dynamic power dissipation and static power dissipation. The parameters which Effects the device of the static power dissipation are reverse - biased junction leakage, sub threshold leakage, gate induced drain leakage and gate direct tunneling leakage of scaling parameters effected majorly. Power of short circuit and switching are mainly considered in dynamic power dissipation. The theoretical calculations of dynamic power dissipation and static power dissipation respectively ps is the product of the leakage current and supply voltage [6]. PD is the product of half of the operating frequency, load capacitance with square of logic voltage swing. The different



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GDI implementation of Low Power Modified Booth Multiplier

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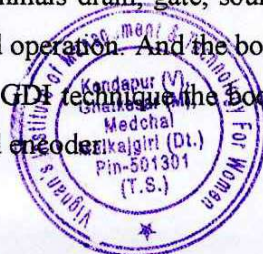
Abstract

The basic operations used in any circuit are addition and multiplication as all the other operations such as subtraction, filtering and convolution are performed by the help of these operations only. In digital signal processing the main task is to perform the inner product, sampling and convolution which is mainly performed by the help of multiplier only. Hence to overcome a problem of delay and power consumption the use of digital multiplier instead of analog multiplier takes place. This paper introduced a low power booth multiplier. In a booth multiplier the multiplication take place with the help of shifting, addition and partial product. The booth multiplier consists of a three section decoder, partial product generation unit and adder circuit. The booth multiplier recodes the input value to the booth equivalent value to reduce the switching activity in a circuit. This paper consist a booth multiplier design using a power reduction techniques called FINEFET and the result is compared with the result of GDI and CMOS. The implementation of a booth multiplier takes place using a cadence virtuoso. The result obtained is compared in term of average power and noise by the help of various reduction techniques in 16nm technique. The input voltage in this paper varies from 0.5 to 0.7 V

Keywords: Booth decoder, half adder, full adder, partial generating unit, AND gate, OR gate, XOR gate, 2-bit binary encoder, CMOS and NAND gate

Introduction

There are different other power reduction techniques, compared to the other techniques GDI provides lowest power dissipation. For lower power circuit the Gate Diffusion Input technique is used. When lowest power dissipation in GDI implementation occurs it reduces the logic switching and static power dissipation. The main advantage of the GDI technique is that it uses the less number of transistor compared to the CMOS, so the reduction in noise and power dissipation takes place easily. GDI consists basic cells they are PMOS and CMOS with four terminals drain, gate, source and body. The booth multiplier performs the low reduction power and high speed operation. And the booth multiplier is the combination of both shifting arithmetic and repeated addition. In GDI technique the booth multiplier consists three sections they are partial generating unit, adder circuit and encoder.



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One-Sided Schmitt-Trigger-Based 9T SRAM Cell for Near-Threshold Operation

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i) Abstract:

SRAM is the most popular memory elements it is used in mainly digital devices. SRAM consists of various types like 6T,7T,8T,9T. And it consists of static noise margin(SNM) and write margin(MW),Delay and power consumption. Here 6T SRAM cell consists of 6 transistors because the name indicates 6T.6T is used to store the information in 6T we use two bit lines because to perform better noise margin. In single bit there is less noise margin so we considered two bit lines.7T SRAM cell consists of 7 transistors there is disadvantage in 6T so we use 7T. The disadvantage is that read line charges slowly. In 7T read line charges very fast and power consumption is less. power consumption of 7T is 42mw and delay is 4.9ns.8T consists of 8 transistors 8T is same as 6T difference is that only one internal inverter.8T SRAM cell power consumption is 67mw and delay is 6.8ns.9T consists of 9 transistors. power consumption is 71mw and delay is 8.05ns. Compared to 6T,7T,8T the 9T SRAM Cell has more power consumption so we use 9T SRAM cell.

KEYWORDS: Bit interleaving, low energy, near-threshold, Schmitt-trigger, static random access memory (SRAM).

1. Introduction:

SRAM is defined as static random access memory. SRAM is constructed by using CMOS technology. It consists of 4 to 6 transistors. Transistors uses clocks. Because clocks holds the data. In SRAM gate and subthreshold leakage of currents are present so, that it decreases the static power. Whenever we increases the ground level then it decreases the subthreshold leakage during inactive mode. SRAM is a volatile memory it loses data when the power goes down. Whatever input we are giving to a computer will be converted in the form of 0's and 1's similarly output generated by the computer is binary language. SRAM has that the memory part in hardware low power modeling plays an important role in energy consumption. SRAM memory has several methods to save power such as pipelining, redundancy, data encoding, and clocking. SRAM has 6 transistors where as 2 transistors among 6 transistors are pass transistors. Which provides excess to the bit lines and other 4 transistors are two cross coupled inverters among which T1, T2 is CMOS inverter pair and another T3, T4 are CMOS inverter pair. SRAM presents the idea of modifying cryptography hardware.

2. Literature survey:

This is to analyse the static noise margin (SNM) of 6T SRAM cell during read operation is increase in transistor using 180nm technology. We can overcome the power consumption due to additional transistor. We use 6T SRAM in 45nm CMOS technology to provide interface with CPU. We can overcome the large fraction of total power in SRAM cell. Here, we can provide low leakage power using self controlled voltage level circuits in 9T SRAM these results in average power. In the design of 9T SRAM cell can consume less power and high read stability. When we compared to other technology there is a decrease in power and increases in stability. Here we can reduce 87% of



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Bus departure indication and auto announcement system in bus stops, useful in rural bus stops

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Abstract :

In present bus transportation system we need one person in each bus station to enter the data of busses arrivals timings and the driver or conductor has to get down the bus to enter the timings for confirmation but this is a time consuming process and needs lot of man power to implement in many bus stops. And sometimes some busses will not stop in particular stops even though they have to stop because of this passengers have to face problem especially in the night time. To make this process fast, automatic and to reduce manpower and also to avoid missing stops we are implementing this project. This can be achieved easily with help of advancement in technologies. Now a day's so many technologies are coming out to make our lives more comfort, user-friendly and secure. This is a complete stand alone attendance system in which we store all busses arrival timings with time and date in excel file which will be created on SD card using Arduino microcontroller.

Key Terms: Aurdino microcontroller, RFID, SD memory card, Embedded systems

1. Introduction:

The world is changing at a rapid pace, driven by technological innovation which reshaping the world faster than ever before. The fast development of innovation and hardware had changed our life from the most essential errand of flicking the change on to the most muddled assignment of substantial machining. Today's cities have become increasingly automobile-dominated where everyone is rushing to reach their destinations, which leads to in transport-related challenges such as public transport weakening, congestion and accidents. Efficient and reliable public transport is essential to economic growth of urban where for the majority of people, the public transport is the main means to access employment, education, and public services. Therefore, for those people who always rely on the public transport in their life, they mostly concern about the real time location of the bus which they are waiting for and the time it will take to reach the bus stop. By knowing the time taken to reach, they can make better travelling decisions. Furthermore, bus tracking and monitoring system for the school bus, provide the safety for the students that enable the parents and school authorities to track the location of the bus as well as the authorities can be able to monitor the speed of the bus to assure that the driver is not in danger during due to the dearth of research in tracking and monitoring





INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

DESIGN AND DEVELOPMENT OF AIR QUALITY INDEX DISPLAY DASHBOARD MONITORING USING ESP32

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ABSTRACT:

The non-stop augmentation of pollutants is a hassle that needs to be addressed straightaway. Pollution affects our fitness in addition to reasons fundamental environmental modifications like Global warming and climate variations. Air pollutants are one in all the largest demanding situations that the sector is going through these days because it has were given negative consequences on human fitness like lung cancer, breathing, and coronary heart diseases. There is a want to continuously measure, analyze, and screen the air first-rate on a real-time foundation to take suitable measures every time needed. We have proposed a version that makes use of the idea of the Internet of Things to permit the person to recognize approximately the awareness of dangerous gases gift around him and for this reason, permit the person to recognize the first-rate of air. The parameters which might be monitored right here are MQ135, Carbon monoxide (CO), Carbon dioxide (CO2), temperature, and humidity. The values of those parameters are in addition displayed on an IoT platform, ThingSpeak, with inside the shape of a graph in addition to a number. If the awareness of Carbon dioxide exceeds a positive threshold, the buzzer receives triggered.

Keywords: ESP32 Board, LCD Display, Adafruit IO, MQ135, MQ7, and DHT11 Sensors.

I. INTRODUCTION:

Air is one of the most important elements in human life [1]. In today's world, air pollution is increasing at an alarming rate, leading to climate change, which hurts everyone. It is polluted by toxic gases emitted by industrial enterprises and vehicle emissions, resulting in an increase in the concentration of harmful gases and fine dust in the atmosphere [2]. Various toxic gases emitted by industrial plants and vehicles are dangerous to terrestrial and marine life. Health problems such as

stroke, heart disease, lung cancer, and respiratory diseases are all caused by poor air quality. Poor air quality poses a major risk to children, asthmatics, pregnant women, and the elderly [5]. These pollutants will also corrode our infrastructure and historic sites. People need to know how their activities affect air quality. CS reports that millions of people worldwide die prematurely due to air pollution every year [3]. Studies have shown that fine dust can significantly increase air pollution. Therefore, air quality has become a major issue of global concern, which is why



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Research Article

A Novel Diabetes Healthcare Disease Prediction Framework Using Machine Learning Techniques

14
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Diabetes is a chronic disease that continues to be a significant and global concern since it affects the entire population's health. It is a metabolic disorder that leads to high blood sugar levels and many other problems such as stroke, kidney failure, and heart and nerve problems. Several researchers have attempted to construct an accurate diabetes prediction model over the years. However, this subject still faces significant open research issues due to a lack of appropriate data sets and prediction approaches, which pushes researchers to use big data analytics and machine learning (ML)-based methods. Applying four different machine learning methods, the research tries to overcome the problems and investigate healthcare predictive analytics. The study's primary goal was to see how big data analytics and machine learning-based techniques may be used in diabetes. The examination of the results shows that the suggested ML-based framework may achieve a score of 86. Health experts and other stakeholders are working to develop categorization models that will aid in the prediction of diabetes and the formulation of preventative initiatives. The authors perform a review of the literature on machine models and suggest an intelligent framework for diabetes prediction based on their findings. Machine learning models are critically examined, and an intelligent machine learning-based architecture for diabetes prediction is proposed and evaluated by the authors. In this study, the authors utilize our framework to develop and assess decision tree (DT)-based random forest (RF) and support vector machine (SVM) learning models for diabetes prediction, which are the most widely used techniques in the literature at the time of writing. It is proposed in this study that a unique intelligent diabetes mellitus prediction framework (IDMPF) is developed using machine learning. According to the framework, it was developed after conducting a rigorous review of existing prediction models in the literature and examining their applicability to diabetes. Using the framework, the authors describe the training procedures, model assessment strategies, and issues associated with diabetes prediction, as well as solutions they provide. The findings of this study may be utilized by health professionals, stakeholders, students, and researchers who are involved in diabetes prediction research and development. The proposed work gives 83% accuracy with the minimum error rate.




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Breast Cancer Detection with Revamped Dataset Using Machine Learning Techniques

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Machine learning is a current topic of interest in research and industry, with the implementation of novel strategies all the time. The main purpose of this research activity is to determine the efficiency of machine learning techniques in the detection research of breast cancer. The incidence and mortality of breast cancer in women are increasing day by day. Worldwide, researchers have worked hard to help clinicians provide the best model for detecting diagnosis and breast cancer. In this work, learning UCI machine Wisconsin breast cancer data from a set of databases, model, and analyze the performance of existing work use, compared to the same data set. The dataset is analyzed, and the revamped dataset is constructed by eliminating redundant features and appending new features essential for prediction. Logistic regression, K nearest neighbors (KNN), support vector machine (SVM), decision trees, random forest, XGBoost, using a machine learning algorithm, such as re-organized data set of artificial neural network AdaBoost, 8 one of prediction build the model application (ANN). Standard to analyze the accuracy rate. In the experiment, these classifications have been shown to work for breast cancer with >97% accuracy. Logistic regression, XGBoost and Adaboost, stand on top with 99.28 percent accuracy. The experiment also, the balanced data set of removal outliers and balance, shows that have a significant impact on the model's prediction performance.

Keywords: Breast Cancer Classification, Machine Learning, Wisconsin Breast Cancer Dataset.

1. INTRODUCTION

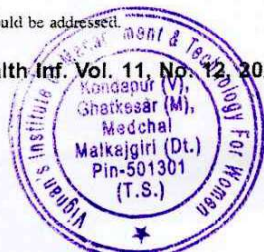
Big data information is an immense volume of information that can perform. It has been a subject of specific worry in recent years due to the astonishing capacity hid in it [1]. Manual understanding of particularly gigantic information becomes monotonous interaction, and subsequently, computerization becomes obligatory to change the crude information into important data. The prescient display is considered the canny center system in business settings [2]. The medical care area is one such space where prescient demonstrating is utilized to anticipate the danger of patients dependent on their clinical records. For forecast, factual strategies, for example, AI and information mining, are utilized to break down the current and recorded information. Information mining is a methodology applied to gigantic information archives to extricate valuable data though AI gains from Training the information, on account of anticipating the obscure information [3, 4].

The capability of AI, an unimaginable advancement, is demonstrated by review sophistications in everyday life. To refer to not many uses of AI like online extortion identification, item suggestions, internet searcher result refining, web-based media

administrations and the rundown develops dramatically [5]. The various uses of AI draw huge consideration from clinical professionals and analysts to control the enormous volume of electronic well-being records. Conclusion and result expectation are two regions that may profit from ML procedures in the clinical field. It includes the probability of perceiving raised danger for patient conditions, such as weakening in well-being or progressing to another infection [6].

The diverse learning standards with AI are Supervision, reinforcing learning and unaided [7]. In regulated learning, the idea of the obscure yield is relied upon to learn by the named informational collection model. Arrangement and relapse issues go under directed learning. Arrangement issues manage to anticipate discrete worthwhile nonstop information is anticipated by relapse issues. In unaided learning, the model isn't given a named dataset. Rather, it examines the basic example and predicts the yield. In support of learning, a specialist, for all its endeavors, is remunerated for progress and punishment for disappointment. In this way, the specialist gains from the climate. The impossible to miss normal for the AI model is that if the expectation turns out badly, the information expert can step in and make adjustments. Another model is called the profound learning model, a subset of the AI model, wherein a calculation will settle on its own whether the expectation is right with its neural organization.

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Improved Priority-based Congestion Control Protocol for Multi-Access Edge Computing (MAEC) Using IoT-based Wearable Devices for Neurological Diseases Diagnosis

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Abstract

Stroke is one of the fatal diseases that affect the brain and causes death within 3 to 10 hours. However, most of the deaths caused by a stroke can be avoided with the identification of the nature of stroke and react to it in a timely manner by intelligent health systems. Internet of Things (IoT) has become an important aspect in medical industry for monitoring of stroke related data/information using various wearable devices. Moreover, Multiple-Access Edge Computing (MAEC) is playing a major role for processing, analysing, and storing of data which leads to several researchers to compete in improving the mechanism of congestion control. In this paper, an improved Priority-based Congestion Control Protocol (iPCCP) is proposed for obtaining increased throughput, decreasing delay, effective resource utilization, and longer network lifetime by optimal energy consumption among IoT based sensor nodes. The proposed method categorizes the data-traffic into emergency and normal data. The packet delivery rate is considered for the normal data-traffic and retains the size of the buffer to improve the throughput and avoids the packet drops due to congestion. The energy consumption and network traffic load is reduced using the data aggregation and filtration technique. For emergency situations, priority-based routing scheme is used to have greater throughput and lesser delay. The performance of the proposed technique outperforms in term of traffic load, lifespan, energy consumption, and network throughput and simulation results are compared with other existing methods to show the improvement of the proposed work.

Key Words: Internet of Things (IoT), Stroke Data, Edge Computing, Congestion Control, Network Traffic, Multi-Access Edge Computing (MAEC).

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Introduction

Currently, the global population is facing a serious problem of increasing healthcare issues. One of the major issues is the emergence of stroke disease.

Stroke, also commonly referred to as Brain Attack, is caused by the lack of blood supply to some parts of the brain.

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Analysis of Leakage Power Optimization Techniques for VLSI Applications

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Abstract: Power dissipation has become one of the VLSI circuit structure's significant worries with the fast launching of battery worked applications. In high-performance structures, the leakage segments of power consumption are equivalent to the switching segment. This will keep incrementing with innovation scaling, except if effective procedures are introduced for controlling the leakage. This paper gives a thorough report, examination, and correlation of leakage power reduction systems and techniques. Additionally, the advantages and disadvantages of different strategies for decreasing leakage power are introduced. These methods can be stretched out to any complex advanced digital implementation.

Keywords: Leakage/ Spillage Power reduction, CMOS circuits. Leakage/Spillage current, MTCMOS

I. INTRODUCTION

With the ongoing developments in VLSI innovation, transistors' requests in Integrated Circuits are yet developing, which requests costly cooling and bundling advancements. Subsequently, because of this, the supplied voltages are downsized for diminishing the power dissipation. Be that as it may, scaling of supply voltage has brought about an exponential increase in sub-threshold leakage current, causing static (spillage) power dissemination. In the present life, the primary spotlight is on low power gadgets on account of development in mobile devices; and however, even before the introduction of mobile devices, power dispersal was an endless issue. Higher power utilization prompts lower execution and reliable quality of the circuit. There are numerous strategies to lessen the leakage power. Static power constitutes about half of the all-out power utilization in the present high-performance chips. As per the need, a decrease of leakage power is the way into a low force VLSI plan.

$$P_{leak} = I_{leak} * V_{DD}$$

Where,

I_{leak} - When the transistor is OFF, the Spillage current which streams in it.

V_{DD} - Voltage supplied

P_{leak} - Power leaked

The leakage current is directly proportional to the leakage power. Therefore I_{leak} must be reduced to get reduced leakage power P_{leak} . The leakage power commands the dynamic power, especially in crucial VLSI circuits and what's more in the circuits that leftover parts in the inertly mode for an extended time, for example, cell power. In real life, every application draws out the battery life anyway. With a developing pattern towards portable computing and remote communication, power dissemination has turned out to be one of the most basic components. In this way, the primary spotlight is on the decrease of leakage power.

As the technology pattern took another stage, leakage power expanded exponentially with more transistors' reconciliation on the substrate. The leakage power is said to be that static force scattered when there is no useful outcome from the current or when the circuit is out of gear state. When gate voltage (V_g) in the transistor is lower than the V_{th} , i.e., threshold voltage, the transistor can't be totally turned off, which prompts little current flow called **leakage current**. The key sources of leakage/spillage current in CMOS transistors are as follows:

1. Reverse-biased junction leakage current
2. Gate induced drain leakage
3. Gate-direct tunneling leakage
4. Subthreshold (weak inversion) leakage current

The sub-threshold current flow stream is considered the most supernatural among all the spillage current flow sources, which ends up going after exploring in the present and future silicon advancements. This paper gives a comprehensive



IMPLEMENTATION OF SDR BASED PASSIVE BISTATIC FM RADAR

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Abstract

This paper illustrates a prototype of Passive Bistatic Radar (PBR) system that uses FM radio transmitter as the Source of Illuminator. Software Defined Radio (SDR) approach is used to simulate and implement the Radar. SDR Board is used to receive the direct signal and the reflected signal from the target by means of Yagi-Uda Antenna. Signal processing operations are performed offline over the direct and reflected signal in order to detect the presence of the target and estimate the target range and speed. In order to analyse the performance of the proposed SDR based passive bistatic radar, MATLAB simulation is used with predefined target settings

Keywords:

Passive Bistatic Radar, Source of Illuminator, Software Defined Radio

1. INTRODUCTION

Passive radar is a type of bistatic radar that uses a commercial transmitter and a dedicated receiver in order to form a bistatic pair. Passive Radars use the illuminators of opportunity like Commercial TV, FM, and GSM transmissions for the detection and estimation of targets [1]. This type of radar has no dedicated transmitter and hence does not require frequency allocation. The passive radar exploits common RF energy transmitted from commercial transmitter and the RF energy reflected by the target in order to extract the range and Doppler information about the target.

In the proposed work passive bistatic radar is implemented using FM signals [2]. FM signals are preferred as they constitute adequate power needed for detecting the targets from the reflected signals and also there are plenty of FM stations available for experimentation. Software defined radio-based approach is used to implement the proposed passive radar [13]. Software radios represent a major change in the design paradigm for traditional radios in which large portion of functionality is implemented through programmable digital signal processing devices, giving the radio the ability to change its operating parameters to accommodate new features and capabilities [14]. A software radio approach reduces the content of radio frequency (RF) and other analog components of traditional radios and emphasizes digital signal processing to enhance the overall receiver flexibility [15].

Universal Software Radio Peripheral (USRP) is a low-cost hardware platform used to develop software-defined radios [3]. USRP architecture consists of a motherboard which includes subsystems like clock generation and synchronization, FPGA, ADCs DACs, host processor interface and power regulation [16]. FPGA is used to baseband signal processing after converting the signal from Analog to Digital format. Before ADC, analog operations like up/down-conversion, filtering, and other signal conditioning operations are performed using RF front-end, called a daughterboard [17]. Daughterboards are available in various

frequency ranges which permit the USRP [4] to support applications operating between DC and 6 GHz [18]-[20].

In the proposed work, two USRP boards (B200 Series) are used to receive the FM signal reflected from aircraft and to receive a copy of transmitted FM signal simultaneously. Yagi-Uda antenna is used to receive signals owing to its high gain and directivity, in order to receive a strong directional component of reference signal.

2. SYSTEM SETUP

The setup consists of two USRP boards (B200 Series) and two Yagi-Uda antennas. The USRP B200 platform supports frequency coverage from 70 MHz – 6 GHz. It has fully integrated single board architecture. The advantages of B200 include low cost SDR development with 56 MHz of real-time bandwidth, an open and reprogrammable Spartan6 FPGA, and fast and convenient bus-powered Super Speed USB 3.0 connectivity. The Fig.1 represents the USRP B200 series used to receive the FM signal. The Table.1 lists the features of B200 series.

Table.1. Features of USRP B200

Sl. No.	Features
1.	RF coverage from 70 MHz-6 GHz
2.	GNU Radio, C++ and Python APIs
3.	USB 3.0 SuperSpeed interface
4.	Standard-B USB 3.0 connector
5.	Flexible rate 12-bit ADC/DAC
6.	Grounded mounting holes
7.	1 TX & 1 RX, Half or Full Duplex
8.	Xilinx Spartan 6 XC6SLX75 FPGA
9.	Up to 56 MHz of instantaneous bandwidth
10.	USB Bus powered

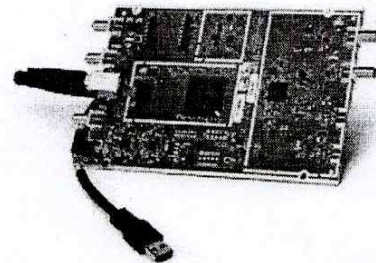


Fig.1. USRP B200 Series

The block diagram of passive bistatic FM radar system is shown in Fig.2. One of the antennas connected to the USRP board

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A Review on 5G Communication

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Abstract—5G (Fifth generation) stands for the next major phase of mobile telecommunications standards beyond the current 4G/IMT-Advanced standards. As the expectation of the public increases with the advancement of the technology comes into picture, the services that can be obtained using the telecom networks have widened. Applications such as High-speed internet, Internet of Things, critical communications etc. the telecom network needs to support high data rate, low latency, reliability etc.

5G has speeds further what the present 4G can provide. From generation 1G to 2.5G and from 3G to 5G this world of telecommunication has seen a number of advancement along with improved performance with every passing day from IMT 2020, there are several requirements from the users and network side, which has to be supported in 5G to support the use cases. To fulfill the requirement, several technologies are being considered in 5G.

Key Words: 5G, Advancement, Requirement, Latency

I. INTRODUCTION

After every 10 years, new mobile generation has come since the first 1G (generation) system which came in 1982. After 10 years, the next generation which was introduced is 2G in 1992 and the first 3G system introduced in 2001. 4G system was introduced in 2012. The development of GSM that is 2G and CDMA i.e. 3G were officially done about 10 year after all the R&D projects where done.

We have observed remarkable growth of cellular communication over the radio. With ever-increasing subscriber base and limited radio resource, providing quality telecom services became difficult. These issues led mobile service providers to research into technologies and improve the quality of service and be able to support more users in their systems. Wireless communication networks have become much more pervasive than anyone could have imagined when the cellular concept was first deployed in 1960's and 1970's. Mobile cellular subscribers are increasing by more than 40% per year. Therefore Cellular communication has been continuously evolving into newer forms. Radio technologies have evidenced a rapid and multidirectional evolution with the launch of the analogue cellular systems in 1980s.

[1] Thereafter, digital wireless communication systems are consistently on a mission to fulfill the growing need of human beings (1G to 4G, or now 5G).

1G: 1G is the 1st generation. It is simply used to make phone calls; this is all it was able to do.

2G: The second generation provided customers with the facility of voice calling and text messaging. 2G networks are digital.

3G: This technology sets the standard for most of the wireless networks. Third generation allowed the use of internet on the mobile phone, while also enabling picture-sharing and Bluetooth Connectivity.

4G: It offers first true internet broadband data transmission rates. Its data transmission rates are 10 times faster than 3G technology.

5G: 5G will be the network for millions of devices and not just for the smart phone. It promises to enable fast (and secure) connectivity between devices other than smart phones, such as sensors, vehicles, robots, and drones. It will have data speed up to 1 to 10 Gbps. [1]

S.N	Mobile Technology in India	Frequency bands in India	Operators
1	GSM(2G)	900 MHz, 1800 MHz	Airtel, Idea-Vodafone, BSNL
2	CDMA	850 MHz	Reliance, BSNL, Tata
3	WCDMA(3G)	2100 MHz, 900 MHz	Airtel, Idea-Vodafone
4	WiMAX	2300 MHz	BSNL
5	4G LTE	1800 MHz	Airtel, Idea-Vodafone, Jio
		850 MHz	Jio
		2300 MHz	Airtel, Idea-Vodafone, Jio
		2500 MHz	BSNL, Idea-Vodafone

Figure 1: Different frequency bands in India

5G SPECIFICATIONS

PARAMETER	SUGGESTED PERFORMANCE
1. Network capacity	10,000 times capacity of current network.
2. Peak data rate	10Gbps
3. Cell edge data rate	100 Mbps
4. latency	<1 ms

Table 2: 5G wireless performances



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STS System: A Sign to Speech and Text, Speech to Sign and Text, and Text to Speech and Sign Converter using DNN

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Abstract

Communication is the most important skill that everyone needs to express their views to others. If you can speak properly and if the other person can understand properly then no issues, you can communicate easily. But imagine if a person who wants to communicate can't speak and here and the person with whom the first person is communicating can't see. In this case, communication is impossible because deaf and dumb can't hear what a blind person is saying and blind one cannot see what a deaf and dumb person is showing using sign language. The world is always filled with equal opportunities, but in the above case if that kind of people meets and wants to communicate or to mingle with the other category of community it's a quite difficult task. So we need a bridge between these two poles to make them meet and to create equal opportunities to communicate in any kind of scenario. The bridge is nothing but technology. We are going to use a kind of Technology In our proposed system that can convert sign language into speech and text, and text to speech and sign, and speech to sign and text. So that, even if a blind person wants to communicate with a deaf and dumb person they can communicate very easily using this technology. The main objective behind our proposed system is to vanish the communication gap between normal people; hearing and speech impaired, and blind people. The system is a tri-directional communicative solution that can solve all the above problems mentioned and create equal opportunity for communication. We can use a software-based solution in the form of an app or a hardware-based solution using Raspberry Pi in image processing combined with DNN, such that it converts speech to sign and text, sign to speech and text, text to sign, and speech.

Keywords: STS System, Image Processing, DNN, OpenCV, Sign to Text and Speech, Text to Sign and Speech, speech to Text and Sign Conversion, Machine learning, Raspberry Pi, Tri-Directional Communication.

1. Introduction

Nowadays technology is seen everywhere. Very complex problems are made simple using technology. In almost all fields like the biomedical field, in education, in transportation, marketing, banking, and even in cheating, people make use of these human inventions. So, I want to use this technology to give equal opportunity in "view exchange". That is nothing but communication. If you are speaking to your friends, you can easily express your views to



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LITERATURE REVIEW ON DATA COMPRESSION TECHNIQUES USING LOSSLESS ALGORITHM

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ABSTRACT

With the contemporary design regard to shift in a chip enlargement the amount of processing elements, high-bandwidth [1] hold-up in on-chip linkage is indispensable for low-speed communication. Utmost of the preceding work hived on architectures of router and webbing topography using broad buses. Although such results may proceed in a complex router planning and cost. In this report, we utilize a table-based information technique of compression, depending on a design value in traffic hoard. Compressing huge packet into a little one can enlarge the effectual of routers bandwidth and connection, while preserving power due to decrease in performance. The foremost challenges are furnish a scalable execution of tables and reducing high up of the compression speed .Initial, we present a split table scheme that requires one encrypting and one decrypting tables for every transforming element, a regulation protocol that does not need orderly delivery. Then, we present smooth encrypt that merge flit inoculation and encrypting in a conduit. Moreover, compression of data can be particular applied to transmission on overfull paths only if compression enhances performance. Simulation outcome in a CMP 16-core exhibit that our consolidation technique increases packet speed to 44% with the mean of 32% and turn down the webbing consumption of power by 44% medial.

KEYWORDS: on-chip, communications, data compression, lossy , lossless data communication

I. INTRODUCTION

Data compression method is a low cost method, for enhancing speed [2] and bandwidth [3] with in specified architecture. Reducing redundancy information permits to be saved in less physical bits and to be sent in less cycles across a fixed number of busses. To reduce the bandwidth and storage capability of digital modules data compressions algorithms play a important role. Lossless compression algorithms are essential in communications systems. Lossy compression is a approximation technique well suited for audio and video applications. Basically lossy compression system will produce higher compression rate compare with the loss less data compression but it nowhere related to source data. lossy compression [5-8] method advised globally for H.264 [4] and JPEG etc applications. Conventionally loss less data compression technique is applied where data content does not change in information across any stage like compression and decompression. Loss less data compression method play a critical role in research to manage the data base information, binary data, text, html data where compression and decompression application required at source, destination end. Loss less data compression



Comparative Analysis on Machine Learning Techniques: A case study on Amazon Product Reviews

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Abstract:

With the digitization of the entire world, e-commerce and online shopping become more popular among the customers. Drastic change in shopping style develops the need of e-commerce sites. This proliferation of customer's interest to check the particular product review before buying the products leads to the sentiment analysis. Sentiment analysis is the analysis of customer's opinion using natural language processing. Customer reviews should be analysed properly to provide correct suggestions to the customers. This paper aims to classify Amazon product reviews for electronics parts into two categories as positive and negative by using different machine learning algorithms such as Support Vector Machine (SVM), Naïve Bays (NB), Logistic Regression (LR), Decision Tree (DT), Random Forest (RF) and Stochastic Gradient Descent (SGD). The analysis shows the logistic regression having highest accuracy of 83.89% and decision tree has lowest accuracy of 73.3%.

Keywords: E-commerce, Customer Reviews, Exponential, Sentiment analysis, Natural Language Processing

1. Introduction

Nowadays, more and more people are using the internet and turning towards online shopping. Due to that many e-commerce websites are developed such as Amazon, Flip cart, Myntra and so on. All these sites provide the facility of giving feedback on the product. Customers can share their experience about the product in terms of reviews and ratings. This feedback is utilized by the customers and businesses in order to understand their customer choice and business. Depending on those different strategies are developed to increase the sale and get more profit. These customer's feedback or reviews are used by the other customers to buy the particular product. So that the customer reviews should be analyzed properly to get insight from it, this process is called as sentiment analysis. Sentiment analysis or opinion mining play a vital role in text mining using natural language processing.

As the businesses are completely switched to online mode, customers are exchanging items through various business sites. Therefore, evaluating items before purchasing is a critical situation. So, breaking down the information from those text reviews and extract the useful data to get benefit is



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Design of DGS Printed Antenna for Surface Ship Radar Applications

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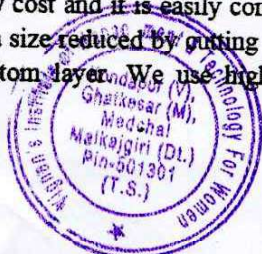
Abstract- In this paper proposed dual layer single coaxial feeding DGS printed antenna by cutting some slots from the patch and adding some slits with the patch. It is the very easiest design to achieve our desired application for which it is designed. We compare the proposed antenna with the conventional design and the proposed structure gives a 49.82% size reduction with compare to the conventional antenna. In this paper we analyze the gain, bandwidth, return loss for the desired proposed structure. The proposed structure designed with the help of IE3D electromagnetic solver which uses the Method of Moment (MoM) based analysis. The proposed structure simulated results are verified by a measurement which is carried out by VNA network analyzer. In this paper, proposed design achieved multiple resonant frequencies and they are applicable for different microwave band applications. As per the concern of 1st resonant frequencies, the proposed structure applicable for surface ship radar applications.

Index Terms- Layer, Edge, DGS, Patch, Slot, Return Loss.

I. INTRODUCTION

To increase the demand on printed antenna with Defective Ground Structure (DGS) among microwaves engineers [1], we choose size reduced antennas. The reason behind choose the antennas, it consume less space, more effective, movable and robust free to any surface. But there will be certain disadvantages like- low gain and low power handling capacity [2-5]. But we use the printed antenna so there will be some disadvantages but due to miniature size it is very helpful for any application. The microwave engineer demand is to use one antenna for different application and the printed antenna satisfies their demand. Rather than printed antenna there are some other antennas are also there like: DRA and fractal antennas [14-19]. Due to the size reduction property, the proposed antenna will give lower resonant frequency than conventional antenna structure [6-8].

Printed MSA requires high interest during research because the antenna having small dimension with low cost and it is easily connected with any microwave monolithic integrated circuit [9-10]. The antenna size reduced by cutting slots and adding slits with the patch at proper place from top as well as bottom layer. We use high dielectric constant for getting high size reduction in



An Efficient User Behavior Based Browsing Content in WEB Search Environment

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Abstract

Most of the businesses in the world are turning to be global through making available their business to the customers, suppliers and other state holders through specially designed websites that implements both E-Commerce and M-Commerce. The content being hosted on to the web site sometimes is quite complex as it involves text, audio, video, and 2D/3D. The E-Commerce/M-Commerce related websites are designed considering different complex user interfaces. The WEB sites are designed using several URL redirection and also involves deep navigation into the WEB site. The users get frustrated when they need to spend quite a bit of times in navigating through the websites in search of the content that they are looking for. There is a need for developing an interface that can provide right into home page the most important links that are most frequently visited by the users. The links are to be fetched based on the user behavior. Frequently visited WEB links which are selected based on the user profile who entered into WEB site when displayed right into the Home page makes the web surfing for information most effective. The utilization of the WEB sites will increase quite drastically when information needed is made available with ease. In this paper, two methods have been presented that allows the user to navigate through the WEB site to the desired content pages with ease and using the elemental level navigable links that show the content that is most frequently needed by the users.

Keywords: RPA, WEB Navigation, clicked counts, snippets, Elementary level links

1. Introduction

Users navigate from one URL to the other in order to get through the information required which is contained in various resource files situated in the network of networks generally termed as world wide web. The information as such is stored as hypertext. The user interface as such is programmed in terms of hypertext. The browser resident on the client processes the hypertext and outputs the user interface through which the users interact and browses through the content stored on the WEB. A designer of a web site designs the navigation using which the users will be able to navigate across the WEB. The usability of the WEB site as such is dependent on the designed navigational scheme. The navigational scheme as such may include local, contextual, supplemental or global access to the resource file situated across the WEB. The primary navigation is hierarchical, the ability to move from a higher level URL to a lower level URL. The user can navigate within the same site using hierarchical navigation which off course is a serious restriction. Since there is a serious limitation using the hierarchal navigation, additional navigational schemes are required.

Local navigation is achieved through navigating through a specific section of WEB site. Global navigation on the other hand is undertaken as a outline navigation to move from one section of a web site to another section or from one web site to the other. The Navigational schemes provides for framework using which the user can navigate effectively and easily across the WEB site. There is still heavy scope to improve the WEB navigation providing excellent acceptance of the users. Many issues that include Standard icons, convection, Irrelevant links, Reveal structure, Buried information, slow loading of pages, clustering of data within a single web page, poor readability makes the accessing of content through web sites complicated.

Every user wants to get into the location of the web site where the desired content is located. The design of the WEB sites are done in such a way that the user knows the current location within the WEB site through provision of many navigation facilities which include navigation bar or tools which provide clear indication about the content indication the knowledge and depth of the same.

Looking at the user interface displayed by the browsers, the user will clearly know the content using which they can navigate. They also know the kind of output that they can get. The users will be able to explore more through navigational bars and links displayed as a part of user interface. Navigational tools can be included into the user interface. The entire web site can be broken into logical groups using the Navigational tools. The user can easily navigate to the logical group in which they are interested. The users are more bothered about the way



A NOVEL MECHANISM OF SMART IOT BASED AGRICULTURE CROP PROTECTION USING IR SENSORS

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ABSTRACT

Agriculture is the fundamental part in the improvement of horticultural nation. In India around 70% of masses depends on developing and 33% of the nation's capital starts from developing. In this paper we are giving a successful answer for agriculturists. Without any human interpretation the warding off the animals over their crop fields and orchards can be controlled, and the protection of the crop fields is done by using some consequently controlled ultrasonic creature repellent ringers, IR Sensor and Raspberry pi this system is been used. It will likewise empower them to remotely screen their fields from wherever, in this manner taking out the need of physical nearness of a man in the fields. Raspberry pi goes about as the mind of the framework. Its work is to deal with every one of the parts of the framework. It is in charge of the preparing the video nourish from the camera and programmed exchanging of the ringers. It will likewise empower the ranchers to screen their fields remotely. An IR sensor is used to environment We are proposing a system which is based on the Internet of Things to

protect the crops from animals. IR Sensor, which continuously works in the fields for any animal activities. This component is assisted with the cameras which provides higher accurate levels. If the camera fails this IR sensor acts as the backup. It provides a message alert system to the owner when animals entered in to the farms.

Keywords: *Agriculture, IOT, IRsensor, Embedded systems*

1. INTRODUCTION

The main objective of the paper is to protect the crops by using IOT[2][3] For that we designed a project smart crop protection system. By using this paper the problems what our farmers are facing by the attack of the wild animals on to the farms are been eliminated. Whenever animal attack on their field's automatically the system captures the image send to the farmer. The problems which are been faced by attack of the wild animals on to the agriculture fields i.e. farms damage is been a very big problem in many of the states, such as himachal pradesh, haryana, Punjab and many more states. The crop vandalization is caused mainly by eating off the flowers, plants and fruits of



[Handwritten Signature]

FACIAL EXPRESSION RECOGNITION USING SOPHISTICATED CNN ALGORITHMS

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Abstract:

Automatic expression recognition based on facial expression is a fascinating study area that has been presented and utilized in a variety of fields, including safety, health, and human-machine interactions. Researchers in this subject are interested in developing strategies to understand, code, and extract facial expressions in order to improve computer prediction. Facial emotion recognition is a subset of facial recognition that is becoming in popular as the need for it grows. Though there are methods for identifying expressions using data science techniques like machine learning and deep learning, this work seeks to recognize expressions and classify them based on photographs utilizing deep learning and image classification methods. In this case we are going to use CK+48 dataset and going to build deep learning models. First we do image processing after doing image processing split the data in 80:20 or 70:30 ratio. By using train we train the model then test it on test data. In this paper we build CNN and VGG-16 model. The goal of this project based on images we need to predict face emotion. In this by using deep learning model we can predict with 98% accuracy.

Keyword: *Deep learning, Image processing, CNN, VGG-16, Transfer learning.*

1. Introduction: -

Traditional learning and lecture delivery methods can be improved by automating instructor expression recognition. Feedback is beneficial to instructors, but it is costly to do extensive human classroom observations, therefore feedback is infrequent. Typically, feedback is focused on evaluating performance rather than correcting

outdated procedures [17]. "Student evaluation of teachers (SETs)" [19], a survey-based valuation in which student's rate separate teachers on numerous factors on a preset scale range, is one classic method. The characteristics include the instructor's knowledge of the course material, ability to present a lecture, engagement with students, delivery of lecture materials, and punctuality. Physical calculations may not be as consistent as they appear because students are mainly concerned with their marks, subsequent in artificial response. Aside from that, the procedure is time consuming, and the legality of the data obtained remains a mystery [17]. Marsh [19] wants to use self-recorded speech recognition to automate instructor feedback while presenting courses. This method makes use of the instructors' dissertation variables and encourages students learning by giving instructors objectives feedbacks for improvement. [20] Describes a real time student engagements system that delivers tailored support from teachers to students who are on the verge of dropping out. It assists instructors in allocating time to students who require the most assistance as well as enhancing instructor classroom methods. [21] Describes an intelligent tutoring system (ITS) that uses real-time teacher analytics to bridge the break in learning results for student with varying prior abilities. Lumilo is a new system that combines mixed reality smart glass with the ITS. This notifies coaches when student require assistance that the training system is impotent to offer.

A mission in computer vision and robotics' is automated face expression recognition. This is a new area of study, particularly in public signal processing and emotional calculating. The



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DIFFERENTIATING AND SHORTLISTING UNAUTHORIZED EXTREMIST REVIEWS

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ABSTRACT

Customer feedback is the key behind firms such as Google, Amazon's success. The quality and service of marketing are increased when the customer's input on a product is analyzed. Customers and companies know the benefits and the downsides of the product through reviews from online shopping sites (like Amazon). Sentiment analysis is one and only of the NLP's key responsibilities (Natural Language Processing). In recent years, sentiment analysis has gained a lot of attention. This paper addresses one of the core difficulties of sentimental analysis: the difficulty of sentiment-polarity classification, a generic approach for sentiment polarity classification is presented. Sentiment Analytics, sometimes referred to as Opinion Mining, is a prevalent study field for the extraction of subjective information by analyzing textual data provided by people who execute the duties of Natural Language Processing (NLP). Online artifact reviews collected from Amazon.com are the data recycled in this study. Tests are being undertaken with encouraging results, both for categorizing sentences and for categorizing reviews. Finally, our future work on sentimental analysis will also be inspired. In this case study we consider whose data point review is 4 and 5 as positive, 1 and 2 as negative review and reaming reviews we simply drop it. After that we can build the machine learning models like NB, Logistic Regression and RF models.

Keywords: *Sentiment analysis, Classification, Machine Learning, NLP, RF, Logistic Regression, NB, Classification.*




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Relationship Pattern Factorization Model on Social Sentiment Reviews in Social media Environments

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Abstract- Social media monitoring has been growing day by day so analyzing of social data plays an important role in knowing customer behavior. So we are analyzing Social data such as Twitter Tweets using sentiment analysis which checks the attitude of User review on movies. This paper develops a combined dictionary based on social media keywords and online review and also find hidden relationship pattern from these keyword. In recent years, shopping online is becoming more and more popular. When it need to decide whether to purchase a product or not on line, the opinions of others become important. It presents a great opportunity to share our viewpoints for various products purchase. However, people face the information overloading problem. How to mine valuable information from reviews to understand a user's preferences and make an accurate recommendation is crucial. Traditional recommender systems consider some factors, such as user's purchase records, product category, and geographic location. In this work, it propose a sentiment-based rating prediction method to improve prediction accuracy in recommender systems. Firstly, it propose a social user sentimental measurement approach and calculate each user's sentiment on items. Secondly, it not only consider a user's own sentimental attributes but also take interpersonal sentimental influence into consideration. Then, consider item reputation, which can be inferred by the sentimental distributions of a user set that reflect customers' comprehensive evaluation. At last, by fusing three factors-user sentiment similarity, interpersonal sentimental influence, and item's reputation similarity into recommender system to make an accurate rating prediction. It conduct a performance evaluation of the three sentimental factors on a real-world dataset. Experimental results show the sentiment can well characterize user preferences, which help to improve the recommendation performance.

Keywords: e-commerce, product recommender, product demographic, microblogs, recurrent neural networks

1. INTRODUCTION

Nowadays, Social media is becoming more and more popular since mobile devices can access social network easily from anywhere. Therefore, Social media is becoming an important topic for research in many fields. As number of people using social network are growing day by day, to communicate with their peers so that they can share their personal feeling everyday and views are created on large scale. Social Media Monitoring or tracking is most important topic in today's current scenario. In today many companies have been using Social Media Marketing to advertise their products or brands, so it becomes essential for them that they can be able to calculate the success and usefulness of each product [2]. For Constructing a Social Media Monitoring, various tool has been required which involves two components: one to evaluate how many user of

their brand are attracted due to their promotion and second to find out what people thinks about the particular brand. To evaluate the opinion of the users is not as easy as it seems to all users. For evaluating their attitude may requires to perform Sentiment Analysis, which is defined as to identify the polarity of customer behavior, the subjective and the emotions of particular document or sentence. To process this we need Machine Learning and Natural Language Processing methods and this is place where most of the developers facing difficulty when they are trying to form their own tools. Over the recent years, an emerging interest has been occurred in supporting social media analysis for advertising, opinion analysis and understanding community cohesion. Social media data adapts to many of the classifications attributed for "big-data" – i.e. volume, velocity and variety. Analysis of Social media needs to be undertaken over large volumes of data in an efficient and timely manner. Analysing the media content has been centralized in social sciences, due to the key role that the social media plays in modelling public opinion. This type of analysis typically on the preliminary coding of the text being examined, a step that involves reading and annotating the text and that limits the sizes of the data that can be analysed. With the development of Web, more and more people are connecting to the Internet and becoming information producers instead of only information consumers in the past, resulting to the serious problem, information overloading. There is much personal information in online textual reviews, which plays a very important role on decision processes. For example, the customer will decide what to buy if he or she sees valuable reviews posted by others, especially user's trusted friend. People believe reviews and reviewers will do help to the rating prediction based on the idea that high-star ratings may greatly be attached with good reviews.

Hence, how to mine reviews and the relation between reviewers in social networks has become an important issue in web mining, machine learning and natural language processing. It focus on the rating prediction task.

In Fig.1, we intuitively show an example of positive reviews and negative reviews on website. From Fig.1, there are many positive words in a 5-star review, such as "great", and "lovely". But in a 2-star review we find negative words, such as "expensive", and "poor". That means a good review reflects a high star-level and a bad review reflects a low-level. When we know the advantages and disadvantages from the two kinds of reviews, we can easily make a decision.

A common approach of using this is described how people think about a particular topic. Sentiment analysis helps in determining the thoughts of a speaker or a writer with respect to some subject matter or the overall contextual polarity of a document. The attitude may be his or her decision or estimate, the emotional state of the user while writing.

CORONARY ARTERY DISEASE DETECTION USING GRADIENT BOOSTING CLASSIFIERS

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Abstract:

Heart disease, alternatively known as cardiovascular disease, indicates various conditions that impact the heart and is the primary basis of death worldwide over the span of the past few decades. There are different kinds of heart disease. The most common types are heart failure (HF) and Coronary Artery Disease (CAD). The major cause of heart failure (HF) is due to the blockage or narrowing down of coronary arteries. Coronary arteries also supply blood to the heart. CAD is a prevalent kind of heart disease and well-known source of heart attacks in the world. According to WHO, nearly 20 million people die of Heart failures, particularly heart attacks and strokes, every year. Globally many persons are facing Cardiovascular diseases (CVDs) and many deaths are occurring due to lack of identification in initially stages and nearly 17.9 million deaths occurring every year. As Cardiovascular is a combination of disorders to the heart blood vessels which includes Rheumatic, cerebrovascular heart disease and other conditions. In every 4 out of 5 heart deaths are due to sudden stroke or heart failures, and one third of these deaths occur prematurely in people under 70 years of age. A. Javeed et al., uses Random search algorithm & optimized Random Forest for the detection of heart disease. In the process of detecting Heart disease, Diagnostic system is used. They compared with different types of techniques which are used in Machine Learning. In the proposed system, it is intended to improve the Heart Disease detection by using gradient boosting technique.

Keywords— Machine Learning, Prediction, Classification

Technique, Heart Failure (HF), Coronary Artery Disease (CAD), Cardiovascular Diseases (CVD) Random Forest, Gradient Boosting Technique.

I. INTRODUCTION

Now a days ML is widely for various diseases prediction accurately with provided and trained datasets. This paper provides is a study of Predictive Analysis of Heart Disease Based on Gradient Boosting Technique. As cardiovascular disease is the kind of disease which can cause the emergency if not predicted early. Many people are losing their life's due to false predictions and later stages predications. As heart disease is a defect related coronary decency which can be occurred due to various reasons in the heart like weakened walls, blockages, insufficient blood supply to arteries. To make a better and faster analysis now days Machine learning (ML) a branch of artificial intelligence (AI) is increasingly utilized within the field of cardiovascular medicine for better, faster and accurate analysis. Machine learning is a method of data analysis that automates analytical model using a set of algorithms which are performed automatically with provided user data. As ML is one of the sections of artificial intelligence which provides a series of steps through which user interacts with training and learning of datasets, various patterns of datasets to make automatic decisions with minimal human intervention. Now a days ML is widely used in many applications such as medicine, Statistics, Agriculture, Aviation, Speech Recognition etc., Through various ML Conventional Algorithms all industrial and other sectors data is used to perform needed tasks automatically without maximum user

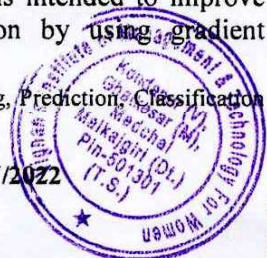


IMAGE QUALITY RECONSTRUCTION USING SUPER RESOLUTION METHOD

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Abstract:

OCT (optical coherence tomography) images relies on interferometry, which explains images suffer from a high level of noise. Noise in image is any degradation in an image signal, caused by external disturbance while an image is being sent from one place to another place via satellite ,wireless and network cable. Image noise is an undesirable by product of image capture the desired information. In existing system, A super resolution algorithm can be used to generate a high resolution image or image sequence .The algorithm has been proposed to estimate sparse co-efficient using joint MAP estimator. A non local sparse model-based Bayesian framework is proposed for OCT restoration. The laplacian distribution, normalized vector and GEV distribution is used for best good fit for modeling super resolution method is not fast as MAP solution. In proposed system, To overcome the existing drawback on single super resolution algorithm we are going to explore multi frame super resolution to gain more improvement in reconstruction quality. A multi frame super resolution produces a superior quality, high resolution image from multiple numbers of blurred noisy low resolution images.

Keywords— *Multi-frame MAP Estimator, Image registration, MAP Estimator, Optical Coherence Tomography, SR Super Resolution.*

(SR) is a promising digital image processing technique to obtain a single high-resolution image (or sequence) from multiple blurred low-resolution images. The basic idea of SR is that the low-resolution (LR) images of the same scene contain different information because of relative subpixel shifts; thus, a high-resolution (HR) image with higher spatial information can be reconstructed by image fusion. Subpixel motion can occur due to movement of local objects or vibrating of imaging system, or even controlled micro-scanning [2, 3]. Numerous SR algorithms have been proposed since the concept was introduced by Tsai and Huang [4] in the year of 1984. Most of them operate in batch mode, i.e., a sequence of images are co-processed at the same time. Thus, these algorithms require a high memory resource to store the LR images and temporary data, and need a high computing resource as well. These disadvantages limit their practical application. There are a variety of SR techniques, including multi-frame SR and single-frame SR. Readers can refer to Refs. [1, 5, 6] for an overview of this issue. Our discussion below is limited to work related to quality multi-frame SR method, as it is the focus of our paper.

I. INTRODUCTION

Image Restoration can be defined as the process of removal or reduction of degradation in an image through linear or non linear filtering. Images with higher resolution are required in most electronic imaging applications such as remote sensing, medical diagnostics, and video surveillance. For the past decades, considerable advancement has been realized in imaging system. However, the quality of images is still limited by the cost and manufacturing technology [1]. Super-resolution

II. LITERATURE SURVEY

The basic assumption for increasing the spatial resolution is the availability of multiple LR images captured from the same scene [5]. The LR images represent different “looks” at the same scene so LR images are sub sampled as well as shifted with sub pixel precision. If the LR images are shifted by integer units, then each image contains the same information and thus there is no new information that can be used to reconstruct an HR image. If the

AGGREGATION TECHNIQUE TO INTEGRATE TEXTURE AND MOTION FEATURES FOR TRAFFIC DATA

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Abstract

Large cities contain millions of people that use different means of transportation, including buses, taxis, motorcycles, and bicycles. The transportation infrastructure in large cities cannot accommodate the continued growth in the number of vehicles, which leads to traffic congestion. To overcome the congestions, a Traffic monitoring system includes automated traffic monitoring systems (TMS) that analyze images/videos captured by closed-circuit television cameras to detect the status of traffic (e.g., light, medium, or heavy) and measures traffic flow. Traffic congestion classification approaches can be categorized according to the features they utilize as a motion-based and texture-based method. The texture-based method evaluates texture features by Deep residual learning method. The extracted texture features evaluate in each batch of frames using a representation learning method called learning-to-rank (LTR). The motion-based method extracts sparse corner points in each batch of frames is extracted and tracked to obtain motion trajectory features. The features obtained are employed to construct a classifier based on an SVM (support vector machine) to classify traffic congestion into three classes of light, medium, and heavy. The Existing work, Largely depends on texture and motion features such systems face several challenges including illumination changes caused by variations in weather conditions, the complexity of scenes, vehicle occlusion, and the ambiguity of stopped vehicles. The texture and motion features are extracted for the feature extraction task. The LTR (learning-to-rank) method captures the latent structures and SVM (support vector machine) to classify traffic congestion. The Proposed work focus on improving the performance of texture and motion features by additional traffic congestion datasets with varying scenes. In addition, employ different aggregation techniques to integrate texture and motion features to improve the accuracy of traffic congestion classification results.

Keywords—Intelligent transport system, CNN -Convolutional neural network, KNN -K-nearest neighbor, Support vector machine, DBN - Deep belief network, Artificial intelligence, Recurrent neural network, Deep neural network

I. INTRODUCTION

The rapid growth of the urban population and motor vehicles has led to a series of traffic problems. Intelligent transportation systems (ITSs) are considered the best tool to solve these

PULMONARY IMAGE CLASSIFICATION WITH APPROPRIATE NEURAL NETWORK SELECTION AND ENSEMBLE LEARNING

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Abstract:

Classification at a medical diagnosis is a complex process that is extremely error prone. Since medical imaging is a major contributor to the overall diagnostic process, the Chest X-ray film is the most widely used and common method of clinical examination for pulmonary nodules. However, the number of radiologists obviously cannot keep up with this outburst due to the sharp increase in the number of Infectious Diseases, which is also a major potential source of diagnostic error. The existing system using inception-v3 transfer learning model to classify pulmonary images, and augmented the data of pulmonary images, then used the fine-tuned Inception-v3 model based on transfer learning to extract features automatically, and used different classifiers (Softmax , Logistic, SVM) to classify the pulmonary images. In the proposing system the classification of Pulmonary Images and the performance can be increased by the study of appropriate neural network selection and by using ensemble learning. The ensemble technique performs better on benchmark datasets than other state-of-the-art methods.

Keywords: Prediction, Classification Technique, Pulmonary Image Technique, Inception v3, Deep Convolution Neural Network, Data Augmentation, Ensemble Learning , Machine Learning,

I. INTRODUCTION

Now a days machine learning is widely used for various diseases prediction accurately. This is provided and trained datasets. This is a study of Predictive Analysis of Pulmonary Nodules Disease Based on state-of-the-art

neural network selection and by using ensemble learning. As our proposed pulmonary image classification based neural network selection using VGG_16 Model, Inception_v3, ResNet50 and VGG19. Nodule detection is an acute pulmonary infection caused by bacteria, viruses, or fungi that infects the lungs, producing inflammation of the air sacs and pleural effusion (fluid in the lung). It is the cause of over 15% of all deaths in children under the age of five.[21]. Lung infections are more common in undeveloped and underdeveloped countries, where overcrowding, pollution, and unsanitary environmental circumstances worsen the problem, and medical resources are limited. As a result, early detection and treatment can help prevent the disease from progressing to the point of death. The use of computed tomography (CT), magnetic resonance imaging (MRI), or radiography (X-rays) to examine the lungs is commonly employed for diagnosis[23,24,25]. X-ray imaging is a non-invasive and painless method of obtaining information. Figure 1 displays an example of a lung X-ray with a damaged and a healthy lung. Infiltrates, or white patches on the Lung X-ray Chest X-ray exams for infection identification, on the other hand, are vulnerable to subjective variability [2, 3]. As a result, an automated technique for detecting Nodules Infection is necessary. We created a method based on deep learning methods for dealing with such automation difficulties in this research. The most extensively used and common type of clinical assessment for pulmonary nodules is a chest X-ray film.

SECURED MULTIKEYWORD SEARCH OVER ENCRYPTED CLOUD DATA BASED ON ATTRIBUTE BASED

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Abstract:

Searchable encryption permits to upload encrypted documents to a remote honest-but-suspicious server and query that data at the server without the papers having to be decrypted first. With the advent of cloud computing, data owners are encouraged to move their sophisticated data management systems from local sites to commercial public clouds for greater flexibility and cost savings. However, in order to safeguard data privacy, sensitive data must be encrypted before being outsourced, rendering traditional data utilization based on plaintext keyword search outdated. As a result, implementing an encrypted cloud data search service is critical. Given the huge number of data users and documents in the cloud, it is critical for the search service to support multi-keyword queries and result similarity ranking in order to meet the effective data retrieval requirement. In this paper propose the Secured Multikeyword Search over Encrypted Cloud Data, which is based On Quality and Usability of cloud data transmission and storage. Further we used triple DES (Data Encryption Standard) Algorithm of encryption and decryption key for secure authentication process. Here we used different key sizes are used in cryptographic process. Our analysis shows that the suggested approach is secure against adaptive chosen-keyword attacks. This solution is highly efficient and ready to be applied in real-world cloud storage systems.

Keywords— cloud, encryption, Machine Learning, Standard Hilbert curve, Secured Multi keyword search.

I. INTRODUCTION

Searchable Encryption enables querying of encrypted data in the cloud without decryption. Nonetheless, due of the fundamentally dissimilar relationship between the variables, most SE solutions are focused on SQL queries and cannot readily be applied to spatial data. In order to enable query services on encrypted spatial data, space

filling curves have commonly been used to convert the original positions of POIs to one-dimensional index values. A space filling curve is one that crosses across every partition of a closed space without intersecting itself [1 and 2]. In this method, each point in multidimensional space will be mapped as a value to one-dimensional space. The standard Hilbert curve (SHC), a sort of space filling curve, is employed as a building block in many schemes for spatial data processing, which can protect the confidentiality of outsourced geographical data and enable successful spatial enquiries. Using the transformation key and the original geographic query, users can create query tokens to search across the encrypted spatial data [3]. As a result, fine-grained verification capability authorization is supported, which means that only users whose verification structure matches the permitted region can validate the query result [4]. Cloud storage is a computer data storage system that stores digital data in logical pools known as "the cloud." Physical storage is frequently distributed over multiple servers (potentially in different locations), and the physical environment is typically owned and maintained by a hosting company. Companies only need to pay for the storage they use, which is usually an average of consumption over the course of a month. This is not to say that cloud storage is less expensive; rather, it has ongoing costs rather than upfront expenditures [5]. A spatial database is one that is designed to store and query data that represents objects specified in a geometric space. The depiction of simple geometric objects such as points, lines, and polygons is supported by the majority of spatial databases. Some spatial databases are capable of handling more complicated structures such as 3D objects,

IMPROVEMENT OF NOISE REMOVAL AND QUALITY OF UNDERWATER IMAGES USING SUPER RESOLUTION METHOD

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Abstract

Enhancing underwater images in epicontinental sea is a challenging problem owing to the influence of ocean currents, the refraction, absorption and scattering of light by suspended particles, and the weak illumination intensity OCT (optical coherence tomography) images relies on interferometry, which explains images suffer from a high level of noise. Noise in image is any degradation in an image signal, caused by external disturbance while an image is being sent from one place to another place via satellite, wireless and network cable. Image noise is an undesirable by product of image capture the desired information. In existing system, A super resolution algorithm can be used to generate a high resolution image or image sequence. The algorithm has been proposed to estimate sparse co-efficient using joint MAP estimator. A non local sparse model-based Bayesian framework is proposed for OCT restoration. The laplacian distribution, normalized vector and GEV distribution is used for best good fit for modeling super resolution method is not fast as MAP solution. In proposed system. To overcome the existing drawback on single super resolution algorithm we are going to explore multi frame super resolution to gain more improvement in reconstruction quality. A multi frame super resolution produces a superior quality, high resolution image from multiple numbers of blurred noisy low resolution images

Keywords— underwater image enhancement; dark channel; improved algorithm; RGB color space, SR Super Resolution.

I. INTRODUCTION

Image Restoration can be defined as the process of removal or reduction of degradation in an image through linear or non linear filtering. Images with higher resolution are required in most electronic imaging applications such as remote sensing, medical diagnostics, and video surveillance. For the past decades, considerable advancement has

been realized in imaging system. However, the quality of images is still limited by the cost and manufacturing technology [1]. Super-resolution (SR) is a promising digital image processing technique to obtain a single high-resolution image (or sequence) from multiple blurred low-resolution images. The basic idea of SR is that the low-resolution (LR) images of the same scene contain different information because of relative subpixel shifts; thus, a high-resolution (HR) image with higher spatial information can be reconstructed by image fusion. Subpixel motion can occur due to movement of local objects or vibrating of imaging system, or even controlled micro-scanning [2, 3]. Numerous SR algorithms have been proposed since the concept was introduced by Tsai and Huang [4] in the year of 1984. Most of them operate in batch mode, i.e., a sequence of images are co-processed at the same time. Thus, these algorithms require a high memory resource to store the LR images and temporary data, and need a high computing resource as well. These disadvantages limit their practical application. There are a variety of SR techniques, including multi-frame SR and single-frame SR. Readers can refer to Refs. [1, 5, 6] for an overview of this issue. Our discussion below is limited to work related to quality multi-frame SR method, as it is the focus of our paper.

II. LITERATURE SURVEY

The basic assumption for increasing the spatial resolution is the availability of multiple LR images captured from the same scene [5]. The LR images represent different "looks" at the same scene so LR images are sub sampled as well as shifted with sub pixel precision. If the LR images are shifted by

MEDICAL IMAGE DATA CLASSIFICATION THROUGH KERNEL DENSITY ESTIMATION

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Abstract:

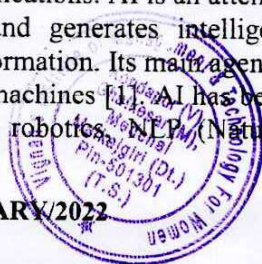
Consider the data/datasets are everywhere to define. Time aware search using queries results the best understanding of temporal data. Time aware kernel Estimation describes about the word temporal predictor to characterize the word-level temporal relevance by fine-grained time-aware kernel density estimation over the datasets and to capture the temporal relevance of query word that was made. The Kernel density defines as it results the predicted data in the form of histograms that was a form of analysis which shows the predicted data of the EHR data search. It mainly consists the word level temporal prediction of past experiences with an incompletely known system to predict future behavior. The effectiveness and robustness proposed by the temporal predictors as time aware to analyze chronic diseases using EHR data. As the growth of chronic diseases, The health care growing parallel. This can elevate visualization, accuracy and effectiveness by considering the chronic disease data analysis time to time. It can be defined as word-level temporal relevance of data from the information and to make kernel density estimation for better effective and the accurate results.

Keywords— Medical image classification, pre-trained DCNN, convolution neural network, big data, image analysis, image enhancement, biomedical image processing, deep learning

I. INTRODUCTION

Artificial Intelligence (AI) is an important field of computer science which thriving enormous research hotspots and applications. AI is an attempt of human intelligence and generates intelligent machines that process information. Its main agenda is to cultivate brain-like machines [1]. AI has been part of many fields like robotics, NLP, (Natural

Language Processing), Expert-System, Image Processing, etc. Machine Learning (ML) is act as a core for AI and comprises different kinds of disciplines like convex analysis, approximation, probability and complexity theory. Machine learning technology provides computers the capability to computations without any pre-programmed. In order to improve performance of a computer, Machine Learning utilizes induction as well as synthesis concepts [2]. Machine Learning technology implemented in different kinds of fields especially diagnosing diseases and bioinformatics. Machine and Deep learning technology plays a vital role in computer field and it act as an expert for predictions and making decisions. Deep learning technology is a kind of machine learning technology [3]. These technologies used to extract the data and process for as per requirements. The fundamental idea of Deep learning is to acquire data representations by improving abstraction levels. Different kinds of architectures for deep learning have proposed including Convolutional Neural Network (CNN), Deep Auto-Encoder, Deep Neural Network (DNN), etc. [4]. Image processing is the growing concept in medical field. Image processing delivers significant information on decision making. Different kinds of steps are followed on medical field before obtaining output [5]. Medical image is given as input to the deep learning and it is partitioned into segments in order to concentrate on important area. Next those segments are used to extract significant information with the help of information retrieval techniques[6]. Then the required features are obtained without noise by using noise removal



Enabling Cloud-Fog computing and smart city applications with Faster 5G self-healing protocols and Applications: A Comprehensive Review

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Abstract:

Fog computing expands the cloud computing model by positioning services at the network edges to meet the expected growth of mobile devices. In order to ensure that on-demand facilities from several detectors in various locations can be requested simultaneously, Smart City technologies such as health monitoring and predictive maintenance would implement new rigorous requirements, including low latency. In order to comply with these standards, current network implementations must then be upgraded and new infrastructure designs constructed. This paper introduces an intelligent, 5G-enabled cities fog computing system that permits autonomous control and orchestration. Recently, 5G advances have affected the industry, and potting is essential to this development. With the number of users steadily increased, today's cellular networks have had to meet high data rates and enhanced spectral reliability. 5G is a complete network service that enables increasing storage speed, high-performance broadcast systems, low latency, and millions of mobile devices to be supported. Through leveraging cutting-edge technologies, the network of the fifth generation responds to the vast needs of an increased number of consumers. The various capabilities and ITU critical characteristics of mobile 5G networking networks have been examined (International Telecommunication Union). Both Internet service providers need a continuous system with the emergence of IoT devices and the smooth shift to a comprehensive 5G-driven network (ISP). The Internet of Things provides an extensive troubleshooting and management network. With this in mind, the twenty-first century is necessary for an intelligent machine to conduct network diagnostics and predictive independence. The analysis architecture uses predictive analysis to implement an automated 5G ecosystem network diagnostics and self-healing technique. When collecting data and evaluating potential irregularities, output specifications of the system or network are taken into consideration. If output parameters differ from common areas, the issues in the network are diagnosed productively, and predictive analyzes are carried out. The analyzes of time series enable network effects to be estimated in many time intervals. This paper examines a live networking environment created by a leading ISP, and a predictive analysis and network diagnostics have shown that self-healing improves network efficiency in 5G networks. In addition, the latest form of analysis significantly reduces the use of network capacity and latency in comparison to optimized cloud networks. This paper also discusses the different deployments of 5G wireless networking and provides insight into the problems ahead for the development of the 5G period.

Keywords: 5g Networks, Fog Computing, Cloud Computing, Smart IoT application.





Article

Photooxidation of 2,2'-(Ethyne-1,2-diyl)dianilines: An Enhanced Photocatalytic Properties of New Salophen-Based Zn(II) Complexes

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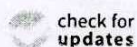
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Abstract: Under solvothermal conditions, the Zn(II) complexes formed from salophen-based ligands with N and O donor atoms are reported. These Zn(II) complexes were initially confirmed through elemental analysis and supported by mass spectral data. The purity of the ligands and Zn(II) complexes was confirmed by using NMR spectral studies. The functional group complexation was established by FT-IR analysis. Additional supportive information about the complexes is also reported through molar conductance and thermal studies. The bandgap energies of the ligands and Zn(II) complexes are estimated with UV-visible DRS studies. The rate of recombination of hole–electron pairs is directly related to photocatalytic activity, which is confirmed by using emission spectral analysis. The surface metaphors for ligands and complexes are obtained from FESEM analysis. These new sequences of Zn(II) complexes were used for the photooxidation of 2,2'-(ethyne-1,2-diyl)dianiline and its derivatives. Mechanistic studies on the fast degradation of dyes were supported in the presence of several scavengers. The rapid photooxidation process in the presence of [Zn(CPAMN)] has been demonstrated, and a highly efficient photocatalyst for the photooxidation of 2,2'-(ethyne-1,2-diyl) dianiline has been proposed. Furthermore, the experimental findings are supported by the DFT studies.

Keywords: Zn(II) complexes; DFT calculations; photocatalytic oxidation; rate of recombination; surface area; 2-(2-nitrophenyl)-3H-indol-3-one



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1. Introduction

The coordination chemistry of transition metal complexes has been the subject of broad study in the past few decades. Moreover, metal–Schiff base complexes have continued to enjoy extensive magnitude owing to their structural diversity and potential applications in pharmacology and catalysis. Most of the studies have aimed to understand the role of M(II) cations in many metalloenzymes in terms of structure–function relationships [1]. The importance of transition metals in several biological systems [2] has motivated the study of the complexes of Zn(II) ions. Studies on lower/higher oxidation state complexes are of special importance because of their potential uses as oxidizing agents, catalysts [3–5] and electro-catalysts [6,7] for the oxidation of compounds such as alcohols, esters and water [8,9]. M(II) complexes with various Schiff base ligands play an important role in coordination chemistry, and a recognized Schiff base ligand is a salophen kind [10], with a bi-functional and tetradentate (–ONNO–) ligand. Some asymmetric salophen kinds of Schiff's base were described by R. Atkins [11] in 1985, who suggested a wide-ranging term for salophen kinds of tetradentate (–ONNO–) ligands. Because of the aromatic ring's substitution and outline hydroxyl group, salicylaldehyde and its analogues are suitable as building blocks for salophen-based ligands. As soon as the azomethine group is formed between the aldehyde and the primary amine, the alignment of the salophen kind of



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journal homepage: www.elsevier.com/locate/matprOptical properties of PMMA and PVDF-HFP blend with NaClO₄ saltMaheshwar Reddy Mettu^{a,b,*}, Mallikarjun A^{c,d}, Jaipal Reddy M^e, Siva Kumar J^a^a Department of Physics, Osmania University, Hyderabad, 500007, India^b Department of Science and Humanities, Sreenidhi Institute of Science and Technology, Hyderabad, 501301, India^c Department of Physics, Jawaharlal Nehru Technological University, Hyderabad, 500085, India^d Department of Physics, Vignan's Institute of Management and Technology for Women, Hyderabad, 501301, India^e Department of Physics, Palamuru University, Mahabubnagar, 509001, India

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ABSTRACT

The poly(methyl methacrylate) (PMMA), pure poly(vinylidene fluoride) (PVDF-HFP), and NaClO₄ salt were used to prepare the blend thin films by solution casting procedure. By using the UV-Visible spectrophotometer optical absorption properties of this prepared film were recorded. The direct and indirect optical energy gaps for these thin films were estimated using Tauc's plots from the UV-visible spectra and found that increasing NaClO₄ salt content in PMMA + PVDF-HFP blend the absorption edge and indirect band gap energy values were found to be decreased.

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1. Introduction

The variety of electrochemical devices, such as electrochemical cells, rechargeable batteries, sensors, and super capacitors has been widely recognized and intensively explored. Polymer electrolytes are attracting attention in electrochemical cells because of their unique attributes such as their electrical and resistive qualities. In recent years, most researchers focused on Polymers and their systems such as PMMA, PAN, PVDF-HFP, PEO, and PVC, were used for battery application [1]. The majority of these polymers have poor mechanical strength and conductivity. Thus blending two or more polymers is a good strategy to improve their mechanical strength and electrical-conductivity. Ionic salts such as Mg, Na, Li, Cd, etc., were added to polymers, or their blending exposed to achieve higher ionic conductivity [2-7]. PMMA is a one of the most favourable polymer in polymeric materials. There have been numerous proposals for its use as a dielectric in Organic Thin-Film Transistors (OTFTs), optical lenses in cameras, and optical fibers [8-10]. Because of its extreme transparency, PMMA is being explored as a possible alternative to glass [11]. In the present investigation PMMA has been used as a host polymer because of its higher stability and lower reactivity towards electrodes.

PVDF-HFP used as co-polymer, which has a suitable matrix to crosslink with other polymers and leads better ionic conductivity.

2. Experimental

PMMA polymer (M.W. 1,20,000 CAC: 9011-147), PVDF-HFP polymer (M.W. 4,00,000 CAC: 14283-07-9), and additional materials such as NaClO₄ were used in this study, all of which were purchased from Sigma Aldrich. Merck Milliopore, Germany provided a solvent, THF (EMPARTA-AR grade).

In this research work, without additional purification, PMMA, PVDF-HFP, the inorganic salt sodium perchlorate (NaClO₄), and the solvent tetrahydrofuran (THF) were used in this study. The solution casting process was used to create PMMA:PVDF-HFP + NaClO₄ polymer electrolyte films [12,13]. To achieve a homogeneous mixture, different weight ratios of NaClO₄ and PMMA:PVDF-HFP blend polymers were added separately in THF, then stirred for 24 h at room temperature. The solution was then placed onto a Petri plate and allowed to evaporate at ambient temperature for several hours. After that, samples were vacuumed for 24 h to remove any remaining solvent. This method produced mechanically stable and self-supporting films and the compositions that have been prepared are given in Table 1.

The absorption properties of a specific sample reveal the nature of the material resistance to the incoming light when compared to a reference sample [14]. The ultraviolet absorption spectra were

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Investigation of Mg^{2+} Ion on Structural, Morphological, FTIR, Dielectric and AC Conductivity of PVDF-HFP Based Solid Polymer Electrolytes and Application to Electrochemical Cell

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Abstract—In this paper, solid polymer electrolytes comprising of poly(vinylidene fluoride-co-hexafluoropropylene) and $Mg(ClO_4)_2$ were prepared by employing the solution casting technique. The fabricated polymer-salt electrolyte membranes are exposed to XRD, FTIR and SEM studies, which confirm amorphous phase and the presence of interlinked micro-pores promote for easy mobility of Mg^{2+} ions that enhances ionic conductivity. The real and imaginary parts of dielectric permittivity are illustrated with the Cole-Cole plot. Static dielectric constant ϵ_s , dynamic dielectric constant ϵ_∞ , dielectric strength $\Delta\epsilon$, dielectric loss ($\tan\delta$) and relaxation time τ are determined using the Cole-Cole plot, which attributes fast hopping of ions from one site of the polymer chain to another for optimal concentration of polymer electrolyte. The electrochemical properties, such as cell discharge characteristics and cell stability (cyclic voltammetry), are analyzed to favor an electrochemical membrane for battery applications. The activation energy of all the samples is estimated from the DC conductivity data. The frequency-dependent ionic conductivity follows Jonscher's power law, and the exponent "n" shows a dominant long-range pathway and diffusion requisite hopping process for ion transport in polymer electrolytes.

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INTRODUCTION

Solid-state electrochemical cells have high demand at present in modern technology. It has been developed by modifying the polymer electrolytes to enhance conductivity and stability at ambient temperature for potential applications and in energy storage devices. In the process of developing good ionic conductive polymer electrolytes, plasticizers are used which are made of complex polymer electrolyte like PEO/PC/EC/lithium, PAN-PC/EC-LiClO₄, PAN-PC/EC-LiCF₃SO₃, PAN-PC/EC-LiAsF₆, and PMMA-PC/EC-LiAsF₆ [1–4]. These complex composite solid polymer electrolytes have potential advantages over conventional solid polymer electrolytes as they exhibit better mechanical strength, higher ionic conductivity, and better temperature stability. Major research work is carried out with various lith-

ium salts LiX (X = I, Cl, Br, ClO₄, CF₃SO₃, BF₄, AsF₆, PF₆, etc.) of low lattice energies dissolved in high molecular weight solid polymer electrolytes. Despite Li-ion salt complex composite structured polymer electrolytes, the magnesium-based salts are used, and prepared to attain good mechanical strength, temperature stability, and high ionic conductivity. Mg^{2+} ion-based polymer electrolytes are of low cost, easy to handle, and have a divalent cationic conductivity mechanism. Besides, magnesium-based batteries are safe and reliable for electric vehicles and domestic applications. The battery performance of magnesium ion electrolytes is very close to lithium ion but avoids explosive hazards that occur in lithium ion batteries [5, 6]. The Li-ion is monovalent but the Mg-ion is divalent in nature. Even Mg is a relatively earth-abundant material, cheaper, lightweight and environ-




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ABSTRACT

Nano composite polymer electrolytes with different concentrations of ZrO₂ nanofillers added in PVDF-HFP: Mg(ClO₄)₂ are prepared using classical solution casting technique. The incorporation of ZrO₂ nanofillers into the PVDF-HFP: Mg(ClO₄)₂ improved conductivity by making more ions available for conduction. Electrochemical Impedance Spectroscopy was used to investigate the electrical conductivity, ohmic resistance (R_o), polarisation resistance (R_p), and Warburg impedance (W) to understand ion transportation behaviour. And the composition-dependent ionic conductivity was determined and the optimum found $\sigma_{ion} = 6.62 \times 10^{-2} \text{ S cm}^{-1}$ at the PSZr12. The nanocomposite polymer electrolyte is used to prepare an electrochemical cell, and its open circuit voltage is found to be 1.8 V and its short circuit current is 180 mA.

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1. Introduction

Electrochemists are now working on high-performance electrochemical devices that can generate a large amount of power and energy. One of them is batteries that can store a large amount of energy, which has revolutionised future technological applications [1,2]. In comparison to lithium-based energy storage devices, magnesium is abundant in nature, and it is one of the competing elements to replace the use of lithium. It is a suitable element for the manufacture of solid polymer electrolyte materials. Flexibility, portability, and wearing electronic gadgets like a roll-up display and electro-chromic windows require a high demand for power sources like batteries, solar cells, and super capacitors. Other growing fields include smart electronics, RFID tags, wearable sensors,

and electric vehicles, which require polymer electrolytes in their respective power sources [3]. The PVDF-HFP polymer is utilised as a gelling agent and as an electrolyte in developing a solar cell, having good mechanical stability and piezoelectric breakdown voltage suitable for high harvesting applications [4]. Adding the necessary Mg-based salts or lithium salts transforms them into an effective ionic conductive polymer electrolyte in a quasi-solid state. Doping with appropriate nanofillers may raise the ionic and electrical conductivity of the solid polymer electrolytes [5]. Additionally, PVDF-HFP possesses a high dielectric constant, semi-crystalline material it has high porous nature to observe more ionic salts [6] and an electron-sucking C-F group helps in the dissociation of salt. PVDF-HFP has high mechanical strength due to the unique characteristics of crystalline PVDF. In contrast, PVD-HFP has an amorphous nature with the HFP's unique amorphous characteristic, which is required for excellent ionic conductivity [7,8]. The ZrO₂ nanofiller has good chemical stability and corrosion

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A COMPREHENSIVE STUDY ON ROBUST LINEAR REGRESSION METHODS OF STATISTICAL OF HIGH- DIMENSIONAL DATA ANALYSIS

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Abstract

With the digitization of information as the process of translating it into numbers, the amount of measured variables grows larger. This eliminates outliers and observations with the underlying model, making it harder or impossible for the practitioner to find them. Outliers in classical least-squares methods can impact the results. Regression is accurate when parameter estimates are unbiased, as in this case. Regression models use robust regression to give weights to observations that are statistically distinct from the model. Regression techniques that have been around for robust-dimensional data for some time may be less well known for their applicability in the high-dimensional scenario. Diverse techniques to robust regression in the high-dimensional scenario have recently been developed, typically using dimension reduction, shrinkage, and their mixture. Down weighting individual cells in the data matrix instead of full observations is a relatively novel concept to make better use of model-consistent information to get higher-performing parameter estimates.

KEYWORDS

dimension reduction, high-dimensional data, Outlier, regression, sparsity

I. INTRODUCTION

When linear regression is applied, it's a linear relationship for predicting a single scalar response coupled with one or more explanatory variables (also known as dependent and independent variables). Multiple linear regression is used when there is only one explanatory variable case, but the technique is called simple linear regression for more than one. [1] Instead of using a multivariate linear regression to analyze several associated dependent variables, you use a technique predicted as singular value





A Novel Feature-Based SHM Assessment and Predication Approach for Robust Evaluation of Damage Data Diagnosis Systems

M. Vishnu Vardhana Rao¹ · Aparna Chaparala²

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Abstract

Structural Health Monitoring (SHM) involves periodic recording and analysis in buildings and infrastructure prone to face external forces, ambient vibration, or natural climate changes. The sensors which are mounted on each floor capture the vibrations and create data with various features. SHM is vital in tracking the rate of deterioration of a structure and detecting damage, thereby maintaining safety. Feature selection, which indicates the process of choosing attributes in the dataset that can provide the best possible output accuracy, plays an important role in the analysis of a Damage Diagnosis system. The present paper proposes to use a combination of Mutual Information and Rough Set Theory for feature selection. After that, the paper proposes the hybrid technique of Support Vector Machine and Artificial Neural Network for increasing prediction accuracy. Comparison with various other commonly used techniques shows that the proposed approach provides a better classification accuracy.

Keywords Neural networks (NN) · SVM (Support vector machine) · ANN (Artificial neural network) · Mutual information (MI) · Rough set theory (RST) · Data mining (DM) · Feature selection (FS)

1 Introduction

Buildings over time are prone to deterioration due to various factors like environmental changes, natural disasters, strength and quality of materials used in manufacturing, etc. For the longest time, damage assessment for buildings has been done manually through visual inspection. As the number of buildings continues to rise, it has become increasingly important to be able to periodically assess the building's condition in order to detect any damage early and take appropriate measures [1]. With this continuous monitoring in mind, more and more buildings are incorporated with Structural Health Monitoring (SHM) systems.

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Original article

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Investigation of morphology and transport properties of Na⁺ ion conducting PMMA:PEO hybrid polymer electrolyte

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Keywords: conductivity; DSC; NaClO₄; PEO; PMMA; SEM; X-ray diffraction.

Abstract: The aim of this research work is to examine the modification of structure, morphology and conductivity properties of PMMA: PEO blend hybrid polymer electrolyte system complexed with NaClO₄ salt. Solution-cast procedure was adopted in preparation of these films. These films were characterized with XRD, SEM, DSC, and DC conductivity for the evaluation of modified properties. Peaks have disappeared and broadened in the XRD pattern of PMMA for higher concentration of PEO polymer and salt presented films, which indicated that attaining of higher amorphous phase in these polymer electrolyte films. Almost smooth surface morphology with fewer pores was observed in 20 wt. % of PEO and NaClO₄ salt present PMMA films of SEM image. This establishes a dominant presence of amorphous content in these NaClO₄ complexed PMMA:PEO hybrid electrolyte films when compared to pure PMMA and PEO. Disappearance of melting temperature was observed in all concentrations of NaClO₄ salt and PEO polymer added PMMA polymer films, which suggests a decrease of crystalline and an increase of amorphous nature. Enhancing of DC conductivity with temperature was observed in all the films but higher conductivity was exhibited at higher concentration of NaClO₄ salt present films.

1 Introduction

There is a continuously increasing demand for solid state secondary batteries in the field of electronics to store electrical energy [1]. The use of liquid electrolytes instead of solid electrolytes may cause leakage, due to this fire and explosions occurs [2–4]. Some examples for solid electrolytes are based on Li, Na, Mg, etc. which are widely studied by many researchers and concluded that these electrolytes transport ions through polymer chains and block the diffusion electrons which deemed as one of the most part of crucial components for the high performance ionic rechargeable batteries [5–9], among these electrodes many researchers were used Li ions for battery applications but it has few limitations such as low lifetime, cost and poor low temperature performance to overcome these limitations Na ions were introduced [10] still need rectification. PEO polymer has considerable technical interest with various molecular weights and wide range of their possible applications in various devices because of its ionic transport mechanism [11, 12]. On the other hand PMMA has higher stability and strength compared to PEO hence which provide better strength to electrochemical cell and also PMMA polymer itself amorphous in nature hence electric conductivity appears mainly in amorphous regions [13]. PMMA and PEO have different chemical structures of different properties hence to obtain desired properties from their complex, blending of these two polymers [14] i.e., Polymer blending is a combination of two or many polymers with or without chemical bonding between them [15]. It was noticed that performance and stability of polymer electrolyte films enhanced through the process of polymer blending [16]. In the present study, polymer complex consisting of PMMA, PEO, and alkali metal salt of NaClO₄ is reported, and suitable technique for preparation of

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Design of fully homomorphic multikey encryption scheme for secured cloud access and storage environment

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Abstract

Cloud hosting is a kind of storage that enables users to access, save, and manage their data in a secure and private cloud environment. As a result of this choice, users are no longer need to maintain and build their storage infrastructure on their computers or servers. Many businesses are hesitant to embrace cloud storage because of the complexities of data privacy and security issues. An easy-to-use and secure method for cloud storage sharing and data access is proposed in this study, which may be implemented quickly and easily. This solution requires users to have a secure password and biometric data in order to function properly. Their capacity to deceive consumers into disclosing critical information to their service providers is the primary reason for this problem. Cloud storage systems must have a secure framework in place in order for users to connect to and interact with one another. Many benefits of cloud storage exist, including enabling users to store and manage their data in a safe environment. Users can regulate and manage their data security while using cloud storage services. While implementing a safe and authenticated data storage model, this article addresses the different elements that must be taken into consideration. Several procedures have been established to deal with this problem. Unfortunately, they are not sufficiently secure to prevent a wide variety of security intrusions from taking place on them. When encrypting stored cloud data, the Fully Homomorphic multikey Encryption (FHE) algorithm is utilized. They also have a vulnerability in their protocol that makes it susceptible to both user and serverside attacks. When it comes to remote access, cloud data and data sharing between geographically dispersed devices is a reliable protocol to use.

Keywords Cloud access · Storage · Data sharing · User authentication · Fully homomorphic multikey encryption

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Multi-Features Disease Analysis Based Smart Diagnosis for COVID-19

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Abstract: Coronavirus 2019 (COVID -19) is the current global buzzword, putting the world at risk. The pandemic's exponential expansion of infected COVID-19 patients has challenged the medical field's resources, which are already few. Even established nations would not be in a perfect position to manage this epidemic correctly, leaving emerging countries and countries that have not yet begun to grow to address the problem. These problems can be solved by using machine learning models in a realistic way, such as by using computer-aided images during medical examinations. These models help predict the effects of the disease outbreak and help detect the effects in the coming days. In this paper, Multi-Features Decease Analysis (MFDA) is used with different ensemble classifiers to diagnose the disease's impact with the help of Computed Tomography (CT) scan images. There are various features associated with chest CT images, which help know the possibility of an individual being affected and how COVID-19 will affect the persons suffering from pneumonia. The current study attempts to increase the precision of the diagnosis model by evaluating various feature sets and choosing the best combination for better results. The model's performance is assessed using Receiver Operating Characteristic (ROC) curve, the Root Mean Square Error (RMSE), and the Confusion Matrix. It is observed from the resultant outcome that the performance of the proposed model has exhibited better efficient.

Keywords: Chest CT; COVID-19; classification; ROC curves; multi-feature disease analysis

1 Introduction

In December 2019, many cases related to pneumonia occurred in Wuhan city of China, and spread throughout the world [1,2]. It was found that severe acute respiratory syndrome coronavirus 2 (SARSCoV2) is the leading cause of the outbreak. This virus comes from the family of SARS and Middle East Respiratory Syndrome Coronavirus (MERS-CoV) [3]. These viruses are merely controlled



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Pragmatic Security-Aware Cross-Layer Design for Wireless Networks from Vampire Attacks



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ABSTRACT

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Keywords:

cross layer design, wireless networks, vampire attack, carousal and stretch attacks

Wireless networks rely on ad hoc communication in an emergency, such as a search and rescue or military missions. WLAN, WiMAX, and Bluetooth are often used in Ad Hoc networks. Using a TCP/IP wireless network poses several challenges. Packet loss in 802.11 may be caused by noise or the network. TCP/IP connects non-adjacent layers of the network, resolving cross-layer communication technology for cross-layer communication. It regulates data transmission energy. This structure solves an issue in various ways. It is often used to improve data transfer. Currently, the OSI reference model's layers and functions are not explicitly connected. Only DCL can send multimedia data via wireless networks. The research employs CLD to improve wireless security—invasions of ad hoc networks (MANETs). The research helps secure wireless MANs (MANETs), Vampire Attack Defense (VAP) algorithms. A Secure Cross-Layer Design SCLD-AHN protocol is included. The paper contributes to controlling security attacks in wireless Mobile Ad Hoc Networks (MANETs). In MANETs effectiveness of Vampire Attack Defense (VAP) algorithms is evaluated and analyzed. It also proposes a Secure Cross-Layer Design for the ad hoc networks (SCLD-AHN) protocol.

1. INTRODUCTION

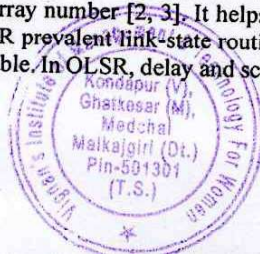
Now people are widely using the Internet. It only takes a few seconds to send a text message. Other people can upload a video when alerted in microseconds. Even though in many places, Internet connectivity is weak, but the multimedia communications required. Sensor zones need communication between drones. The multimedia server has to make rescue operations, search activities, emergency usage in battle areas and meeting rooms. In the examples provided, everyone needs a node to collaborate. The ad hoc networks of two types Static and Dynamic. In static nodes, fixed called Static-Ad-Hoc-Networks (SANET). In dynamic AdHoc networks, the mobility of nodes (active nodes) happens called the Mobile Ad Hoc Network (MANET). In MANET, an individual node acts as a system and router. It can be deployed everywhere without infrastructure networks. These features make the AdHoc network ideal for situations such as search, rescue operations, combat areas and emergency use. It also challenges the MAC layer to communicate between transport and network layers of TCP / IP reference models [1].

The MANET faces many architectural issues, such as persistent link crashes. Several routing algorithms proposed to solve these problems. Here a couple of ways to manage ad hoc network routing protocols. The first is a proactive Destination-Sequenced Distance Vector (DSDV) routing protocol. The second is the reactive Optimized Link State Routing Protocol (OLSR). DSDV is an active routing protocol that uses the destination generated array number [2, 3]. It helps to identify the old ways. The OLSR prevalent link-state routing protocol overheads with a link table. In OLSR, delay and scalability are

low. Existing well-known algorithms are Ad hoc On-Demand Distance Vector (AODV) and Dynamic Source Routing protocols [4]. It searches for the route when needed. The primary use of a proactive routing technique is the scalability of nodes, but it leads to transmission delay. The IEEE 802.11 is standard for MAC layer and ad hoc networks, but Ethernets not ensembles in wireless environments. The IEEE 802.11 standard assumes error is minimal in wired, but in wireless links, it is very high [5].

On the other hand, two-layer security, power usage, and frequent connection breaking problems in Ad-hoc networks addressed. The Network, MAC Layers and Protocol Stack to address these issues. Issues such as power optimization and throughput improvement with energy control. Transmission of power is a significant issue in MANET for more performance. It is because it affects almost all layers. However, this requires cooperation between all layers. CLD manages to find the right resolution for optimization. The cross-layer design acts as intermediate to each layer to solve the problem [6]. The primary method of energy transfer proposed. In this case, the RTS-CTS sends the highest transmission power. The Data-ACC packets the packets to deliver the minimum required level.

The advantage of consumptive transmission control is that it optimizes power intake and increases capability. Energy requirements disturb layers transmissions. However, physical, MAC, and network layers play an important role in enhancing performance. Srivastava et al. [7] proposed the mechanism for interactions between the network, MAC and physical layers for cross-layer design. In wireless sensor networks, (WSN) power transmission utilized to solve energy issues in VANETs,



AI-Based Image Processing for COVID-19 Detection in Chest CT Scan Images

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ABSTRACT

Big data analysts and artificial intelligence experts are paying attention to the COVID-19 outbreak. The classification of computed tomography (CT) chest pictures as normal or diseased necessitates a large amount of data and a unique AI module design. By studying CT chest scan pictures, we present a platform that encompasses various layers of analysis and classification of normal and pathological characteristics of COVID-19. Specifically, the platform augments the training dataset with a reliable collection of photos, segmenting/detecting suspicious portions in the images, and evaluating these regions in order to return the correct classification. We also integrate AI algorithms after selecting the most appropriate module for our research. Finally, we compare the efficacy of our design to other strategies published in the literature. The collected findings indicate that the suggested design is 95% accurate.

COVID-19, corona score, medical imaging analysis, AI medical platform, deep learning, computed tomography, segmentation
Keywords: COVID-19, corona score, medical imaging analysis, AI medical platform, deep learning, computed tomography, segmentation

1 INTRODUCTION

Artificial intelligence has made a significant contribution to medical diagnostics and drug development. Artificial intelligence, according to experts, will have a significant impact by providing radiologists with tools to make faster and more accurate diagnoses and prognoses, resulting in more effective treatment. Because computers will be able to process massive amounts of patient data, big data and artificial intelligence will change the way radiologists work, allowing them to become experts on very specific tasks (Shen et al., 2017a). Artificial intelligence has already been successful in solving problems such as chronic illnesses and skin cancer (Esteva et al., 2017). Scientists now anticipate artificial intelligence to play a significant part in the hunt for a cure for the new corona virus, and therefore in reducing the terror that has gripped the globe.

Due to the COVID-19 pandemic, the health-care system has recently faced significant challenges in terms of supporting an ever-increasing number of

patients and associated costs. As a result, the recent effect of COVID-19 necessitates a mental change in the health-care industry. As a result, using current technology such as artificial intelligence in order to build and develop intelligent and autonomous health-care solutions has become critical. When compared to other viruses, COVID-19 is notable for its rapid dissemination, which allowed it to become a global pandemic in record time. The medical and health-care systems are still researching and analysing it in order to get more trustworthy information and obtain a better understanding of this critical issue of rapid spread. As a result, accurately simulating the COVID-19 transmission remains a top goal in the fight against this virus. The detection of viral RNA from sputum or a nasopharyngeal swab using real-time reverse transcription-polymerase chain reaction (RT-PCR) is now the most widely utilised diagnosing approach. These tests, on the other hand, need human interaction, have a low positive rate at early stages of infection, and may take up to 6 hours to provide findings. Thus, quick and early diagnostic tools are needed to speed up the control of this pandemic, particularly in the long run, when lockdowns are entirely removed, testing should be conducted on a broad scale to avoid the pandemic from resuming.

Due to a lack of resources and technology in certain nations, testing has been confined to individuals who have symptoms, and in many instances, several symptoms. It goes without saying that the enormous burden that the situation has placed on national health-care systems and personnel, even in the most industrialised nations, exacerbates the difficulty of recognising and monitoring potential cases.

Artificial intelligence algorithms, which are approaches used to implement AI systems, assist with a variety of pandemic-related questions, ranging from vaccine and drug development to tracking people's mobility and how and whether





MESSB–LWE: multi-extractable somewhere statistically binding and learning with error-based integrity and authentication for cloud storage

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Abstract

The concept of cloud envisioned cyber-physical systems is a practical technology that allows users to interact with each other while transferring data in the cloud. In cyber-physical systems, cloud storage utilizes data deduplication techniques to improve the performance of its applications. However, this method exposes sensitive data and causes security risks. Various research related to cloud storage has been conducted. Despite the advantages of this technology, it lacks the necessary security features and high performance. In the proposed method, a victim's virtual computer is moved to the cloud without interfering with the other processes running on the network. It protects against the attacks caused by encrypting the data with a cryptographically binding hash. Post-Quantum Cryptographic techniques, such as lightweight Multi-Extractable Somewhere Statistically Binding and Learning With Error authenticate data sharing protocols (MESSB–LWE), have been used. These allow for safe data sharing across geographically scattered physical devices and clients with lightweight concepts. The numerical analysis of MESSB–LWE is carried out in different stages, and the results show that it has incredible performance and practicality when compared to the literature. Finally, the authors have explored a couple of factors that should be considered for future research work in authentication for securing remote systems in the cloud environment.

Keywords Somewhere statistically binding · Learning with errors (LWE) · Cloud security

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Improved Priority-based Congestion Control Protocol for Multi-Access Edge Computing (MAEC) Using IoT-based Wearable Devices for Neurological Diseases Diagnosis

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Abstract

Stroke is one of the fatal diseases that affect the brain and causes death within 3 to 10 hours. However, most of the deaths caused by a stroke can be avoided with the identification of the nature of stroke and react to it in a timely manner by intelligent health systems. Internet of Things (IoT) has become an important aspect in medical industry for monitoring of stroke related data/information using various wearable devices. Moreover, Multiple-Access Edge Computing (MAEC) is playing a major role for processing, analysing, and storing of data which leads to several researchers to compete in improving the mechanism of congestion control. In this paper, an improved Priority-based Congestion Control Protocol (IPCCP) is proposed for obtaining increased throughput, decreasing delay, effective resource utilization, and longer network lifetime by optimal energy consumption among IoT based sensor nodes. The proposed method categorizes the data-traffic into emergency and normal data. The packet delivery rate is considered for the normal data-traffic and retains the size of the buffer to improve the throughput and avoids the packet drops due to congestion. The energy consumption and network traffic load is reduced using the data aggregation and filtration technique. For emergency situations, priority-based routing scheme is used to have greater throughput and lesser delay. The performance of the proposed technique outperforms in term of traffic load, lifespan, energy consumption, and network throughput and simulation results are compared with other existing methods to show the improvement of the proposed work.

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Key Words: Internet of Things (IoT), Stroke Data, Edge Computing, Congestion Control, Network Traffic, Multi-Access Edge Computing (MAEC).

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Introduction

Currently, the global population is facing a serious problem of increasing healthcare issues. One of the major issues is the emergence of stroke disease.

Stroke, also commonly referred to as Brain Attack, is caused by the lack of blood supply to some parts of the brain.

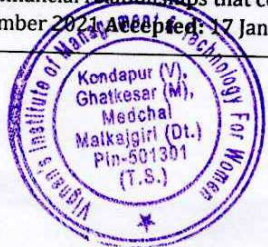
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An Efficient Data Mining Technique for Structural Strength Monitoring System

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Keywords:

classification, classifiers, clustering, structure strength, integrators

ABSTRACT

A fundamental target of strength monitoring frameworks for different structures is to analyze the condition of the structure and to assess its conceivable danger and furthermore to investigation, identification, and characterization of danger in complex structures is a critical part of auxiliary strength checking. The capacities are browsed as lexicon of time-recurrence movement and scaled variants of a basic Gaussian hypothesis work. This word reference is likewise adjusted to utilize genuine estimated information. Characterization is then accomplished by coordinating the removed damage includes in the time-frequency. In this paper, we utilize our model to assess our information mining approach for the fault checking. The balanced scratch-off and high-pass sifting strategies are consolidated adequately to take care of basic issues in numerical reconciliation signs gathered from sensors are disintegrated into direct blends of very confined Gaussian capacities utilizing the coordinating significance decay calculation. The combination exactness is enhanced and contrasted with former numerical integrators. Rough set analysis uses only internal knowledge and does not rely on prior model assumption as fuzzy set methods or probabilistic models do. In this manuscript a novel hybrid algorithm combining the features of Rough set Support vector machine (Rs-SVM) classified structures and Rough set Artificial Neural Network (Rs-ANN) classified structures are used. At long last the vertices of the structure of different types are connected and analysed by the Hybrid algorithm and furthermore to additionally enhance order execution, the data gathered from numerous sensors is incorporated utilizing a Bayesian sensor combination approach.

1. INTRODUCTION

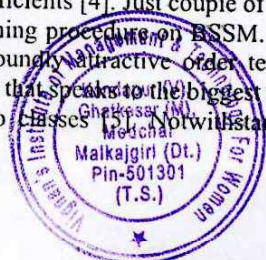
Auxiliary vibration control and Basic Structure Strength Monitoring (BSSM) innovations are worried about the security of structures. The first issue in BSSM is to locate the basic danger and its area by playing out some factual example acknowledgments on the deliberate information named as feature extractions. The danger caused by ecological burdens ought to be fixed; else it will develop with time and may prompt aggregate framework disappointment [1]. Dynamic parameters like increasing velocity, velocity, and dislocating assume a vital job in deciding the structure elements. Particularly on account of scaffolds, removal is an essential data. Customary uprooting sensors are hard to introduce on extensions and can't be valuable particularly amid a seismic movement [2]. Another detecting technique is the Global Positioning System (GPS). Be that as it may, its use is influenced by terrible climate, electromagnetic commotion, Wireless systems are utilized to keep away from the incredible expense of customary conventional anxious frameworks.

The BSSM of tall structures for the most part utilizes vibration information [3]. The danger represents the progressions of auxiliary parameters, for example, the firmness and damping coefficients [4]. Just couple of research utilized an information mining procedure on BSSM. Support Vector Machine is a profoundly attractive order technique, since it offers a hyper plane that speaks to the biggest partition (or) edge between the two classes [5]. Notwithstanding, it

needs to settle quadratic programming (QP) with the end goal to discover a partition hyper plane, which causes an escalated computational complicated nature.

Rough Set Theory (RST), which developed in mid 1980's, is the ongoing scientific tools which is having its significance to information procurement and grouping through AI, Feature supportive networks, inductive thinking and so forth. One prime preferred position of RST is that it needn't bother with any sort of primer data about the example informational collection for example likelihood appropriation, measured likelihood task and so forth. A technique for decreasing ordered information is to utilize the geometric properties of SVM. In computational geometry, various calculations are known for figuring the curved structure for a limited arrangement of focuses [6]. By utilizing a nonconvex disaster work, it shapes a nonconvex SVM [7]. Be that as it may, some great properties of SVM, for instance, the most extreme edge, can't be ensured, in light of the fact that the crossing point parts of informational indexes are not fulfilled curved conditions [8].

Utilizing the RST lessens the properties for SVM activity. Rough Set Theory is one of information mining strategies which lessen the highlights from enormous quantities of information [9]. Utilizing RST needs to fabricate the choice table or the data table. The idea of Rough Set hypothesis depends on the supposition that with each object of the universe (U) there is related a specific measure of data (information, learning), communicated by methods for certain



AN EXPERT WEAPON IDENTIFICATION IN SECURITY SYSTEMS WITH CONVOLUTION NEURAL NETWORK (CNN)-BASED SSD AND FASTER RCNN ALGORITHM

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Abstract-

Because of an increase in crime rates during crowded events or maybe secluded places, security is always a top priority in any profession. Computer vision may be used to solve a wide variety of difficulties, including the identification and monitoring of irregularities. Because of the growing demand for safety, security, and personal property protection, video surveillance systems that can recognise and understand scenes and anomalous occurrences are becoming increasingly important in intelligence monitoring. In this article, a convolution neural network (CNN)-based SSD and faster RCNN algorithms are employed to achieve automated gun (or) weapon identification. The suggested approach makes use of two datasets. One dataset contains pre-classified photos, whereas the other contains images that have been manually categorised. However, practical usage of the results is contingent on a trade-off between speed and accuracy, which both approaches accomplish.

Keywords--Firearm identification, computer vision, quicker RCNN, SSD, CCTV, and Artificial Intelligence (AI).

I. INTRODUCTION

Weapon detection, also called anomaly detection, is the identification of irregular, unexpected, unpredictable, or unusual occurrences or things that are not judged to be a regularly occurring event or a regular item in a pattern or items included in a dataset, and consequently diverge

from present patterns. A pattern that departs from a set of typical patterns is referred to as an anomaly. As a consequence, anomalies are impacted by the phenomena of interest [3] [4].

Object detection distinguishes instances of different types of



Software Prediction of defects at function points stage by means of Neural network

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Abstract— Many authors try to predict the details of defects in software systems, before they deliver it to the customer. The purpose is to attempt to predict the quality of software at different stages in the process of software development. This defect is the sum of the errors found in requirements, design, code, documentation, and bad fixes errors introduced when repairing prior defects. Different variables come into picture in this process. In this paper neural network model is used taking volume of U.S paper work with sizes and domain. Eight form of software paperwork containing requirements, specifications and documentations of few function points are taken as input. US average Defect Potentials per function point (sum of requirements, design, code document and bad fix Defects) of few function points as output of the neural network

Keywords— Software quality, defect potentials, neural network, Introduction

I. INTRODUCTION

Each nodes of input layer receives input signals and combines these inputs and then sends the output signals to some nodes of some number of neurons.

A. Neural network

A neural net is an artificial representation of the human brain that tries to simulate its learning process. An artificial neural network is often called a neural network or simply neural net. Traditionally the word neural network is referred to a network of biological neurons in the nervous system that passes and transmits information. Artificial neural network is an inter connected group of artificial neurons that uses a mathematical model of computational model of information processing based on a conditional approach to computation. The artificial neural network is made of inter connecting artificial neurons which may share some properties of biological neural network. Artificial neural network is a network of simple processing elements which can exhibit complex global behavior determined by the connections between the processing elements and element parameters. Neural networks are capable of solving complex problems by means of its basic characteristics. This paper discusses calculation of six stages (sum of requirements, design, code, document, and bad fix defects.) defect potentials per function point of eight form of software taking its paperwork in requirements, specifications and documents as input form. The data is directly taken following eight software (end user, web, MIS, US Outsource, commercial, systems and military.) [4]



II. ANALYSIS

Four case studies are considered.

Input: 100 function points overall volume of pages per function point for the aggregated sum of major document types containing requirements, specifications, and documents data in terms of pages per function point. Eight forms of industrial software data is. Taken from Capers Jones.[5,6]. Input layer is given Eight input values (End user, Web, MIS, US outsource, Offshore outsource, commercial, Systems, Military). The input values are normalized before passing it through neural network. Back propagation algorithm is used.

Output : This eight form of software data is directly taken from caper Jones.100 function points approximate US average value of defect potentials per function points of defect potentials per function point of 100 function points (sum of requirements, design, code, document and bad fix defects). Three different case results for same input /outputs are given in table [1, 2, 3]

Details of Same Eight forms of software. While comparing the difference between actual output with expected one is taken as error. Sum of errors of all eight forms together is recorded. When the total error is <0.001 corresponding iterations are taken. If the error is more, 20,000 iterations are taken for reference. Average value of input data is 2.73 fp. Average values of Output data is 4.24 fp.

Table-1	100 FP	
Hidden Neurons	iterations	Total error
3	200000	0.3688
6	5329	0.000129
9	5744	0.0012

Input 1000: function points software paper work in requirements, specifications and documents (data in terms of pages per function point) from the same source. Total Errors are calculated for three different number of hidden neurons and iterations, and given in Table 2. Average value of input data is 5.27fp. Average value of output data is 5.27fp.

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AI based Machine Learning Model for COVID Data Analysis

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ABSTRACT

At present Scenario data science and digital image processing are essential technologies used in many health care applications for quick, accurate detection and analysis of patient's big data. Statistical analysis in data science was useful tool to diagnose quickly and give proper treatment for covid disease effectively and efficiently. Artificial Intelligent based Machine learning techniques efficiently monitoring the cases who take proper treatment and vaccination based on gender and age. Analysis reports are obtained accurately such as diseases spread through community contact and recovered, Cases recovered and not hospitalized, not hospitalized and recovered etc. Big Data analytics assist the early recognition of COVID-19 through the investigate significant characteristics that permit the treatment to classify the factors that facilitate the early detection of the infection.

Keywords: Analysis, Artificial Intelligence, Detection, Diagnosing, machine learning

INTRODUCTION

AI-based algorithm using CT scan images to detect CoVID-19 in such a way to help doctors to diagnose CoVID-19 patients and help them decide what to do next depending on the output of the algorithm, help automate the diagnosis of patients to help doctors to know severe or not, decide how to proceed for patients, free up doctors time as the algorithm will automate a process that can be very time consuming. AI based covid detection using machine learning helpful for radiological diagnostics, prognostics' based on clinical data, pharmaceutical discovery, test kit development, virus function & disease progression, identification of potential drugs and methods [Fig-1]. The versatility of artificial intelligence (AI) has surged up the momentum to implement the technique [1] [2] for medical and societal adversity in the COVID-19 epidemic [3] [4] [5].

Machine learning technique used for diagnosing, calculating, forecasting and examine, evaluation. clinical performance medical AI-based approaches [6–10] can be implemented using machine learning (ML) which can be further subdivided into deep learning, artificial neural network (ANN), fuzzy logics, and reinforcement learning. In addition, algorithms like support vector regression for predicting the spread and analysing the growth/transmission rate [11–14], random forest machine learning model for anticipating compound growth rate [15–23] with respect to social distancing stringency and as a discrimination tool for early screening [17–19] have contributed towards gaining an improved understanding of the potential risk factors. Regression models are used for COVID are

- Least Absolute Shrinkage and Selection Operation (LASSO)
- Random forest
- Decision tree regressor
- Linear regression
- Support vector machine
- Polynomial regression

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Storage and Security Issues of Medical Images using Cloud Platform

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Abstract: In this current era of technology people are interested more in online medical facilities for more faster and comfortable life. Because of huge demand, health care field is growing rapidly. The data in the form of x-rays, diagnosis reports, MRI images, videos is generated. Such form of data consumes large amount of storage space and processing power, therefore nowadays alternate solutions such as cloud storage are used to store such huge data. As the medical data in the form of images or videos is very important and confidential it is very crucial to concentrate on the issues like storage and security. The proposed work discuss about the image security techniques like watermarking using different types combined with data encryption techniques during transmission so as to ensure better security along with reduction in cost for storage with the use of cloud environment. In this study, we offer a deeper insight into the challenges hindering the adoption of this technology. Then we analyze and compare these findings of the cloud based medical image process implementation with security necessities.

Index Term: Image security, Watermarking, Health care ,transmission

I. INTRODUCTION

In the supportive associations field, recuperating picture planning through cloud will show to be a standard blueprint. As a last resort masters are benefitted as it gives epic pictures through which end should be conceivable with exactness and better treatment can be given through chronicled data and current data which will be investigated. In like way, this new perspective licenses empowered exertion between helpful associations specialists planned at better places.

Removing the distinctive perfect states of passed on getting ready, moving towards cloud a risings faltered troubles.

In such way, security and affirmation are the standard obstructive fragments for the wide confirmation of healing picture getting ready over virtual stage. Starting at now, different executions are proposed pointing towards the advantages of this new perspective.

Common pictures hold tight in progress data structures, cloud or elective systems are of key criticalness. Affirmation and security must be

protected for such pictures through encryption and underwriting structures. Mixed and watermarked pictures during this required to be reversible in like way the plain picture handled inside the encoding and watermarking structure will be absolutely redeemable. In this paper, we will if all else fails undertaking an absolutely redeemable mixed and watermarked picture process system for the insistence of helpful pictures in progress data structures. The methodology is used to endure observer to and secure the accommodating pictures. Our results showed up, obviously, to be terribly reasonable and strong for completely recoverable pictures.

In the power disclosures the symmetric encryption figuring is proposed in which the riddle key is passed on from the patient individual data what's more watermarking is created for underwriting.

II. CLOUD SYSTEM ARCHITECTURE

The proposed system consists of the cloud architecture as shown in the figure 1, that describe some problem and it consist of four parts

- 1) IaaS that is the Infrastructure as a service
- 2) The Proxy service
- 3) The Server meant for security
- 4) Entry

1. IaaS

The IaaS is answerable for data accumulating and search segments. In any case, ethically the cloud organization supplier should not be empowered access to the information changed or hold tight inside the cloud. In these conditions, it is definitely not a clear task to develop a cloud based help that has server viewpoint data amassing and looking frameworks.



CROSS VALIDATED HARD ENSEMBLE MLP CLASSIFICATION TECHNIQUE TO DETECT PARKINSON'S DISEASE

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ABSTRACT: The movement of the human body is controlled by a drug known as "Dopamine". The lack of which may not communicate the information to the brain cells and results in damage of brain cells. This is considered as vital symptom of "Parkinson's Disease". The impact of this disease on the nervous system is increasing with the stress lives of the human beings. This is highly impacted in areas, where health care is not provided up to the minimum facilities. So, for the better living of the human beings, a health care system is needed, which can identify the symptoms of this disease at early stages. So that, a life of human being can be saved. This paper has studied various systems that are developed to identify the Parkinson's disease using various popular algorithms in ML & DL. Most of the systems have acquired good accuracies but still there are few gaps identified in this paper. These gaps are resolved using ensemble techniques of machine learning and obtained an accuracy of 97.02%.

Keywords: Feature Extraction, Health Care, Voice Analysis, Classification, Evaluation Metrics

1. INTRODUCTION:

It's a bit sad to know that nearly 10 million people throughout the world are affected from the survey done by the medical associations till 2020. Out of which, most of the people are either middle aged or old aged people. The impact of the stress is making the neurons not to produce dopamine element, which gradually affecting the brain cells and damaging the nervous system and a major impact of this disease is voice impairment. The figure 1 represents the overall classification of machine learning algorithms



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CREATION OF SYNTHETIC DATA OF CHEST X-RAYS FOR DETECTION OF COVID-19 USING UNETGAN

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ABSTRACT: People began exploring using available chest x-ray images of lungs in 2019, when COVID-19 began spreading as a viral infection over the world. However, the research paper discovered that the available photos are limited, and the majority of the symptoms are comparable to pneumonia sickness. So, before completing the multiclassification procedure, this study aims to increase the dataset size by merging the UNET with cyclic GAN's. The majority of real-world data is in an unbalanced state, which has an impact on the design's overall architecture and performance. Many researchers have used manipulation techniques such as translation, rotation, and others to increase dataset size, but these fundamental and easy procedures have little effect on the model due to the high dimensionality of medical pictures. By executing segmentation utilising the UNET operation, the improved cyclic GAN's mechanism aids the research article in creating a balanced dataset with a greater number of augmented or reconstructed CXR images.

Keywords: Cyclic GAN, Semantic Segmentation, UNET's, Up-Down sampling, Cycle Consistency, Contraction and Expansion Path

INTRODUCTION:

For the past few years, CNN has been the most often used word by most researchers, industry professionals, and other significant AI figures. CNN is a deep learning method for distinguishing between different input items based on the weights applied to them in a prioritized order. The fundamental benefit of artificial neural networks is their ability to recognize relationships between spatial and temporal variables using various types of filters. Any network's main goal is to interpret the input images with the fewest amount of trainable parameters possible. In a real-



A Survey Analysis on Data Mining Techniques: ANN & VSM

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ABSTRACT:

The knowledge or data extraction from some huge collection of data that is preserved in many data collections, which are heterogeneous, is termed as Data mining. The message relaying in this procedure is sometimes direct and sometimes indirect. The research in the current study is to provide a survey on various aspects of data mining in other fields. The aspects are the Artificial Neural-Networks(ANN), Vector-Space Model (VMS)and Spatial-Image Mining (SIM)along with the artificial neural-networks. This paper furnishes the data regarding the aspects of data mining in the above mentioned themes. The current research visualizes the SIM with the relative implementations and computations utilizing VSM and artificial neural-networks.The comparison between different algorithms like BM-Cilin, VSM and VSM-Cilin with respected to different datasets or different types of areas like Entertainment, Military, Sports and Political. Among all our method got better results the

Keywords: Data-mining, VSM, RST, SIM, Neural-networks.

I. INTRODUCTION:

The current enhancements in the IT have resulted in an outrageous growth of data in the last decade in many areas. The process of storing and processing the present data and decision making have been on research for quite some time for enhancements. The methodology in which the extraction of patterns and some data is done from a huge set of data is termed as data mining. It's a logical method which is preferred to compute on data sets to find some useful information. The datasets are very essential for the determination of the patterns and abide their optimum. Requirements and accuracy of the system developed.The term "data mining" is often used interchangeably with KDD. The term confusion is understandable, but "Knowledge Discovery of Databases" is meant to encompass the overall process of discovering useful knowledge from data. Meanwhile "data mining" refers to the fourth step in the KDD process. This is commonly thought of the "core step" which applies algorithms to extract patterns from the data. It parallels the "modeling" phase of other data science processes.

While KDD variants can range from 5 to 7 steps, many influential and authoritative voices on the matter regard KDD as the following 5-steps process: Selection, Pre-processing, Transformation: Data Mining: Interpretation/Evaluation: The below figure-1 shows An Outline of the Steps of the KDD Process.



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MANET Energy Efficient Multi-Path Routing using Ant Colony Optimization and Binary Particle Swarm Optimization

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Abstract: The MANET is a network of autonomous mobile devices that are wirelessly connected to one another. Because of their high energy consumption, the nodes in this network have a short life expectancy compared to other networks. When it comes to extending the life of a network, optimization approaches are often used. The optimization techniques of Ant Colony Optimization (ACO) and Binary Particle Swarm Optimization (BPSO) are merged in this study to develop an ACO: BPSO hybrid strategy that is designed to extend the lifespan of the network by increasing its density of ants. The ACO assists nodes in transitioning from ACTIVE to SLEEP state. With the use of the NS2 simulator, it was discovered that the proposed method outperforms existing strategies in terms of throughput, PDR, and residual energy.

Keywords — Energy efficiency, ACO, PDR, MANET, Optimization, BPSO

I. INTRODUCTION

The fact that MANETs do not have a defined network means that they are nothing more than a collection of self-routing devices that link to one another and to the rest of the world. In the absence of a centralized authority, people are more likely to depend on their neighbours to interact with one another and create social groupings. Because of the mobility of the devices, the topology changes over time. The energy consumption of a device is more important in multi-hop networks than it is in mobile networks, which is the norm. However, even if energy economy is an important issue, the routing mechanism should also be taken into account in terms of the session's overall reliability and scalability. In many situations, the energy of mobile devices is required in order to ensure that the connection is stable and that continuous communication may continue indefinitely without interruption. Because the most energy-efficient route is selected, the routing strategies that are used contribute to a reduction in energy consumption. Most routing systems choose nodes that are the minimum feasible hop distance apart from one another based on the protocol they are using. Many current network optimization algorithms, such as those described in [1, 2, and 3], are focused on selecting optimal nodes based on the amount of residual energy that is present in the network. A valid interpretation of multi-node route selection as an optimization problem may be made in light of this fact. Recent years have seen an explosion of novel optimization approaches




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Diabetes Prediction using Machine Learning Techniques

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Abstract:

Diabetes is a disease that develops as a result of a high glucose level in the bloodstream of a person. A person's diabetes should not be disregarded; if left untreated, diabetes may lead to serious health complications in the long run. Such as heart disease, renal disease, high blood pressure, and so on it may cause eye damage and can also have an impact on other organs in the human body. Diabetes may be managed if it is identified and treated early on. In order to accomplish this is the objective during this project's effort; we will look at early diabetes detection. In a human body or on a patient in order to get more precision Different Machine Learning Techniques are being used. Machine gaining knowledge of methods by constructing models using data gathered from patients, it is possible to get better results for prediction. This is the case in this effort that we will put to use Classification and ensemble learning with machine learning Using statistical methods on a dataset, diabetes may be predicted. Which of the following are K-Nearest? KNN (Kindest Neighbour), Logistic Regression (LR), and Decision Tree (DT), Support Vector Machine (SVM), Gradient Boosting (GB), and Support Vector Machine (SVM) The Forest of Chance (RF). Every model has a different level of accuracy than the others. Whenever they are contrasted with other models. The project work provides the opportunity to the model's ability to forecast diabetes with high accuracy or greater accuracy demonstrates that the model is capable of doing so. As a result of our research, we have discovered that when compared to other methods, Random Forest produced greater accuracy. Techniques using machine learning.

Keywords: Diabetes, Machine, Learning, Prediction, Dataset, Ensemble

1) . INTRODUCTION

Diabetes is one of the most dangerous illnesses in the world. Diabetes is caused by obesity, excessive blood glucose levels, and other factors, among others. It has an effect on the insulin hormone, resulting in aberrant glucose levels. Crabs' metabolism is improved, as is the amount of sugar in their blood. Blood. Diabetes develops when the body does not produce enough insulin. Insulin. In accordance with the World Health Organization (WHO), Diabetes affects about 422 million people worldwide, with the majority of them living in low- or middle-income nations. And this may be the case. Up to the year 2030, the total amount of money will have risen to 490 billion. However Diabetes is reported to be prevalent in a number of different countries. Such as Canada, China, and India, among others. India has a population of 1.2 billion people. As the population of India has grown to more than 100 million, the real number of diabetics in the country is 40 million. Diabetes is a leading cause of mortality in the United States. Throughout the whole globe early detection of diseases such as diabetes may save lives. Maintain control while saving a person's life In order to achieve this, this research investigates diabetes prediction by examining a variety of variables. Diabetes-related characteristics are listed below. In order to do this, we using the Pima Indian Diabetes Dataset, we run a number of tests. Techniques for machine learning classification and ensemble learning to be able to anticipate diabetes Machine learning is a technique that is used to learn new things. This method is used to explicitly teach computers or machines. Various Machine Learning Techniques are effective in delivering results. Gather knowledge by creating different classifications and categorizations ensemble models derived from a dataset collection such information was gathered Diabetes may be predicted with the use of statistics. Various methods are used. Machine Learning is capable of making predictions; however this is not always the case. It's difficult to decide on the ideal method. As a result, for this reason On the basis of popular classification and ensemble techniques, we develop a dataset for the purpose of prediction

2) REVIEW OF THE LITERATURE

K.VijayaKumar et al. [11] presented a random Forest algorithm for the prediction of diabetes and developed a system that may be used to diagnose the disease. Can make an early diagnosis of diabetes in a patient who has a genetic predisposition The Random Forest method, which is used in machine learning techniques, provides more accuracy. The suggested model provides the following:

Findings for diabetes prediction were the best, and the outcome indicated showed the diabetes disease prediction system is capable of accurately, efficiently, and most importantly, accurately forecasting the diabetes disease



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A secure new HRF mechanism for mitigate EDoS attacks

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Abstract: This paper proposes HTTP request filtering (HRF) mechanism to detect and mitigate EDoS attacks and compare the performance with existing mechanism through game theoretical approach. The HRF mechanism was implemented with three stages and hosted on web application firewalls (WAF). The performance of these mechanisms with cost analysis is done using finite queuing model. The efficiencies are compared with the formation of two player non-cooperative zero-sum game and gains are calculated based on loss probability as a QoS metric. To obtain the analytical solution and computation of game value, different probabilities of defending strategies and attacking strategies through numerical illustrations are carried out. The results are discussed and finally conclusions are drawn.

Keywords: HTTP request filtering; HRF; cloud security; web application firewalls; WAF; honeypot; game theory.

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A Sophisticated and Light weight Cryptographic Protocols for Data Security in Wireless Sensor Networks

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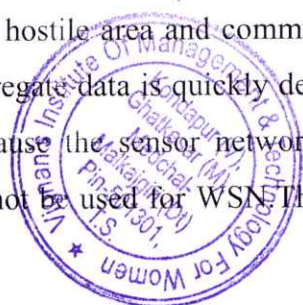
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Abstract

Wireless Sensor Networks have been used practically every application because they give a cost-effective solution to real-world challenges. However, the sensor nodes have limited processing capacity, battery power, and memory. These nodes immediately transmit the measured environmental or physical data to the Base Station (BS). This direct transfer of data raises the cost of data connectivity. Furthermore, increased data exchange consumes more energy, reducing the lifespan of sensor networks. As a result, the data aggregation methodology is used in WSN to minimize transmission costs and extend the lifespan of sensor networks. Because the nodes are put in a hostile area and communicate through broadcast, the sensor nodes are quickly taken, and the aggregate data is quickly destroyed. As a result, data security is an important study topic in WSN. Because the sensor network has limited resources, specific wireless network security solutions cannot be used for WSN. The research that has been done indicates that lightweight block cyphers



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