3.2.1 JOURNAL PUBLICATIONS

INDEX SHEET

3.2.1: Number of research papers per teachers in the Journals notified on UGC website during the last year

Sl No.	Description	Year	Numbers
1	Number of research papers per teachers in the Journals notified on UGC website during the last year	**2021-2022**	**110**

VEHICULAR PLATOON BASED TRAFFIC CONTROL SYSTEM

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ABSTRACT

Nowadays, the increase in the flow of traffic raises the need for a new technology that can improve the efficiency and safety of travel systems. Road safety can be improved by building wireless networks using platooning technology. Platooning is an idea that one vehicle tracks and follows the movement of another. Aiming to provide reliable wireless communication for the vehicle network. This paper presents an implementation of vehicle-to-vehicle communication at low cost and an efficient platooning system is designed. Zigbee module is used to communicate between the vehicles. Ultrasonic sensors, Infrared sensors, Arduino Board, Zigbee module are used to implement the complete design.

Keywords: *Platooning, Sensors, V2V communication, Zigbee*

Introduction

Nowadays, road accidents and traffic jams are the major issues in day to day, life. Platooning of the vehicle is a technology build based on V2V communication and **Cooperative adaptive cruise control** (CACC) controller. Figure 1 shows the platoon communication. The algorithm is developed which operates by communicating with vehicles indicating the accidents, traffic jams, weather conditions, road work, etc. The communication involves sharing the information from the moving vehicle to the previous vehicle and is ongoing. In the real scenario, the communication takes place through **Dedicated short-range communication (DSRC)**. These are wireless communication channels designed for automotive purposes. DSRC technology also helps VANETS to convey with the larger network through mobile stations and the internet. The speed of the vehicle can be controlled by CACC. We proposed zig-bee technology to establish a communication between the prototype model.

Some researchers have been developed for platooning of vehicular safety and transportation efficiency. In work [1] describes platooning dynamics for a self-driving vehicle, effect on increasing the road capacity and safety, reduce fuel consumption and CO_2 emission by 10% and also introduce the protocol for maneuvers such as joining, leaving maneuvers, reliability and driver comfort.

In work [2] the authors described the communication established between vehicles using long term evolution (LTE) network where the information can be transmitted by the messages received by the cellular mobile station which then re-transmitted to intended vehicles. In work [3] V2V communication utilizes sensors for warning messages and to avoid head-on collisions. In work [4] it is focused on pre-cash detection and warning system, blind-spot detection system based on V2V communication system.

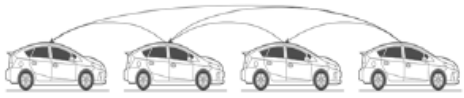

Fig. 1. Platoon communication

Methodology

Working of Prototype Model

Figure 2 shows the proposed block diagram of the vehicle1 and vehicle 2 model. It consists of the Ultrasonic sensors, Infrared [IR]sensors, Motor Driver with DC Motor, Zigbee module.

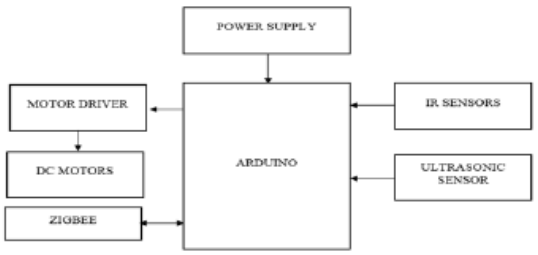

Fig. 2. Block Diagram of Vehicle 1 and Vehicle 2 model

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Power Monitoring in Hybrid Power System with Fault Detection

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***Abstract*— This project focuses much on the efficiency of monitoring process of Hybrid Power System and Fault detection. It aims to build a hybrid power system which is completely reliable on renewable energy sources on the generation side and monitor the power from Solar and Wind energy sources through a DC microgrid implementation The system is automatic with the use of sensors and controller for monitoring and detecting the possible faults that occur in the DC grid. Faults detected are indicated and in a swift the relay operates protecting the load from possible damage that could occur due to fault.**

***Keywords*—DC Nanogrid, Hybrid Energy, Solar, Auduino based, autonomous**

I. INTRODUCTION

We require electricity for operating the majority of the appliances we use in our day-to-day life. So, it has become an important a part of our life. Now there are two ways to supply electricity first by using non-renewable sources of energy and second by renewable sources of energy. With increase in population and advancement of technology, consumption of electricity is additionally increasing exponentially. Simultaneously, we've to increase generation of electricity also to fulfill the stress of growing population. The largest disadvantage with the usage of conventional resources is that their usage causes pollution thanks to the assembly of varied pollutants like ash just in case of a coal station, smoke just in case of diesel power station, stuff just in case of atomic energy plant. Maintaining these pollutants isn't a simple task, and it also requires lots of cash. So, we've got to seek out another methods to supply electricity. The simplest possible way is by using non-conventional sources of energy. Out of all the possible options available in non-conventional sources of energy, solar and wind are the simplest methods.As tidal energy is used only on the ocean shores, ocean thermal energy may be utilized in the center of the ocean and its setup is additionally very difficult. While solar and wind are available all told the areas of the globe and fitting their powerhouse is additionally not a cumbersome task. Energy from Solar and wind for power generation may be a promising solution pleasing the stress of both the agricultural and concrete population. Utilizing the renewable energy can overcome several issues within the environment like environmental pollution, degradation of fossil fuels resulting in heating may be reduced therefore, and also the ecological balance and atmospheric condition is maintained. We are able to supply to GRID also, just in case our consumption less and generation is more. In our project we are specializing in the employment of renewable energy and build up a hybrid power grid with an automatic power monitoring through sensors and controller . Also sensing of parameters like voltages & current which successively helps us program to detect faults if any and monitor faults through relay operation.

II. LITERATURE REVIEW

M.Tech Scholar Kurukshetra university in their paper discusses about hybrid power system implementation through Simulink model. Comparision of wind and pv system has been made in this paper, and specifications, principle to supply power to grid has been discussed.

Mergu Chandramouli (IJEREEE) dicusses about SWHES i.e Solar Wind Hybrid Energy Systems, the need for solar wind energies as they are clean sources of energy with abundant availability in nature. They are pollution safe and doesnot effect environment.

Snehal Namdev Mitak in their paper explains the use of the green energy technology powe power generation , the possible application of wind and solar for providing power to house . Use of green energy for domestic purposes is discussed with its possible uses and results

Yandra Shivrath (IJMER) comes up with a innovative idea of powering pumps in agricultural fields with hybrid stand alone system.

Dicusses about the scenario of entire country and requirement for its implementation in India.

2019 IEEE APAP in their paper explains about the battery storage technology with its possible applications, usage and more. They also focus on the control logic technology, need for it and possible techniques that can be employed.

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CHARGING OF ELECTRICAL VECHICLE THROUGH RENEWABLE GRIDS

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Abstract: In this paper we are introducing an updated version of charging of batteries through renewable energy grids. The major sources of this charging by solar panels and wind turbines. A voltage regulator is used to produce a constant voltage at the output side. Buck-Boost converter is used to convert the low voltage DC [LVDC] to high voltage DC [HVDC]. A rectifier circuit is used only at the output of the wind turbine which rectifies the harmonics produced. This power is stored in the battery. The output of this battery can be used for any type of electrical component. However, we are using a switching mechanism used at the battery side which makes sure that output from the batteries will be continuous.

Keywords: Energy grids, Solar panels, Wind turbine, Buck-Boost converter, LVDC, HVDC, Rectifier, Batteries, Voltage regulator.

I.INTRODUCTION

As we move toward the next generation where every machine or some other thing that makes human work easy will work only on electrical energy. If that is the case, then production of this energy and storage of these charges will be a major task for humans. Through this project, we have come up with a production of this energy by renewable energy.

These two major renewable energies by renewable energy. These two major renewable energies are easily available in our nature. Even people living in the urban area can easily find this out. Till now the major producer of electrical charges was from a thermal power plant, But the pollution produced by these power plants is very harmful to nature. By the latest research, deforestation is increased from 11.5% to 22.5% in the last 15 years. These woods go for burning. In this way, we make sure that the production of electrical energy will increase day by day and also make sure that we are not harming the environment. According to a World Health Organization report, India ranks 13th out of 20th highest polluted countries in the world. The implementation of this project can help us to reduce carbon dioxide emissions by about 50%. Battery charging from renewable energy systems is possible with hybrid wind-solar energy. Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Moving towards energy sustainability will require changes not only in the way energy is produced. In this project, we have proposed the design and development of the battery by renewable energy grids..

Smart Heart Attack Detector Using Raspberry pi

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Abstract: *Nowadays, in everywhere heart attack are the major problems in all age groups. In this paper we are introducing how to detect heart attack. It consists of three sensors heart rate, blood pressure and accelerometer sensors which extract the accurate readings of temperature and send the data to the raspberry pi. The heart rate pulse output is connected to GPIO pin of controller. The controller is connected to the cloud which is interfacing using think speak API. The data is sensed by logging in cloud URL. The android app is developed to observe login and request for the URL. This paper benefits the reducing cost of heart attack in humans.*

Keyword: *Raspberry pi, Heart rate sensor, BP sensor,.Accelerometer, Thing speak tool.*

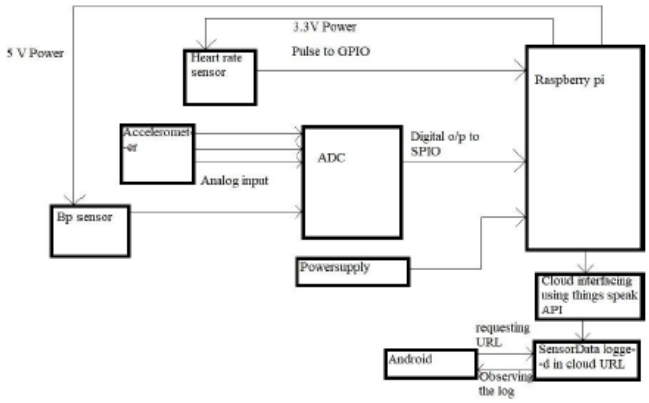
INTRODUCTION

In the Worldwide, heart attack is one of the most leading causes of human death. An aging population is not the sole contributing factor to increase the level of non-communicable disease called cardiovascular condition. Even though heart attack is life threatening, it has early symptoms that could greatly help in saving person's life many times.usually heart attack detection isdone traditionally using specialized hardware devices.In work [1],this system gives alert to caregivers made available for remote use and only to authorized users like remote specialist doctors for special advice.In [2],authors have developed the state of art systems available for monitoring different vital parameters like temperature ,blood pressure and heart rate response.Another work [3],authors have introduced system which includes automatic data collection of different signal from heart and detection of heart attack or emergencies related to other heart diseases using different strategy.[4] By authors proposed heart attack detection system using zigbee heart rate monitoring and alert system.In hospitals and homes cardiac patients can be monitored using heart attack detector based sensor networks.

In [5] ,authors have developed portable device which are location tracking smart phones used for health monitoring of cardiac patients. we have proposed a portable wearable system that can continuously monitor for any early symptoms of this medical situation ,and avoiding consequences if it is detected and reported in a timely manner .It also includes an open source monitoring application that graphs patients pulse in real time using smart phones capable of detection ,storage and analysis of collected records, which could informthe patient as well as caretaker within their location .

METHODOLOGY

Figure 1 shows the block diagram of the system procedure. It has three types of sensors used, Heart rate sensor, BP sensor , accelerometer ,ADC ,Raspberry pi connected to cloud interfaced with Things speak API.



SPEED CONTROL OF DC MOTORS BY USING MULTILAYER NEURAL NETWORK PARAMETER TUNER FOR PI CONTROLLER

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ABSTRACT

A multilayer neural network parameter tuner (NNPT) for PI controllers is employed in this project to improve Dynami response of DC motors in terms of speed and torque. The DC motor is subjected to intensive development, but it still ha nonlinear properties which require more complex control systems. By developing adaptive motor control systems, th problem of nonlinear structures can be solved. A traditional PI controller's working performance cannot be relied upon t control the speed of DC motors. A multilayer neural network parameter tuner for PI controllers is developed in this projec to adjust the speed and other parameters of the DC motor by making adjustments of the values like Ki and Kp. I comparison with traditional PI controllers, the NNPT is expected to provide superior performance

Keywords: *matlab, NNPT, jupyter notebook , PI controller*

I. Introduction

A deep learning system uses layers of neural networks in order to accomplish its task. Deep learning adopts a conceptual approach similar to the way the human brain processes data in order to identify speech, translate languages, recognize objects, detecting objects and for making the decisions. In order to simulate human intelligence, Deep Learning uses NN. Neurons are arranged in three layers of a neural network: the Input Layer, the Hidden Layer, and the Output Layer. A feedforward NN is a network where there is no cycle in the connections between nodes. Here nodes are nothing but neurons. In this network, the information moves in one direction i.e from the input nodes, through the hidden nodes and to the output nodes. The weights applied to the inputs are then applied to an activation function, along with the bias, of the signals that are transmitted between neurons. The delta rule is Backpropagation algorithm. Backpropagation algorithm calculates the error based on a known and desired output for each input value, it is usually classified as a type of supervised-learning . This project uses back propagation algorithm to train and implement the feed forward neural network tuner.

II. Literature Survey

Tuning pid controllers for dc motor by using microcomputer .(ali hussein mohamed alhili):international journal of applied engineering research 2019:

This paper present a review study of tuning of PID controller for speed control of DC motor. PID parameters like kp ,ki ,kd are tuned using the different methods. Here in this paper, Tuning is done by the Ziegler-Nichols method using MATLAB programming as well as python programming technique. Raspberry pi is one of the microcomputer ,was taken into consideration as it supports Linux based operating system and it is programmed using python. As part of the conventional closed loop control system, the User Interface Unit, Feedback Circuit, Error Detector, PID controller circuit, and the control signal generator are integrated into the hardware circuits. Here, all these hardware functions are integrated using a single Raspberry Pi. The logic for the PID controller can be implemented on Raspberry Pi by using Python.. When Python programming was compared to other techniques, the results showed that the former had better parameters for performance.

B. Artificial neural network for adaptive pid controller. (frantisek kudlacak) ieee conference 2018:

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Experimental Investigation of Effects of T3 Hormones on Human Body and their Analysis

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Abstract: *The diagnosis of thyroid disease fully depends on hormones. Generally doctors use medical history in diagnosis but it is not sufficient because without physical exam and medical hormonal test does not diagnose clearly. In any case if pituitary gland not properly works means T3 functions are not properly work. Thyroid function inter relate with every function in human body. If human body function not properly work then some symptoms overcome in human body as like fatigue, weight gain, mood issue, irregular period, muscle pain cold hand, dry and cracking skin neck swelling etc. Generally thyroid problems are two types' hypothyroidism, and hyperthyroidism. These two different problems have different own symptoms in human body. By the help of Iodine easily maintain thyroid gland hormones because thyroid gland converts Iodine in triiodothyroxine (T3). Many thyroid cells are in the human body. In this work we analysis the various age group T3 data for Female and Male patients.*

Keywords: T3 hormones, Human body, thyroid hormones, Metabolism

1. Introduction

Thyroid hormone is the hormone that's mainly responsible for controlling the speed of your body's metabolism. In infants, thyroid hormone is critical for brain development. Your thyroid, a small, butterfly - shaped gland located at the front of your neck under your skin, makes and releases thyroid hormone. It's a part of your endocrine system (Klein, I., &Ojamaa, K.2001).

Hormones are chemicals that coordinate different functions in your body by carrying messages through your blood to your organs, muscles and other tissues. These signals tell your body what to do and when to do it.

Metabolism is the complex process of how your body transforms the food you consume into energy. All of the cells in your body need energy to function (Mullur, R., Liu, Y. Y., & Brent, G. A.2014).

Thyroid hormone actually represents the combination of the two main hormones that your thyroid gland releases: thyroxine (T4) and triiodothyronine (T3). They're often collectively referred to as "thyroid hormone" because T4 is largely inactive, meaning it doesn't impact your cells, whereas T3 is active. Once your thyroid releases T4, certain organs in your body transform it into T3 so that it can impact your cells and your metabolism (Ormston, B. J., et al., 1971)

Your thyroid also releases a hormone called calcitonin to help regulate calcium levels in your blood by decreasing it. Calcitonin isn't grouped into the "thyroid hormone" name, and it doesn't impact your body's metabolism like T3 and T4 do (Korevaar, T. I., et al., 2019).

The production and release of thyroid hormone — thyroxine (t4) and triiodothyronine (T3) — is controlled by a feedback loop system that involves the following:

- Hypothalamus.
- Pituitary gland.
- Thyroid gland.
- Multiple hormones.

Your hypothalamus is the part of your brain that controls functions like blood pressure, heart rate, body temperature and digestion.

Your pituitary gland is a small, pea - sized gland located at the base of your brain below your hypothalamus. It makes and releases eight hormones.

Your pituitary gland is connected to your hypothalamus through a stalk of blood vessels and nerves. This is called the pituitary stalk. Through the stalk, your hypothalamus communicates with your pituitary gland and tells it to release certain hormones.

To start the feedback loop, your hypothalamus releases thyroid - releasing hormone (TRH) which, in turn, stimulates your pituitary gland to produce and release thyroid - stimulating hormone (TSH). TSH then triggers your thyroid to produce T4 and T3. Of the total amount of hormones that TSH triggers your thyroid to release, about 80% is T4 and 20% is T3. Your thyroid also needs adequate amounts of iodine, a substance you get from the food you eat, to create T4 and T3 (Dayan, C. M.2001).

This hormone chain reaction is regulated by a feedback loop so that when the levels of T3 and T4 increase, they prevent the release of TRH (and thus TSH). When T3 and T4 levels drop, the feedback loop starts again. This system allows

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A NOVEL APPROACH FOR AN INTEGRATED SMART HOME AND AGRICULTURE MODEL

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ABSTRACT

A Smart Home and Agriculture System can smartly and efficiently operate on its own through automation. This project is implemented by gathering data related to the home such as time of switching on the lights, presence of people, temperature and humidity so that the operation of the domestic appliances can be automated. Similarly, data is such as soil moisture, mineral content, temperature, etc., will be collected and processes such as irrigation and fertilizing will be maintained. All the data will be made available to the user through the internet on his phone from where he can not only monitor but also control. This is implemented through the Internet of Things.

Keywords: *IoT, color rendering*

Introduction

The human population is on the rise, therefore we need to grow more crops and hence need more land, this land is obtained by deforestation which affects the biosphere adversely.

Our project is to integrate the home and farm as one unit. We would be having a smart home with not only automation of the home but also a mini indoor farm that can accomplish the provision of small fruits and vegetables.

The project is going to consist of a system that is going to monitor the home appliances and operate them automatically smartly and efficiently and also is going to consist of a system that will be used to grow the crops.

Literature Survey

Improving "color rendering" of LED lighting for the growth of lettuce

The "color rendering" of LED light is used for the growth of plants which is subjected to the absorption spectrum of lettuce. It is found that RYB light is similar to the ideal spectrum, which is good for the growth of a plant. The plants grow bigger under RYB light. The leaf growth rate is faster under the RYB light, and the leaf expands more rapidly under the RYB light.

A Study on Smart Irrigation System Using IoT for Surveillance of Crop-Field

In this paper they have implemented a Smart Irrigation System Using IoT for Surveillance of Crop Field, they have employed a system that involves an Arduino Uno board collecting sensory data from the sensors such as temperature, the humidity of and soil-moisture content the crops field and sends it to the user via Bluetooth, to his mobile application. If the soil moisture is below the set limit then the motor is turned on automatically to irrigate the field. The user can also irrigate the field manually by turning on the motor by using the application. An ultrasound sensor is placed in the reservoir to measure the volume of water present

A Study on Smart Irrigation Systems For Agriculture Using IoT

In this paper, we see that not only the data related to temperature, humidity and soil moisture is concerned but also other related and important data such as intensity of sunshine,

wind speed, crop growth rate and crop type is also considered. This data is updated to a web page via the internet and allows for remote monitoring of the crops. This project was mainly developed for the optimum usage of water to irrigate the plants in regions that have water scarcity. The above data is used for the irrigation of the plants without the wastage of water or

even when less water is available. With proper irrigation, there will be better and higher yield of the crop.

CLOUD BASED AUTOMATED WASTE SEGREGATOR USING ML

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ABSTRACT

As we all know, cleanliness is the major factor for human health. One important feature of cleanness is the efficient waste disposal. Waste disposal has become a huge cause for concern in today's world. And improper disposal of waste which affects the environment and leads to spread of diseases. Since people are not following the guidelines issued by government and are not segregating the wastes into different categories leading to improper waste disposal. So, we have proposed a system which segregates various kind of trash based on their nature and dumped into different compartment at the disposal level itself .it uses appropriate sensors and image processing techniques to classify the plastics from other waste. This idea helps in proper waste management and thus able to distinguish the recyclable and non-recyclable waste. This provides efficient and hygienic waste disposal system helps in waste Optimization.

Introduction

Waste management is an important requirement for ecological sustainable development. Approximately 1 lakh tons of waste is generated every day in our country . Among which only small amount of waste is recycled.So possible solution for this problem could be segregating the waste at the disposal level itself. Using Embedded technology and image processing technique waste can be sort into metallic waste, wet waste ,dry waste , and plastic waste present in dry waste , thereby making waste management more effective.

The quantity of waste that are being dumped world wide increasing day by day due to the increase in urbanization and advancements in technology which increased migration of people to cities which results in increased waste generation. The segregation of the waste following that transportation and discarding of the waste needs to be very specific and controlled so as to avoid the risk to the health and safety of the public. Different types of wastes need to be sorted and treated effectively for reasons like hygiene, control the spread of diseases and toxicity. Waste segregation is an important and inevitable stage in waste management. However, in today's busy life schedule wastes are thrown in every hook and corner of the city roads making it difficult for the waste segregators to segregate them manually with bare handed which leads to health issues. Most of the waste are dumped directly to the landfills without proper sorting and this has caused a huge impact on us. Where the landfills are reaching its maximum capacity.

Most of the waste have some reuse or recycle content that need not to be thrown away and unproductive method of waste disposal do not allow these materials to be fed back to the system for recycling and reuse, this leads to an unnecessary pressure of utilization of resources resulting in resource depletion.

In accordance with the swatch Bharath initiative launched by the government of India which focuses to provide clean nation, so a smart bin which segregates the waste more effectively and recycling much easier may possibly be the solution for simple and convenient waste management

The proposed design which works on a simple and efficient approach .it can be customized for household or public use depending on the applications . it uses some sensors to detect the type of waste and a camera is used for image acquisition and classification of plastic from other waste

The Properly sorting up of moist, dry and plastic waste lets us recycle it more productively and saves us a lot of money and resources

Related Work

In 2018, "Manisha Jayson, Sanket Hiremath [1]" have developed a system which makes

AUGMENTED REALITY STUDENT CARD (ARSC)

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ABSTRACT

Augmented reality nowadays is widely used in various fields. Increased reality these days is broadly utilized in different fields. The current paper-based understudy card barely contains a lot of data and the text dimensions are somewhat minuscule, makes burden people who experience the ill effects of vision abandons, stressing their eyes while getting to the data from the cards. Alongside the huge development of use in cell phones, this venture is planned to foster an Augmented Reality Student Card (ARSC) to give the fundamental functionalities to boost the utilization of the data on the understudy cards. The data which is gathered, are shown on a cell phone by utilizing Augmented Reality application. At the point when understudy card is filtered, the understudy card capacities as a marker and gives data. Applying the idea of increased reality innovation incorporated with Vuforia library, the application is additionally improved to recover 3D models, 3D movement video, site and web worker network for understudy ID card.

***Keywords**: Unity 3D, Vuforia, Autodesk maya, Application, Augmented reality.*

I. Introduction

Increased Reality has its starting point from the word 'Expand' significance to add or upgrade. The term Augmented Reality was given by Boeing Researcher, Tom Caudell. Here, the increase is being done continuously. One can say that AR is an innovation in the middle of genuine reality and augmented reality. The formatter should make these segments, consolidating the relevant standards that follow. AR can be characterized as the framework where genuine and the virtual universes have been joined, there is ongoing collaboration, and the gadget is enlisted in 3D.

The overlaid material information can be useful or harming. This experience is faultlessly gotten together with the real world so much that it is to be viewed as a clear piece of the veritable environment. Thusly, extended reality changes one's ceaseless perspective on a certified environment, while PC created reality absolutely replaces the customer's actual environment with an impersonated one. Expanded the fact of the matter is related to two generally identical terms: mixed and reality. Moreover, the persistent correspondence between virtual.

Moreover, the virtual things can appear in automated 3D models with a further evolved system of mixing content. The virtual substance is made and prepared of time and set aside locally or in cloud. Possibly than just lowering customers in the virtual world, expanded reality development grows object in the real world by working on the applications with cutting edge information and correspondence capacities. The understudy card is the conspicuous verification card given to understudy, which holds basic nuances of an understudy. The understudy card which is given to understudy from the foundation, doesn't contain bare essential information about an understudy like understudy specialization and casual local area unequivocally proposed for calling i.e., LinkedIn, Skype, Gmail, etc, and moreover school activity entrance like Select Smart, Campus Uno.

A. Examples

1) Google Lens
2) IKEA
3) Snap Chat

II. Methdology

The block diagram consists of various software and the hardware components discussed in the previous chapter. Here physical student id card as a target image, Vuforia is used to create database and license. Later unity 3D is the software where entire design is done. Android SDK is used for building android application.

STRATEGIES TO DETECT COVID-19 AND MEASURES TO PREVENT IT

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ABSTRACT

Severe acute respiratory syndrome (SARS) is an abbreviation for acute respiratory syndrome (sars Syndrome. SARS-CoV-2 is a kind of coronavirus (also known as Novel Coronavirus or COVID-19) is a contagious viral bacterial respiratory illness that will be studied to determine the scope of the epidemic in India as well as future forecasts. The fundamental reproduction number, R0, in China, where the outbreak began, is determined to be between 2-2.5, depending by location. As the Asthma virus spreads rapidly, medical testing kits are in limited supply all around the world. Since the corona epidemic, determining whether or not someone was infected has been extremely difficult. Temperature gadgets are frequently used to tackle this problem by measuring body temperature. These gadgets are equipped with contact - free infrared temperature sensors that can detect body temperature without requiring physical contact. Furthermore, the traditional contact within heat level evaluation has the drawback of wasting commodities and generating problems. We offer a contact free, tailored CBTM construction with an isolated heat sensor to determine the aforesaid problems. In this project, we connected an IR temperature sensor and used a picture of the person to send email warnings when the temperature of a certain person crosses the defined values.

Keywords: *COVID-19, IR temperature sensors, Thermal cameras;*

Introduction

Body temperature is among the most viral things in the human body. By taking the body's core temperature, it is possible to determine whether the patient has fever or not. It can also make educated guesses about the treatment's impact on the patient. It is particularly critical for those who require extensive monitoring (e.g., infants and the elderly). As a result, body temperature is currently the most widely utilized indication by physicians in hospitals to assess a patient's physiological state. As a result, an Automated CBTM technology seems to have become a worldwide research topic, with the primary objective of precisely and long-term body temperature measurement.

The two major types of continuous body temperature monitoring methods utilized today are real interaction and non-interaction. The touch measuring device has the possibility of measuring a high thermal resistance (about 90°C to 300°C) without remaining unaffected by the environment. Many touch techniques for measuring core temperature (e.g., clinical temperatures and thermocouple) are currently used, however this approach not only active industry, space, and commodities, but it also adds to caregivers' workload and wastes resources.

Furthermore, in order to achieve precision in the measuring technique, the participant's activities will be denied, and the approach might cause damage. On comparing the encounter procedures, the non-contact core temperature measurement will use infrared techniques which do not require significant contact with skin cells during the procedure. The most common IR systems are temperature sensors and infrared imaging. In this work, we utilized the Thermo sensor to see the metabolic rate as an image.

Image processing, which specializes with the collection of necessary data connected to digital images and performs a distinctive role in technological progress, is also included in this project. Our main focus will be on acquiring digital photos and then processing them with programmes and techniques to extract relevant data. As the visual data is delivered into the image processing system, it is processed to make it valuable without the need for human observation. Image processing information will play a significant role and assist in a variety of fields where it may be used. Image processing has a wide range of applications and may be used in almost any situation where imaging data can be linked to pre-determined algorithms. It was a sophisticated image analysis tool that also served as the foundation for our research.

Literature Survey

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Original Article

Investigation of Duty Cycle Distortion in Clock Channels with Infinisim Clockedge Technology

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Abstract *- Infinisim has developed a dynamic clock analysis tool, clock edge Simulated Program with Integrated Circuit Emphasis (SPICE) provides accurate results at very high speed and full-chip capacity. The real-time adaptive simulation technology of RASER makes the simulation fast and accurate. Clock edge overcomes the limitations of Static Timing Analysis (STA) and provides the designer with accurate timing analysis, accurate power and leakage data, and On-Chip Variation (OCV) analysis. For accurate analysis of jitters in clock edges, Infinisim clock edge uses SPICE models instead of the .libs method. Earlier days, Prime Time (PT) was used with .libs to calculate the Jitter and delay. This investigation calculates the Duty Cycle Distortion (DCD) of clock sources using Infinisim clock edge. From the final observed results, it was found that the duty cycle is not to be varied as in the case of clock edge by synopsis prime time tool, and the results were found for only 50% duty cycle; hence the analysis also did not as accurate as clock edge.*

Keywords *- Duty Cycle Distortion, Placement, and Routing (PnR), On Chip Variation, Node Based Framework (NBF), Static Timing Analysis, Prime Time, Infinisim Clock edge.*

1. Introduction

Static timing analysis is a simulation method of computing the expected timing of digital circuits without the need to simulate the full circuit. High-performance integrated circuits have been traditionally characterized by the clock frequency they operate. Delay calculations must be incorporated into the inner loop of timing optimizers at various design phases, such as logic synthesis, layout (PnR), and in-place optimizations performed late in the design cycle [1-2]. In the latest decades, the transmission data rate has been hastily improved due to the fast enhancement in all communication methods with VLSI. The main bottleneck to enhancing the rate of data transmission and its lengths is Jitter [3]. Synopsis prime time STA tool provides a signoff solution for timing, Signal Integrity (SI), power, and aware variation analysis. Primetime deals with the interpolation principle to calculate the delay models of each cell [4-6]. Interpolation uses .lib files, which contain information like each cell's input transition and output capacitance. The above parameters calculate the delay of each cell. But in the case of infinisim clock edge, it uses SPICE models, in which the delay for each cell is calculated mathematically. At 28nm technology nodes and below, STA proves overly pessimistic, and OCV leads to unacceptably large guard banding [7-9]. The rest of the article is organized as section II, discussing the infinisim NBF flow. Section III presents the infinisim clock edge analysis results, and Section IV with concluding remarks.

2. Node-Based Framework

The framework based on the node with different parameters like infinisim clock edge, node-based frame workflow, details of duty cycle distortion, and the methodology adopted is as follows.

2.1 Infinisim Clock Edge

Clock edge is a high-performance SPICE simulation tool optimized for clock network analysis [10-12]. The tool runs clock network analysis by performing tracing, netlist annotation, test bench generation, simulation, and data post-processing integrated into a fully-automated flow. The clock edge is fully integrated into the NBF flow. Reports and histograms of various parameters like Insertion Delay, Slew, Duty Cycle, and R2R check [13-15]. Clock edge provides accurate duty cycle information. Each clock from the whole circuit can be simulated separately for 45%, 50%, and 55% duty cycles. The functional failures of the clock at design speed, specific nets with duty cycle error, and specific nets failing to reach rail to rail power supply voltages can be identified [16-18].

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SMART APPROACH FOR GROUNDWATER RECHARGING BY RAIN-WATER HARVESTING

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ABSTRACT

In today's modern world water scarcity is emerging as a new problem due to various issues be it increasing population, industrialization, increase in various forms of pollution. All these issues collectively are becoming a major source for water scarcity or water pollution. Water scarcity is majorly faced in Urban areas and in few parts of Rural areas as well. As we all know water is very precious, we must take important steps and precautions to save water and increase water availability. The goal of the present study is to utilize rain-water and to take steps for the concept of nature conservation, in this study rain-water harvesting system is analyzed to be as an, replacement for the source of water. Harvesting rain-water is one of the best, simple and cost-effective way for the conservation of water. This study of model enables us to save rain-water for future usage as well as keeping an eye on its quality. This developed model satisfies all the requirement for the common usage of water in all the areas fulfilling basic needs.

I. Introduction

We live in an era where technology is improving at a very fast pace but contrarily, we are missing on our basic needs such as water and its protection from pollution. Due to the continuous growth of industrialization which in-turn has resulted in the growth of Urban population and usage(wastage) of water at a very large scale and become a major reason for decline in underground water which is considered as source of clean water from the time of our ancestors.

Although India receives higher rainfall when compared to other nations of similar size it still faces issues when it comes to water usage and water conservation. When it comes to the point of water conservation, rain-water harvesting is believed to be one of the best solutions as rain-water is considered to one of the purest forms of water on the Planet. Rain-water harvesting system can be used to provide sources for high-quality, soft water and reduces our dependency on rivers, ponds, and supplementary sources of water. It is cheaper economically in implementing when compared to other sources of implementing conservation of water. It is easy to implement in industrial areas, residential areas or any other vicinity.

Quantum of water collected through rain-water harvesting is intangible form which it is not possible to measure the quantity of water harvested in the rainy season, if we could measure the quantum of water collected during rainy season through rain-water harvesting this data will be helpful for the government authorities on creating a roadmap to deal with the issue of water conservation.

This paper proposes a model to deal with the issues mentioned above including from the collection of water to measuring its quality and quantity. It can be done by the help of various electronic components which includes various sensors, pump, microcontroller along with IoT to keep the user updated on the quality and quantity of water stored in the storage element. The main objective of the rain-water harvesting system is to fulfil the rising needs of water necessity, to decrease the groundwater contamination, to increase the underground water table, to use the water for usages other than drinking, it can also help us in reducing the water bills in urban areas, along with reducing flooding and soil erosion and using it for irrigation purpose in Rural areas.

II. Related Works

In recent years many approaches on rain-water harvesting system has been introduced in different views. Rain-water harvesting system has an accumulation area and storage system. The main concept of rain-water harvesting system involves collecting water and to store it in storage tanks and later used for various forms/purposes.

GREEN WAY FOR AMBULANCE BY AUTOMATIC CONTROL OF TRAFFIC LIGHTS

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ABSTRACT

Traffic congestion on roads has become a major problem in highly crowded smart cities especially in countries like India, being the second most populous country in the world and also having a rapidly paced growing economy. In order to reduce congestion on the roads, and to save lives of people who are in emergency, our project, "Greenway for Ambulance by Automatic Control of Traffic Lights" is helpful. The system uses technologies like RFID. The model proposes a "GREEN WAY" in which the ambulance moves swiftly without any traffic delay. An incoming signal from both the RFID reader and the sound sensor is sent to the Arduino board. If an ambulance passes the RFID reader and the siren of the ambulance triggers the sound sensor, an interrupt signal is sent to the system to make only that lane green. The system checks for the density at other roads once the ambulance passes the junction, and releases the traffic in descending order of density.

Introduction

In today's world, we all have experienced traffic related problems, which has resulted as a downside of modern urban planning. It could lead to someone's death in emergency situations. So, there is a need to tackle this issue. Here, in this 21st century era, every nation is on the track of establishing a complete developed nation. In this race, there are many developing nations, like India on the extent of new technologies, economy, and growth. In this race, there are new series of problems developing, which the majority are not paying attention to such as wide spread of population, deforestation, wildlife extinction, climate changes, water security, etc... Traffic density, which is rising gradually every year, is also turning out to be a headache. Some factors that lead to this issue have been identified like substandard road conditions, exponential rise of vehicles on road, and even sometimes, fraudulent activities by traffic personnel, are amongst the few. One of the critical concerns with this type of traffic congestion is the delay that will be created in the services of the ambulances.

In 2017, it was reported that 20% of the major emergency deaths of patients were caused by the traffic jams, since the time taken by the hospitals is delayed and the other major reason reported was due to the negligent driving of ambulance drivers in chaotic traffic conditions causing crashes. The situation might aggravate in the future. Hence, immediate action is required. There is a need to have an efficient system to help the ambulance reach on time, a system where it can identify the ambulance and make the lane less dense by switching the signal to green. Many schemes, systems, and models have been proposed to address this issue.

Traffic lights were being used as early as 1868, to maintain the traffic flow in the intersections. Congestion at the intersection creates a delay, thereby decreasing the efficiency of the system. In order to increase the efficiency, many researchers have worked out clever algorithms to schedule traffic lights. They have considered secluded intersections, and the period of each traffic light is set according to the simulated traffic movement. Many aspects were considered like the number of vehicles, the traffic speed, and the traffic volume of each flow, to mention a few. The lesser the mean delay at each road intersection is higher the throughput of the road metacenter is, the more efficient the scheduling algorithm becomes.

Related Work

In 2018, Prof. Manjiri M. Kokate & team [1] developed a website called" Health Card" where users can register about the medical history of all citizens. This data is used to help save time in hospitals to become ready for the

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Original Article

Detection of Airport Disguise and Threat Objects using Shortwave-Infrared Imaging and Machine Learning Techniques

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Abstract *- Aiming to solve a problem that involves humans disguised with fake facial hair and skin at airport security inspection. By X-ray imaging for scanning of luggage to prevent security threats such as threat object detection. With the help of a Short wave-Infrared (SWIR) imaging camera, it can be detected whether a person is in disguise or not. As SWIR has 1-2 μm of spectral range, it can differentiate the real facial hair and skin colour between fake facial hair and skin colour in the image. The luggage is the most vulnerable place where threat objects could be hidden inside any amount of luggage. X-ray imaging technology is most suitable for scanning because every material has a different degree of absorption of X-ray, and different items scatter the X-ray differently by which different colours could be obtained. Machine learning will be implemented to these images by which the detection of unwanted objects is identified in a possibly effective way. An automatic alarm will be sent to any defence system available to oversee the detected object and make way for further investigation. In contrast, the SWIR system is used to detect and disguise the person being investigated by the authorities on the spot. The threat object detection could be done by implementing specialized libraries in machine learning like Keras with Tensor Flow, OpenCV and Convolution Neural Network. With the combination of the above technologies, disguise detection and threat objects could be covered, which makes the airport security more secure and less vulnerable to any kinds of attacks.*

Keywords - *Face Disguise Detection, Threat Object Detection, Shortwave-Infrared, Machine Learning, Airport Security.*

I. INTRODUCTION

Airport security is considered to be the most secure system, as a large number of innocent lives depends on that security system. There is no room for any kind of error to ensure all forms of security. If this security is off-balance, then the entire country could be in danger. To ensure security, Transportation Security Administration (TSA) was created by the United States Congress on November 19, 2001. The Aviation and Transportation Security Act ensures that TSA is responsible for all kinds of security in transportation [1-3]. Irrespective of all the security measures taken, crimes are frequently happening as time passes by. Every time the security system faces a challenge, the system is updated accordantly. The security systems have evolved to be more effective with the help of technology for scanning specific materials in order to detect unwanted items. As the crimes are being well planned, the need for technology with good engineering is the best way to prevent all those crimes. All the security protocols take a lot of time to go through all the passengers as the number of passengers is gradually increasing. With the help of modern machines, we can speed up the process of security procedures. Current technologies are Advanced Imaging Technology (AIT), Advanced Technology X-ray (AT-2), Explosives Trace Detection (ETD), Explosives Detection System (EDS). Further, the security can be enhanced by confirming a person's face with his id proof, where the id proof is stored in a database with respect to id number and photo, a camera can be used to cross verify the Pearson's id number with his face. Face recognition can be done by extracting facial features using a pattern recognition system called face localization. This can be achieved by MATLAB and Open CV. A prototype or a system can be created to detect faces [4-7].

There are various algorithms for effective detection, but the accuracy and efficiency of the algorithm should be considered in order to implement a better system; by the use of Multi-task Cascaded Convolutional Networks (MTCNN), an enhanced face and eye detection can be performed [8-10]. When it comes to scanning luggage, we use advanced technology in X-ray, which scans for any unwanted items. It is very important to scan each and every piece of luggage as fast and effective as possible. For detection of unwanted items is done manually, which is not effective and fast.


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Improvement of Overall Performance by Implementation of Different Lean Tools - A Case Study

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Abstract

Manufacturing enhancement is a core strategy to obtain manufacturing excellence and is necessary to obtain a good financial and operational performance of small and medium scale manufacturing industries. Lean engineering tools help in reducing unwanted wastes and cycle times and also in identifying the proper alternative layout in the industry. The objective of this research is to study and identify the time taken and bottleneck stations for manufacturing the product. The bottleneck process has been addressed using line balancing which includes work load leveling. The line balancing results by distributing the workload and the result has been reached to 97% effective use of workers. 5S auditing and implementation was carried out for effective housekeeping and the scores before and after implementations were 2.54 and 3.54 respectively. The layout of the industry was analyzed and found that the current layout has more unwanted transportation, improper communication between necessary departments, and more cycle time for producing a product. The layout has been optimized and the best alternative was selected. From the simulation study, it inferred that the total cycle time was reduced by about 155 minutes and the value added time was reduced from 534 to 378 minutes.

Keywords: production; performance; pressure vessel: lean tools; cycle time

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1. Introduction

Productivity is known as the ratio between the outputs for the given input. It improves customer satisfaction, reduces the cycle time and expenditure for developing, and helps in producing and delivering products. Productivity improvement is about reduction in wastage of resources like men, machine, material, space, and time. Work study is an important tool that helps in improving the productivity by identifying the bottleneck stations and suggests a proper system to improve the productivity. Work study is like an inspection process that finds out the consistent system of work done in the industry. Work study and method study have been used as tools in both lean and industrial engineering. Usage of lean tools such as 5S helps in reduction of time for searching materials and tools and has major significance in effective housekeeping. The problem addressed in this research article must be visually clear and well defined. At that time, Value Stream Mapping (VSM) is used as a lean tool and methodology helps to show and present the problem addressed and to understand the scope for improvement based on kaizen study. Line balancing is an effective and important tool in improving the workstations by minimizing the workload in the bottleneck stations. It helps to identify the processes that are taking more cycle time and arrange them in an orderly way so that unwanted cycle time, non-value added actives, and throughput time are reduced. Layout optimization is also an important industrial engineering tool which helps in improving the productivity of a product or process or service. A proper layout is a more effective way of improving the productivity and has many advantages in reducing unwanted wastages of human resources, time, materials, transportation, etc. The optimized layout facility effectively acts as a tool for minimizing the overall production cost to improve the productivity rate.

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FAKE INDIAN CURRENCY NOTE RECOGNITION USING PYTHON

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ABSTRACT

Falsifying or faking of money has become a genuine risk tothe business of individuals as well as the economy of our nation. In spite of the fact that fake money locators are accessible, they are limited to banks and Corporate workplaces leaving common individuals and small traders helpless. So, in this extent we'll explore the various security features of Indian currency and then set up a software-based framework to identify and contradict fake Indian currency by utilizing image processing techniques and computer vision strategies. The validation system for this currency is completelydesigned using Python language in PyCharm environment.

Keywords: *Counterfeit currency, counterfeit detection, feature extraction, ORB detector.*

Introduction

Currency duplication or manufacturing of fake currency notes illegally by imitating the real production procedure is a large hassle that every nation faces. Counterfeit currency can decrease the esteem of genuine cash and cause expansion due to an unauthorized and unnatural increment with in the cash supply. Manual recognition of notes could be a good way in distinguishing currency notes but it is a very tedious and time- consuming process. Hence, the need of automatic testing procedure for notes comes into the picture which is necessary for handling enormous amount of currency notes in order to get precise output in shorter duration of time. In this paper, we propose a fake currency note detection system using various digital image processing techniques and algorithms.

The proposed framework is outlined to approve Indian currency notes of denomination 500 and 2000 rupees. This system meagerly comprises of three fundamental algorithms and validates the authenticity of different feature present in a currency note. The first algorithm comprises of a few steps which include image acquisition, pre-processing, greyscale conversion, feature extraction, comparisons of images (test image and pre-existing image) and output.to carry out all the process mentioned above we employ different image processing technique such as ORB and SSIM. After this process, in the next step we use 2nd algorithm which is used for the purpose of calculating number of bleed lines present in the currency notes. Then we use 3rd algorithm for the purpose of validation of the number panel present in the currency notes. Once we apply all the algorithm to the given input image, we get a digitally processed result which is displayed as a out for each currency notes. This framework is smooth way to validatecurrency notes precisely in shorter time span. This automated system is highly accurate and is easily accessible to everyone when compare to already existing manual method for detecting fake currency note. So, this system is very easy to handle and can easily use by everyone.

Commonly Utilized Security Highlights to Distinguish FakeNotes

1) **Bleed lines:** At the end of each side of a horizontal currency note, there are few lines incorporated with a small angle to the note. These are known as angular bleed lines and it is different for different denominations. There are 5 bleed lines in Rs.500 notes and 7 bleed lines in Rs.2000 notes.
2) **Denominational Numeral:** A vertical band on the right side of the Mahatma Gandhi's portrait contains a latent image showing the respective denominational value in numeral i.e., if we have 2000 then Denomination Numeral will be 2000 and it is same for 500 notes also.
3) **Number panel:** Each banknote provided by Reserve Bank of India (RBI) bears a distinctive serial number along with a

DETECTION OF LUNG CANCER USING IMAGE ENHANCEMENT AND ANN

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ABSTRACT

Lung cancer is the most frequent disease and has the greatest fatality rate. In this study, artificial neural network (ANN) method have been investigated and image enhancement technique is followed. The image processing, segmentation, and enhancement phases are all applied to CT scan images of lung cancer. The features extracted are used for training the neural network using back propagation algorithm and finally CT images are detected as cancerous and non-cancerous images. The performance shows satisfactory results and gives accuracy 98.67% accuracy.

Keywords: *artificial neural network, image enhancement, segmentation, Artificial Neural Network.*

Introduction

Cancer is most serious health problem worldwide, with the smallest survival rate. Among people of ages between 45 and 70 the cause of death is more due to lung cancer. The possible treatments are surgery, chemotherapy, and radiotherapy but, it is more costly and time consuming. The approaches utilized were for diagnosing lung cancer in its advanced stages because it is difficult to recognize the symptoms that arise in the advanced stages, which produce a high death rate, in its early stages.Early detection gives the higher the chances of successful treatment and also reduces death rate. To overcome this, a technique called Artificial Neural Network is used to detect the lung cancer along with image enhancement. In this system, image pre-processing technique is used to provide good class tool for cultivating the manual analysis.

The process of converting a 2D image to a grayscale image occurs during pre-processing. Limited adaptive histogram equalisation approaches were utilised for picture improvement, while the Otsu thresholding method was applied for image segmentation. In further analysis feature extraction values are extracted using Grey level co-occurrence matrix. On this basis training and testing is done and for this purpose back propagation algorithm is used. This study gives accuracy in detection cancerous and non-cancerous cells of lungs in early stages.

Literature Survey

Many authors worked on lung cancer detection techniques in the post-current study. Moffly Vas and Amita Dessai [1] proposed a Lung cancer region segmentation using a mathematical morphological operation. The computational cost of the lungs is reduced by segmentation, which entails transforming the pictures to binary. In this study feed forward back propagation algorithm was used by giving overall success rate of 92%. The disadvantage is that the region of interest is split as white regions, and misdiagnosis occurs when cancer nodules are found on the lung's boundary. Md. Badrula lammiah and mohammad abu Yousuf [2] investigated a system for lung cancer detection it includes two stages in premature state. Binarization is a technique for converting binary images into numeric values that can be compared to detect lung cancer. After the process of feature extraction, the extracted features are further passedto trained network for the purpose of classification and detection. This system obtains accuracy of 96.67%. Gawadeprathamesh pratap and R.P. Chauhan[3]. CT scan images are converted to gray scale image then it passes through high-pass filter which makes bright images by sharpening. Further images are analyzed throughimage processing, median filter, watershed algorithm and final processing is done by passing salt and pepper noise through median filter. The proposed strategy can be used to identify malignancy in lungs. Raviprakash s. Shriwas and akshay d. Dikondawar[4]explains the pre-processing

CHILDREN SECURITY AND TRACKING WITH AN ALERTSYSTEM USING GSM AND GPS TECHNOLOGY

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ABSTRACT

Child safety and tracking is a major concern as the more crimes on children are reported nowadays. We see such a huge number of occurrences of abduction and missing of child. To address these issues, a smart security system for children must be built. So, this model describes a secured system for children consisting of Raspberry Pi microcontroller, the Pi camera which is used to capture a real-time image of the surrounding place and various sensors such as Heartbeat Sensor, Temperature Sensor, Vibration Sensor, Sound Sensor and Sweat Sensor. This device results the parameters like heart rate, temperature changes, sweat content, excess vibration, and extreme sound. When these factors exceed a certain threshold, the device activates and tracks the child's location and will send the message via Twilio or a mobile application called Telegram.

Keywords: *Raspberry Pi microcontroller, Pi camera, GPS and GSM module, Twilio, Telegram.*

Introduction

The development of Children is key to the succeeding of any society. Children are the ones who play a vital role for deciding how the world will appear after some years. In present time there is a huge number of kidnapping cases. As reported by the National Crime Records Bureau (NCRB) thousands of children are reported to be missing in India every year. Where few of the Children are traced by the police within a short period of time and some of the cases were left unsolved with no hint.

In several circumstances we make use of Global Positioning System (GPS). GPS is a navigation and positioning system which delivers location and timing information around the world without depending on time and weather. GPS is used to track the location of people. The location and other information can also be tracked through computer applications or mobile phone. The both services of GPS and GSM is provided through Twilio in this project.

The designed model results the location and situation of the missing child. This instrument is arranged with various sensors like Heartbeat sensor, Temperature Sensor, Vibration Sensor, Moisture Sensor, and Sound Sensor. The sensors result the current state of the child when the threshold level mentioned is crossed. The Raspberry Pi is used as a microcontroller in this electronic device. The sensors connected to the Raspberry Pi results the geographical location of the children which is sent through SMS to the phone using Twilio. The placed camera results the live capturing of the surrounding picture of the child which is sent through mail to the concerned person.

It is difficult for the Parents to monitor their children when they are at public places. This might lead the child to be lost or kidnapped. In order to overcome such instances, the children tracking system is developed to assist parents to take care of their children's safety. The main aim of this child tracking system is to ensure that the missing child is safe and healthy even in the crowded places.

Literature Review

[1] This proposed method make use of two sensor nodes which are the 'staff node' and the 'student node' which is connected by Bluetooth communication for the security center for tracking the location of the student as well as the teacher. The location will be traced and sent to the supervisor if the two nodes have been relocated away from the classroom. This model is useful to the children and the staff only when it is in the school campus. This device makes use of powerful computer system to react immediately

AUTOMATIC COW MILK EXTRACTOR

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ABSTRACT

Automatic milk extractor designed in such a way that all farmers can easily affordable and can get high income here in this paper Teats are detected under experimental situations using an analytical method based on the Haar- cascade classifier. the Milking System's vision development, Haar- Cascade Classifiers are being used for real-time teat detection. The suggested vision system is intended to swiftly and precisely detect teats so that a manipulator can be directed to connect milking cups to teats with the minimal mistake. The system has gone through multiple rounds of development as the result of various image kinds being tested.

***Keywords**: Teats, Haar-Cascade Classifiers, Automatic Milking System.*

Introduction (Automatic cow Milk Extractor)

Because of population growth and resource depletion, food and shelter are becoming increasingly difficult to meet in today's global economic environment. As part of every human being's diet since childhood, milk and dairy products are nutrient-dense foods that provide energy and significant amounts of protein as well as vitamins B5 and B12 that are essential for reducing hunger and malnutrition in the most vulnerable populations. As the world's population grows, milk production is still needed in cold and difficult-to-reach areas. Cow milking is a labor-intensive process. Milk harvesting by hand A significant element in extended working hours which takes occurs twice a day for up to 300 days per year. Globally, the solution to this issue is to automate the process of milking. Without adding additional labor costs, automatic milking systems reduce heavy workload and allow for individual cow milking frequency monitoring based on production level or lactation stage. Worldwide, the use of automatic milking systems (AMS) is increasing, and some design and facility recommendations have been made to achieve optimally.

The next 10 years are expected to be dominated by Intelligence artificial (IA) comprising deep neural networks and machine education. Consumers gain now from these technologies, but their uses must yet be examined by the dairy sector. Patents submitted by the top Automatic milking system brands demonstrate that their technology is still left behind on a lack of cow-related data and that their systems rely on the MIS to control future milking procedures.

On the Automatic Milking System, this paper discusses current research on the creation of a visual system for detecting cow teats, which guides the machine for victorious connection of the suction cups. It seeks to develop a Haar Cascade Classifier from open source available data on the internet and test it in a laboratory as well as on small data from local farms.

Ease of Use

Teat Detection Algorithm

Laser/CCD systems are the most common vision systems used in commercial AMS today. Lasers and CCDs are used to detect teats using edge detection methods. This can be done by combining information about laser and camera distances as well as incidence angles to determine the teat position in a three-dimensional space.

In the most recent research on hybrid vision systems, the following conditions were found to be necessary for optimal functionality:

In the teat region, the teats and the background should be contrasted. The teats should also be visible without obstruction.

Dairy cows aren't used to being milked by robots, but these conditions make it more difficult for them to adjust. Machine learning

MANASVITA- PRE DETECTION OF SUICIDAL TENDENCIES

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ABSTRACT

Suicide is a complex public health problem of a global dimension. Every suicide is a tragedy. Accounting for these, it is essential for developing an effective technology for pre-detection. In this model, the neurobiological sensor output data are run on the python program to obtain the level of suicidal risk factor in a suspect as the output. The current conventional method of diagnosis relies on filling questionnaires or survey from the patient or relatives, doing a physical examination by the doctor, just lays the groundwork but is not accurate enough. In this paper, we discuss the interconnection between the psychological, physiological and Socratic maieutic factors and their impact on suicidal tendencies in prime suspects. Thereby, the proposed project is an attempt to provide an electronic solution for the precautionary prevention of suicidal attempts in a suspect. A technical approach to the prevailing drawback by monitoring psychological, physiological and behavioral changes is designed.

Introduction

The research has shown, Suicide can be defined in such a way that 'A fatal self-injurious act with evidence of intent to die is Suicide'.

KEY FACTS (World Health Organization Extract):

- Globally, approximately 800,000 people die due to suicide every year.
- Number of people attempting suicide are increasing every year.
- Considering teenagers, the third cause of death is Suicide.

We can use many terms to describe suicidal and self-harming behaviours in the scientific literature. To allow meaningful comparisons, consensus definitions of international terminology is important. Number people committing suicide every year is approximately 800,000 people, ie one person every 40 seconds. From many researches we can say that there may be 20 people attempting suicide while one person died by suicide. Suicide is a global phenomenon and occurs throughout the lifespan. What does the current evidence tell us about suicide? Every suicide is a tragedy. Accounting for these, it is essential to developing effective suicide prevention strategies. Suicide prevention starts with recognizing the warning signs. Thereby, the proposed project is an attempt to provide an electronic solution for the precautionary prevention of suicidal attempts in a suspect.

A. Project Objective

The objective of our project is to design a software that helps to detect suicidal tendencies much prior to committing the act. Our project also determines other underlying medical problems the suspect might have. Motivation of our project is to reduce the number of deaths caused in the world due to suicide.

The presented study has evaluated the possibility of distinct physiological and psychological changes in a suspect prior to the attempt of suicide. The proposed software system draws digital outputs of the picked up signals by the sensors to send an alert signal to get help.

In this model, the neurobiological sensor outputs are given to a program on Google Colaborator to get the level of suicidal risk factors. The current conventional method of diagnosis relies on filling questionnaires and surveys by the patient or relatives, doing a physical examination by doctor, just lays the groundwork but is not accurate enough. A technical approach to the prevailing drawback by monitoring psychological, physiological and behavioural changes is designed.

Lastly, the put forward idea marks its application in medical sectors dealing with neural disorders leading to suicidal tendencies, or by people who have access to interact with suicide suspects.

B. Literature Views

In the paper [1], the author speaks about passively monitoring physiological, behavioural, and psychological changes in a

COLOR BASED VEGETABLE AND FRUIT CUTTER AND SORTER USING ARDUINO

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ABSTRACT

In the document, the ESP8266 WIFI module is used to provide control signals to the machine. The received control signal is transmitted to the arduino. Arduino is used in conjunction with the universal asynchronous receiver transmitter. Seven motors with three motor controllers are used for the movement of the unit. There are two L293D high-power motor drivers. One of the engine impellers is used to manage the motion of the wheels in all directions. Second motor driver is used to control up and down movement of the arm, and also controls the cutting action. When the sensor detects color, it triggers the cutting action. Once the vegetables leave the factory, they are placed directly on the tray and the vegetables are transferred to the corresponding compartment of the container according to their color.

Keywords: *Agribot, Arduino, etc.*

1. Introduction

Agriculture is the pillar of India. "The discovery of agriculture is the first step towards civilized life." One of the famous Arthur Keith quotes. The above line highlights that agriculture becomes a very important part in the development of each country. From beginning, agriculture was a method of earning income by producing food for humans. Today, a large amount of land is being developed for the production of various crops. India is a great agricultural country. Agriculture is the main occupation of India. India's economic situation is highly dependent on agriculture. The agricultural process involves various actions that need handling of large materials. Some examples in traditional are plowing, where farmers use heavy-duty plough.

Nearly 70% of India's population lives on agriculture. There are several activities that need to be improved to achieve effective agriculture. Some of them are plowing, sowing, watering, weeding, fertilizing and harvesting. When watering their crops, farmers use the ancient method of transporting water through heavy pipes. All these processes are time-consuming and laborious. All of these processes require more manual skills and worker power. Therefore, it is necessary to adopt new technologies and skills to increase agricultural production. At the same time, the population of India is growing day by day. Therefore, it is necessary to improve the agricultural profession to fully meet the demand. In present days farms are anticipated to produce higher yields and quality at bottom most price in a justifiable way that has reduced dependent on labor. The application of digital agriculture and precise management of specific locations are few possible answers, which depends on sensor technology, and also in addition to continuous field data collection that can only be achieved through the appropriate use of agricultural robots. Agricultural scientists, farmers, and growers also face the consequences of growing more yield on less land in a justifiable manner to reach the demand of the population. The blend of digital tools, sensors and control technologies has advanced the design and development of agricultural robots, exhibiting the important advantages of present-time agriculture.

A. Project Objectives

Module is built to perform three main functions, such as detecting the color of ripe fruits or planted vegetables, finishing, and determining the corresponding compartment in which the container will be placed. Design a machine that is effortless and is a compatible user interface to perform the required operations. Reduce malfunction, minimal labor input, and manual maintenance costs. An easy-to-use mobile app that controls the machine to run the way you want it.

B. Literature Views

The purpose of the document is to design an

E-SIGHT FOR VISUALLY CHALLENGED PEOPLE

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ABSTRACT

Our project, E-sight for visually impaired individuals utilizing Raspberry Pi, is primarily concerned with the use of technology by blind people. Object recognition and detection, text from image to audio conversion, and current location sharing are all part of our project. In general, blind persons find it difficult to go about their daily lives because to their disability. We interfaced some system with their bodily component to make their lives smarter. We interfaced certain smart functions with their body part in this system. When an obstacle is discovered on the path using an ultrasonic sensor on a body component, the camera is triggered to capture the thing in question. The image is delivered to a CPU to determine the object's type, and then it is sent as a spoken command using earphones linked to the Raspberry Pi. So that blind people can recognize the object in front of them and, if it is determined that the object is a human, they can seek assistance. They may be able to walk based on the thing in front of them if there is a huge impediment, such as a car. We're also working on open-source audiobook software that will allow you to create a reader using only the Raspberry Pi. Here is the Brick Pi Book Reader, which allows you to read an actual book. Also, the blind person can see what obstacles are in front of him or her by using a picture controller to analyse the data and generate genuine coordinates connected to current position, which is then translated into a specific message for the person. We will measure the distance between the blind persons and the obstacle using an ultrasonic sensor, and the distance will be played through earphones.

Introduction

As a result of use of sound waves, E-sight for visually challenged people allows impaired people to travel with greater confidence and ease. Globally, including a latest study by the World Health Organization (WHO), this seems to be an approximated two hundred and eighty five million disabled individuals. Of those, about 82 percent will be in the older than 50 years age category. Disabled users now make up the largest population in India. There really are 2.5 million blind men in the world, including over 15 million throughout India, so there is requirement to be research. It allows evaluation of indications, the identification of hurdles, the recognition of ecosystem's features, and the ways to obtain the way without opposition on your own. Disabled users, for even the most part, are unable to detect certain specifications leading to a shortage of preconception. Wearing this gadget is all they require to deal with the issues human beings face daily, even if they are indoors or outdoors. Everyday life is much more difficult for them. Even when useful, the standard white cane used by those who are influenced has a lot of drawbacks. A further option is to keep a guard dog, but this can be expensive. Pet dogs, like dogs, are also a option, but they are very affordable. This Suspires the program to create a much more cost accurate list to help disabled persons explore with increased ease, velocity and self-belief First stretchable shutters software that fixes all the identified issues. There are several navigational aids and electronic objects available today for blind human, and several of them became hard to take and improve firm performance to use. It is estimated that visually impaired people can experience so much problems with daily lives as a result of technological advancements. The Raspberry Pi microprocessor, a reduced amount, small sized laptop, can be used to enforce this modern technologies. Everyone can gain new skills in Scratch and Python on this worthy tiny gadget. Computing images is one of the innovations included in this proposal. Performing functions on data in attempt to optimize it or extracting meaningful case is given as object recognition. In this case, the information is a photo, and the outcome is either a photo or qualities present in an photo. Designers use image processing to identify obstacles utilizing machine learning methods.

AUTOMATIC SPEED CONTROL AND ACCIDENT AVOIDANCE OF VEHICLE

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ABSTRACT

Now a day-to-day collision on a motor vehicle has developed a major security issue. Cases of injury and decease from car crashes are reported regularly. The number of pedestrians hit by cars is also increasing in cities and highways. Additionally, in zoos, wild animals are often killed by cars. The cost of living is immeasurable, the cost of damage to vehicles also has a negative impact on asset. In many cases drivers fail to recognize the presence of hindrances in advance and the brakes require the driver's response to run thus increasing comeback time, which in turn reduces their reliability. When any obstacle (such as a human body, car, etc.) comes in visible of a automobile, controlling the rapidity of the vehicle is an effective key to circumvent accidents. We recommend a solution to our project to dodge road coincidences and control vehicle swiftness. Ultra-sonic sensors for cars detect complications, details and transfer them to the car to stop the car with the aid of Arduino Uno. In addition, if there is an hindrance approaching the car, soon the buzzer and LED will notify the motorist.

Keywords: *safety, automobile, coincidence, reflex system, ultrasonic sensor, hindrance, road coincidence, Arduino uno, LED, Buzzer, etc.*

Introduction

From progression to humanity, we rush to modernization and sculpture in the road and automotive system to duck an unique act which sets a good instance in the work of improving our lives. The availability of new technologies in automobiles is growing day by day. Some famous countries have already exposed their strength in the development of non-motorized vehicles. Some of these can be determined by precise timing. Therefore, on the basis of this it is very important for the driver to participate in the program as soon as possible in a critical situation where the vehicle is very close to another vehicle. A car accident problem is portion of an boundless slope of accidents that can happen wherever at any time. Around 1.2 million individuals perish on the roads every year, making the foremost source of demise worldwide. Short-income and mid-income republics are where greatest of these deaths happen. Speedy economic growth has augmented traffic congestion and road damage. There are very limited roads protection actions in developing nations, leading many accidents.

This causes a chief encounter as developing nations misplace about 3 percent of their uncultivated domestic product as a result of road accidents. A road coincidence is the important cause of death for many years, most accidents are safe and expectable. There is ample evidence of ways to help accomplish road safety. Some nations have effectively executed these results to significantly reduce road accidents. Implementing this global intervention suggests great potential to prevent future injuries and save people lives around the world. This scheme is suggested to eliminate common driver errors, as many smart cars only monitor programs, for example speed bumps, anti-bolt brakes, and additional automated systems, particularly luxury automobiles, but these automobiles are not of a lesser amount of expensive for everyone and as a result, an expensive system is required. well but it works carefully for all automobile users.

A accident prevention program is a scheme designed with devices or sensors mounted in the vehicle to alert its car user to any potential traffic congestion. Other dangers associated with these sensations include the proximity of vehicles to nearby vehicles, and the exact distance from the vehicles. The ultrasonic distance sensor is adjusted to measure closeness to the front and rear motor. Many of the ultrasonic sensors available for vehicles are allowed to approach vehicles at very low speeds. While complex analysis of proximity information can't be used directly, a clever

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ORIGINAL PAPER

Role of Silicon Carbide Nanoparticle on Electromagnetic Interference Shielding Behavior of Carbon Fibre Epoxy Nanocomposites in 3-18GHz Frequency Bands

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Abstract
The effect of introducing high-content SiC nanoparticle to a carbon fibre reinforced epoxy resin composite on electromagnetic interference (EMI) shielding behavior is discussed in this study. The main purpose of this work was to investigate the EMI shielding performance of SiC particle addition in carbon epoxy composites at high frequencies up to 18GHz. Hand layup process was used to make the shielding epoxy composites, which were then characterized according to ASTM standards. It was found that adding SiC particles to a carbon-epoxy composite improved its mechanical characteristics. For high SiC content in composites, the scattering characteristics showed the maximum reflection, multi reflection, and absorption behavior. It was also found that the shielding effect increased as the volume of SiC particle increased. At 18GHz, composite designation N5 had the maximum shielding of −49.6 dB. These enhanced SiC-epoxy composites with improved EMI shielding properties might be employed in radar, tele-communication, military, and signal processing equipment where interference is a challenge.

Keywords EMI · PMC · SiC · Carbon fibre · Scattering parameters

1 Introduction

An electromagnetic (EM) field can cause electromagnetic interference (EMI) when electronic equipment is exposed to it. Any device with electronic circuitry is susceptible to EMI. Increased electromagnetic spectrum utilization and development of increasingly complex and sophisticated electronic devices have led to a rise in EMI concerns [1, 2]. Consider a source, a route and a receiver when dealing with EMI issues. Receptor functioning is disrupted as a result of the electromagnetic radiation that passes through. An issue with electromagnetic interference (EMI) can only occur if all three are present. There are a variety of ways to create a path: it can be direct, indirect, inductive, radiative, or a mix of these. Consider these two things to have a better idea of the effects of EMI: Emissions as well as immunity (also known as susceptibility). A radiofrequency source emits electromagnetic energy in the form of emissions [3, 4]. An electrical device's ability to operate without interference from an external electromagnetic energy source is referred to as its resistance. If the device's EMI resistance falls below a certain level, it will be sensitive above that level. The three most common EMI concerns are radio frequency interference, electrostatic discharge, and power interruptions [5].

Many investigations have been conducted to develop high-efficiency EMI shielding materials, and many of these experiments have been documented by researchers. Moreover the device's performance and usefulness may be boosted by preventing electromagnetic interference. There are three important shielding mechanisms usually exist in every shielding composite. They are shielding due to absorption, shielding

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Data Security on Cloud by Cryptographic Methods Using Machine Learning Techniques

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Abstract
On Cloud, the important data of the user that is protected on remote servers can be accessed via internet. Due to rapid shift in technology nowadays, there is a swift increase in the confidential and pivotal data. This comes up with the requirement of data security of the user's data. Data is of different type and each need discrete degree of conservation. The idea of data security data science permits building the computing procedure more applicable and bright as compared to conventional ones in the estate of data security. Our focus with this paper is to enhance the safety of data on the cloud and also to obliterate the problems associated with the data security. In our suggested plan, some basic solutions of security like cryptographic techniques and authentication are allotted in cloud computing world. This paper put your heads together about how machine learning techniques is used in data security in both offensive and defensive ventures, including analysis on cyber-attacks focused at machine learning techniques. The machine learning technique is based on the Supervised, UnSupervised, Semi-Supervised and Reinforcement Learning. Although numerous research has been done on this topic but in reference with the future scope a lot more investigation is required to be carried out in this field to determine how the data can be secured more firmly on cloud in respect with the Machine Learning Techniques and cryptographic methods.

Keywords:
Cloud Computing, Cryptographic Methods, Encryption, Machine Learning Techniques, Secrecy.

I. INTRODUCTION

Cloud Computing is an emerging effective distributed abode that avail oneself of the plan of distributing, computing capacity, connectivity, storing, and virtualization. Spreading between wide network i.e., Cloud on internet facilitate a huge pool of methods, sharing media and storage media which needs to deliver on-demand facilities. This will assist the end-users to come after the plans of distribution, safety, isolation and flexibility. Security matters are the leading strenuous issue in cloud domain and the indispensable obstacle for elevating of IT companies which give users on-demand facilities. These security matters can be envisioned at network phase, application phase, authentication phase, virtualization phase and authorization phase. The two main causes for the security cover in cloud computing are that these days, mostly everyone store their data on cloud. So, the foremost concern is on the security of user's data and the crucial data should not get meddled while transporting over the network[1], [2].

It is obligatory to guarantee the Integrity, Availability and Confidentiality of user's data. The authenticated user's data is being accessed by the unauthenticated user. To resolve these threats, cryptographic methods can be applied in cloud servers[3], [4]. Although when the user is abrogated, using a particular cryptographic method is not ample to indemnify the safety of data and to run the Access Control techniques in Cloud Computing world. These systems are tried on encryption for data safety. It could be very costly to encrypt the whole data when it comes to time and memory. Therefore, to resolve this issue it would be preferable if we initially divide our sensitive data and then try encryption techniques [5]. It would mark well founded outcomes if we restructure the facts depending upon its secrecy degree. In the area of machine learning, the data categorization is a way of differentiating the group of undivided data illustrative put with the assistance of build classifier [6].

When an instruction set of close data samples is established, a classifier is set up. Large radius of justified instructions data samples are needed to evolve an adequate classifier. This development asks a new prototype of assistance where data categorization to its different clients or users is provided by servers on cloud [7]. Precisely, the data will processed by the server spontaneously and therefore, divides the user's information samples present on distant personal servers. Although the confidential data can be accessed by the unauthorized third party servers. Furthermore, even if the servers give the categorization services to its users, any description or data set identification should not be disclosed. Therefore, a technique that makes sure the secrecy of the server's training set and user's

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ARDUINO BASED SMART HEALTH KIT

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ABSTRACT

Prior to the advent of the internet of things, correspondence between specialists and patients was distinctly through visits, messages and telephones. There were no strategies that could empower specialists to screen their patients constantly and make ideas appropriately.. But with the advent of the internet of things, the entire scenario has changed. The health care industry is getting smarter with new tech innovations. IoT takes patient care to a new level. Many hospitals have invested a huge amount of money in IoT enabled technology for patient monitoring. It has allowed specialists to give great consideration by distantly checking the patients utilizing IoT empowered gadgets. In this paper, we are utilizing Arduino Uno with different sensors to gather fundamental patient data like Blood pressure, heartbeat, IBT, and Blood Glucose level. Data collected from these sensors is uploaded to thingspeak using wifi module.

Keywords: *NIR, IOT, SOC, GSM, MCU, SMS, IBT.*

1. Introduction

We are all in the digital era now. We are using innovative technologies to leverage time & to make human life much easier.

In the traditional method, to consult a physician for a general health checkup, patients have to take prior appointment & get their names registered in the clinic, and also after the consultations, there will be a delay in generating medical reports. Due to this prolonged process, working individuals will in general overlook the tests or procrastinate it. For a common man its bit difficult to meet with the medical expenses for regular & repeated checkups. For this purpose, various systems have been developed to bring down the cost, delay involved in generating the medical reports. IoT is one such methodology that grants specialists to give phenomenal consideration by distantly checking the patients utilizing IoT empowered gadgets. This novel approach reduces time consumption in the process.

The Internet of Things (IoT) has opened a world of possibilities in many fields, the healthcare sector has no exception for this. With advancement in digital technologies, how doctors interact or communicate with their patients is changing. Constant measurement of some vital parameters of the patient such as heartbeat, IBT, sugar level,BP& many other parameters are very important to diagnose the disease. By using some digital devices it's very easy for the doctor to diagnose the disease. The physiological parameters procured by the sensors are conveyed to healthcare providers. The information is analyzed for possible issues by a medical health care providers and if an issue is recognized health providers are immediately alerted.

By implementing this paper, we can offer a more affordable framework for monitoring the health of patients in distant inaccessible places. The system will automatically send an alert signal to the care taker of the patient, if any of the patient's parameter goes abnormal. Care taker can take necessary steps to save the life of the patient.

2. Problem Statement

In health care facilities, the various readings regarding patients health is taken at regular intervals so that the health can be monitor and any abnormality can be addressed immediately by changing the treatment accordingly. These readings may include parameters like, sugar level, blood pressure, heartbeat and IBT. These readings can be taken by healthcare specialist or supporting staffs and taking too many

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COVID-19 cases detection using deep neural networks with X-Ray images

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ABSTRACT

Mysterious sickness with flu-like signs became first located in Wuhan town of China. This sickness became re- sulting from extreme acute respiration syndrome coronavirus 2 (SARSCoV-2). Covid-19 introduced havoc internationally affect- ing each public fitness and the economy globally. And inflicting the biggest worldwide recession because of the Great Depression. With the fundamental replica variety (R0) ranging from 2-2.5,it's far vital to become aware of the effective instances and deal with them. There is a demand for auxiliary diagnostic tools. The information amassed the usage of the radiology imaging strategiesoffers exceptional data about the COVID-19 virus. Radiological photographs and superior synthetic intelligence(AI) strategies canwork withinside the choice of a brief analysis of the infection. In this we examine, an automated version for COVID-19 detection the usage of chest X-ray photographs is rendered. The rendered version is advanced to cater stable diagnostics for binary category and multi-class category. Our version gave a category accuracyof 98.08 percentage for binary classes and 87.02 percentage for multi-magnificence instances. In our investigation, the Darknet version was used as a classifier for a YOLO (you only look once) real-time object identification system. We are using VGG-sixteen architecture and added filtering on every layer. Our version can be engaged to support radiologists within side the preliminary screening, and also can be hired through cloud to immediately screen patients

Keywords: *COVID-19, Machine Learning, CNN*

1. INTRODUCTION

COVID-19 ailment, which commenced with the reporting ofan unknown reason for pneumonia in Wuhan, Hubei province of China on December 31, 2019, has hastily turn out to be a pandemic. The ailment is known as COVID-19 and the virus is named as SARS-CoV-2. Most coronaviruses impacts animals, however, they also can be transmitted to human beings dueto their zoonotic nature. Severe acute breathing Syndrome Coronavirus (SARS-CoV) and the Middle East breathing Syndrome Coronavirus (MERS-CoV) have prompted extreme breathing ailments and deaths in human beings. The maxi- mum, not unusual place to take a look at approach presently used for Coronavirus (COVID-19) analysis is RT-PCR. Chest radiological imaging including X-rays has crucial roles in early prognosis and remedy of Covid-19 ailment. Due to the low real-time RT-PCR sensitivity of (60-70) percentage, despite the fact that bad effects are acquired, signs may be detected with the aid of using analyzing radiological pix of sufferers. X-ray pix findings are discovered that over an extended c programming language after the onset of signs, and sufferers typically have a ordinary X-ray pix withinside the first 0–2 days. In examination of lung X-rays of sufferers who survivedCOVID-19 pneumonia, the maximum large lung ailment is determined in ten days after the onset of signs. Since the start of the pandemic, Chinese scientific facilities had inadequate take a look at kits, that are additionally generating an excessiverate of false-poor outcomes, so medical doctors are advocated to make prognosis handiest based on scientific and chest X-ray outcomes. Researchers state that combining scientific photograph functions with laboratory effects might also addi- tionally assist in the early detection of Coronavirus(COVID- 19). Radiological pix acquired from the Coronavirus(COVID- 19) instances incorporate beneficial records for diagnostics. Some research have encountered adjustments in chest X-ray pix earlier than the start of Coronavirus(COVID-19) signs.

2. TRANSFER LEARNING WITH CNN

Our minds include a sophisticated layer of neurons, eachof which retains a few records on the object, and all of the item's functions are retrieved by the neurons and kept in our memory.

A. Convolution layer

Kernel is the name given to the photo's convolved function matrix. A weight vector is a representation of each cost within the kernel.

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Text Interactional Voice Bot (T.I.V Bot)

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Abstract--- A bot also referred to as a personal assistant or conversion bot is an application that runs simple and repetitive automated tasks performed by the users, such as customer service or support staff. Examples of bots in every use include bots that provides information about the weather, make dinner reservations, or provide travel information. A bot interaction can be a quick answer, or it can be a complex conversation that provides access to services. Conversational bots are incredibly flexible and can be scoped to handle.

Key Words: User Friendly, Information management System, Desktop Application, Product Efficiency.

1. INTRODUCTION

1.1 Basics Of Bots

A bots provides users with programmed answers to questions that it recognizes. If programmed to do so, a bot can theoretically provide an infinite amount of information. The question for developers might have originally been, "What can't a bot do?". One of the biggest successes ultimately came from the technology within smartphones. In 2011, Apple Launched Siri for IOS. siri was the first multifunctional, voice-commanded bot. She paved the way for intelligent personal home assistants,like Amazon Alexa, which have become household names around the globe. Bots have even gone back to their roots. Medical and mental health care providers are experimenting with bots for diagnosis and ongoing care A study from juniper Research suggests that by 2022, 75 to 90 percent of healthcare queries will be managed by bots.

Nowadays, the central use of bots is even more comprehensive. Today's bot isn't tied to personal assistants, and they're not just mimicking therapy. They're migrating to messaging apps and speech. And Weizenbaum's little thought experiment is now a standard business practice. Bots have become a popular customer service solution for private enterprise. They're constantly available to customers, maintain the voice of the brand, and even work for free--after you build them, of course. They can be used to route communications more effectively to customer service representatives, or they can actall on their own as the rep.

So where will this trend go next? These days, industry experts are speculating about how bots will be able to and to even otter service that were previously only delivered by human employees, such as providing human resources information or legal advice. Bot adoption is off to a strong start: Companies will save 2.5 billion customer service hours using bot by the end of 2023.

If you're interested in learning more beyond this bot introduction, be sure to check Bot for business tag, which feature every article discover. Bot has written about bots in business.

2. RELATED WORK

[1] One of the most popular languages for the definition of a chatbot knowledge base is artificial Intelligence Markup Language (AIML). The interpreter must guarantee the compliance of properly formed AIML documents, perform all the necessary pre-processing duties for the correct usage of the chatbot and ensure the correctness of both patterns matching of user input and chatbot response. A chatbot is software that is used to interact between a computer and a human in natural language. Naturally, it can extend daily life, such as help desk tools, automatic telephone answering systems, to aid in education, business and e-commerce. In general, the aim of chatbot designers is to build tools that help people, facilitate their work, and their interaction with computers using natural language; but not to replace the human role totally, or imitate human conversation perfectly.

[2] Presently Chappie is being used as a routing agent wherein it can classify the requirement of user into one of the services provided by business based on the first few chats and then transfer it to an agent expert in that service. It uses natural language processing (NLP) to analyses chats and extracts intent of the user with a score similar to the likes of WIT1. Then it uses this information and AIML (Artificial Intelligence Mark-up Language) to make a conversation with the user. Through Chappie, trying to redefine chat experience in an automated manner. The novelty lies in the way we define our system as not merely a response generator but an intelligent interface to a response generator. Then we try to bring counting as a way to avoid repetitions. Overall Chappie is performing decently, but it needs more sophisticated algorithms to extract intent and classify chats more

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BIRD CLASSIFICATION USING CNN FRAMEWORK

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Abstract - *We haven't seen any bird species in our area in recent days, and even if we do, determining the bird's species is tough. From the perspective of a human being, the appearance of the bird varies in terms of shape, size, colour, and other factors. The most efficient approach to recognise the birds is to understand about them through photographs. In this work, we used a CNN method to transform the image to greyscale format. In certain ratios, we also achieve this by dividing data into training and testing data sets. For estimating the species of a bird or its characteristics using a deep learning model, we utilise anaconda software and a jupyter notebook.*

KeyWords:(algorithm,datasets,training,testing ,deep larning

1.INTRODUCTION

We are "extremely fast and unbelievable" every day. 'Bird Watching' includes one of our past times, a lovely snenarium that may provide calm and enable us to confront everyday challenges. It is also a joy and a day with a birds' peerful song and encouragement. A number of individuals are hurrying to view and know the attributes of the birds in bird santuries. Our knowledge about exotic birds as well as their habitats and biodiversity may be strengthened by learning and comprehending their characteristics.

Here observing restrictions like all conditions and the length, equipment and eye identification of birds may also be anticipated on their various characteristics and distinguishing characteristics can typically be viewed as tiresome. In the earlier days, the computer vision and even the lower recognition category also uses machine learning technical ML, which has been extensively investigated in order to delineate specific properties for the subject, in a specific cluster of sites including all vegetables and fruits, landmarks, clothes, cars, plants and birds.

We are also thinking of classifying an aesthetics of birds in their habitats, of our project or of our thisstudy, which create a method utilising a 'Neural Network of the Convolution' (CNN). Therefore, countless semantic components of a bird were collected and located at first. The vectors of each generic section were identified and lettered depending on their form, size and colour following their collection. Using a Graphic.s Processing Unit (GPU) to extract the function vector in the last section of the detection, a CNN model was trained to take into account the features referenced above and then the classified data was saved on the server for identifying the target item.

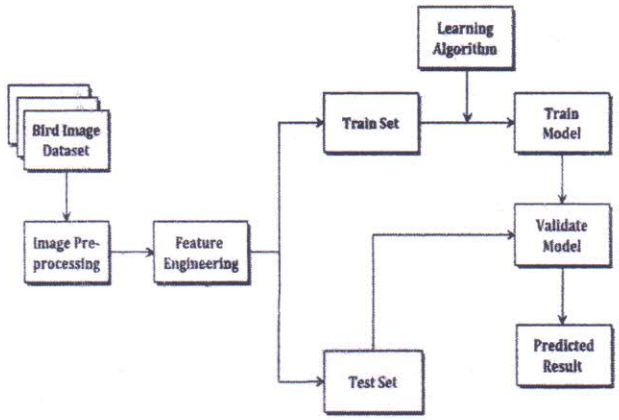

Figure 1: Two distinct components are represented.

This is the architecture for recognising bird species, which begins with data training and then moves on to testing.

We use a flow chart because it is one of the seven fundamental quality tools that is commonly used in project management and also to represent the key activities that are extremely important for fulfilling the goals of the specific assigned tasks in a certain order.

This is also known as s mapping or process maps, and it depicts a sequence of stages with branching options that forecast or show 1 or more inputting values (inputs) and transformations to achieve expected output.

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Advanced facial recognition attendance and behavioral feedback system

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ABSTRACT

Manually maintaining an attendance system can be tedious and time-consuming. A smart, automated way to manage attendance can be created using biometrics. Facial recognition is just one example. The problems of proxies and fake attendance can be solved with this system. This system also helps overcome time wasted in calling attendance the traditional way. The previous attendance system that relied on face recognition was flawed. Face occlusion meant that some faces went unnoticed. Therefore, our system helps overcome these issues, make the system more reliable and useful with various techniques like People Counter and Behaviour Analysis. The detection and recognition of faces are the two most important processes in this system. Following that, crosschecking the detected faces against the database of student faces can be done. This smart system will allow students to keep track of their attendance and records. It also helps institution get feedback about a class and helps save time on surveys and questionnaire.

Keywords: *Facial Recognition, SVM, Facial Emotion Recognition, CNN*

1. INTRODUCTION

Face Recognition is one of most effective biometric methods for identifying someone. It can also be used to track student attendance in education.There are many schools and colleges where thousands of students can receive their education. There are approximately ninety-to-100 students in every classroom. Every few days, a new institution opens. It can be difficult to keep track and record the attendance of so many students. It is tedious and time-consuming to take attendance in a class with so many students.We can therefore implement a system to automatically mark students' attendance through recognising their faces. The face recognition process is broken down into several steps. However, the most important steps are recognition of faces and detection of faces. First, each student will be given a photo of their face from the data pile. This image will then be compared with those in the area. The camera device will be set up in the classroom and can take the photo. This image will be used as input to the system. The image will be used to detect faces. A face recognition system will use an image as input to search a database for people who can be identified. Face recognition systems consist of four modules: detection, alignment, feature extract, and matching. Localization and normalisation (face detection) are the processing steps that precede face recognition (facial matching).

Here, we use the face Landmark Algorithm. Facial landmark detection is used to provide important prior information for face alignment problems such as head position estimation, facial emotion expression, and face modelling. A better facial landmark detection can provide stronger prior information and better performance for facial alignment problems. Facial landmark detection algorithms have advanced over the years since PCA was first introduced. The most critical factor in facial landmark detection's success is the face detection algorithm. They are sensitive to facial position, occlusion. Facial landmark algorithms are built on the facial detector that determines which facial bounding box detectors work best and then follows up with facial landmark detection results. This highlights the importance and value of initial detectors. We will discuss this in more detail later. Deep learning-based methods for landmark detection have one goal: to predict the locations of facial landmarks based on data with occlusion. To initiate facial landmark regression, we use Kazemi's TREE algorithm. This algorithm can be used with very small training data derived from the 2-stage object detection algorithm. It is quick and accurate.

Machine learning is used in disease classification and scientists are keen to develop such systems for easier tracking. Machine learning (ML), an Artificial Intelligence discipline, is a way to

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Soil quality monitoring, automated irrigation system using machine learning and Blynk

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ABSTRACT

India Ranks the second country in the world in farm output of 64% of cultivated land which depends on monsoons. Irrigation accounts for Fifty five to seventy five percent of water usage In the World. Also nearly sixty percent of this water while irrigation is wasted. So now we have to conserve the water by making use of soil moisture sensors resulting in smart water management Another is issue is people always focus on the crop yield whereas before the crop yield the other process such as soil quality and soil fertility, which crop to be grown and what fertilizers needed plays an very important role in the yield of the crop. So in our project we have focused on these factors such as irrigation, prediction for fertilizer and which crop to be grown. This project takes a real time data from the deployed sensors such as temperature, moister, npk and ph values in to account and predicts the output in iot machine learning environment. The system implemented will be introduced to the semi-supervised learning model where we will be applying algorithms such as knn and random forest and svm to predict fertility and where as for the crop along with this we have consider other factors such as season and place.

Keywords: *IoT, Soil Fertility, Ph Values, Microcontroller, Semi-Supervised Learning, Crop Prediction, Fertilizer Prediction Smart Water Management*

1. INTRODUCTION

The most important field of an Indian economy is Agriculture. Indian farming accounts for 18% of India's GDP and generates jobs for 50% of the country's labor force. In this new period, the farmer may use technologies to exert influence over the complexities of adjusting crop management and water usage. With both the advent of SaaS and cloud computing, farmers have received modern technology and resources to maximize their income, growing the number of discerning customers and unparalleled temperature values over the last few years. But as we can see that farmers still uses the traditional farming process to grow crop which results in low yield of the crops and fruits. Yet everywhere there was technology, and the mechanical equipment was substituted by humans. Many papers recommend utilizing devices that gather data from various forms of devices and then using a Wi-Fi to transfer them to servers in the cloud. The gathered data provide valuable knowledge on particular environmental factors, which requires control of the device in effect. Environmental management standards are not sufficient and systematic for increasing agricultural growth production. The other factors that can affect the efficiency significantly. Such factors include attacks on insects and rodents that can be tracked by splattering the field with the insecticides and pesticides required. Measurement of soil content such as N (nitrogen), P (phosphorus), and K (potassium) is needed to decide how much additional nutrient material needs to be applied to soil to improve crop fertility. Soil fertility sensors are used to monitor NPK. Nitrogen, phosphorus, and potassium are a significant component of soil fertilizer. Understanding the concentration of their soil will give rise to nutritional deficiency or excess of soil used to support plant growth. Moisture sensors are very important instruments for monitoring moisture in the area. Technically, the device is used to measure humidity in the atmosphere. A hygrometer measures measurements like humidity and ambient temperatures. The ratio

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Psoriasis stages detection through image processing

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ABSTRACT

Air Pollution can have numerous unfavorable impacts on the skin. In thickly populated regions, skin infections are more normal. These infections can effectively affect lives and make an extraordinary requirement for determination. This proposition centers around precise analysis utilizing picture handling. This strategy intends to identify skin infections by looking at the information picture. This includes separating the info picture to eliminate clamor and changing it over to grayscale. At last, picture division is performed. To diminish the information that should be prepared by the classifier, highlight extraction is utilized. To recognize skin illnesses, the SVM (Support Vector Machine), is utilized for picture grouping. Innovation has made it simpler to analyze and treat sickness rapidly. The proposed technique can recognize skin conditions, for example, rosacea and melanoma with a high precision speed of 89%

Keywords: *Image Processing, Skin Disease*

1. INTRODUCTION

The thickness of human skin can change in explicit areas, similar to the soles and palms. It is made out of two layers, the epidermis, and the dermis(inner). The skin's interesting adaptability is because of the presence of collagen and versatile segments. The skin goes about as a safeguard, shielding the body from mechanical powers and substance specialists [1]. These can cause numerous infections, including rosacea, skin inflammation, and psoriasis.

Skin infection recognizable proof has been quite possibly the most well known and fascinating examination regions throughout the most recent couple of years. This paper presents a technique for diagnosing illness that dermatologists can use to decrease the quantity of analytic blunders and help country patients in recognizing the infection early, when drug isn't promptly free [2].

Preprocessing the information picture is important to eliminate any clamor. This is significant all together for precise conclusion. The grayscale picture is made from the sifted picture. The GLCM (Gray Level Cooccurrence Matrix), includes that describe skin injuries depend on surface investigation. These quantifiable highlights are then passed to the SVM classifier which is used to portray pictures [2]. This paper depicts the strategy that can precisely recognize illnesses like psoriasis or other sickness contaminated skin pictures.

For skin illness recognition, picture handling is done in MATLAB. This paper utilizes pictures from different web sources to prepare and test the classifier, as the dataset isn't promptly available. Pictures of skin sicknesses like skin inflammation, rosacea, melanoma, psoriasis and rosacea can be found in the dataset. To make an appropriate dataset, which incorporates 105 pictures, the pictures of skin illnesses like melanoma and rosacea just as psoriasis, were gathered.

Sifting is utilized to eliminate foundation clamor from pictures. Thresholding is the most broadly perceived technique for division. This procedure utilizes undeniable level highlights to order skin pictures for various skin infections.

It is ordered dependent on the highlights taken from the picture. Typical is for solid skin. This is utilized to recognize diverse skin infections utilizing shading pictures[6].

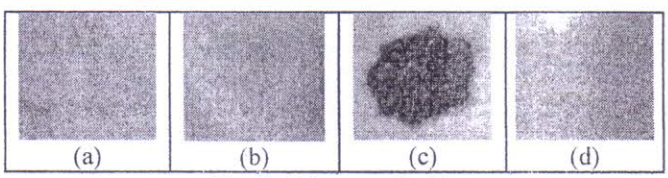

Fig. 1. Diseases of skin

Fig 1 represent the skin disease pictures gathered in the paper the contaminations are (a) skin irritation, (b) psoriasis, (c) melanoma, (d) rosacea [2]. Fig1 represent the skin ailment

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Traffic Prediction Using Convolution Neural Network

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Abstract- *This project will be accurate and timely with the use of a computer tool. In addition to traffic signals, accidents, rallies, and road repairs that cause traffic jams, the traffic environment includes traffic signals, accidents, rallies, and traffic jams. The above and other factors affecting traffic allow us to make an informed decision based on our prior knowledge. Additionally, autonomous vehicles will benefit from it. Statistics on traffic have become more important in recent years. As a sector, transportation has been experiencing exponential growth in data generation. Real-world applications do not lend themselves to many traffic flow models. After collecting traffic data and building modeling models, it was decided to investigate the forecasting of traffic flow. Considering there are so many data points available, it can be difficult to forecast transportation system traffic flow accurately. In order to reduce the complexity of the traffic analysis, we used machine learning, openCV algorithms, and deep learning algorithms. As part of the project, we used this image for categories such as accidents, dense traffic, fires, and sparse traffic. Machine learning systems use these images to recognize traffic patterns and provide monitoring, analysis, and alerts in real-time. DeepQuest AI produces machine learning algorithms using this model that can recognize, comprehend and adapt to a range of daily situations they confront.*

I. INTRODUCTION

Traffic flow information is essential for businesses, government agencies, and individuals. Intelligent Transportation Systems (ITSs) enable traffic flow predictions to be more accurate, thereby reducing congestion, improving traffic operations, and reducing carbon emissions. In addition to inductive loops, radars, cameras, mobile GPS, crowdsourced data, and social media, this system combines sensors to create a traffic flow. Data about transport and traffic can be used in the present, as well as in the past, to determine traffic flow. An outlet of news. We are entering the era of massive data transport and traffic data is exploding with the advent of new sensors and new technologies. In recent years, traffic control and management have become increasingly data-driven. Despite the enormous amounts of data, numerous systems and models use shallow traffic models and as a result fail.

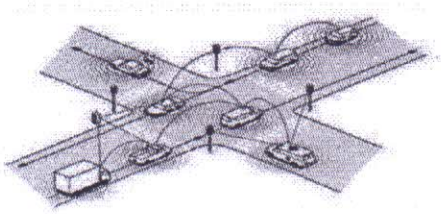

Fig.1 Virtual representation of traffic

II. RELATED WORK

CAs a result of an enormous amount of complicated algorithms and statistical models, computer systems are no longer able to accomplish simple tasks. Instead, traffic-management servers are the preferred way to compare In lA long with improved accuracy, the things algorithms will also be improved. large cities, GPS navigation is a popular method of navigating and computing becomes increasingly difficult on a daily basis, the collected data could be used to visualize the current traffic in the city.ed In the future, it will also be possible to prepare traffic forecasts and analyze. We waste resources and time in vehicular traffic.ime In this paper, a machine learning algorithm is presented for traffic prediction. this paper. As well as the data included in the US traffic 2015 dataset, since this is actual traffic data, not a simulation, researchers are able to leverage patterns from this study to make significant advances over time using different dataset sets. GBy focusing on data-driven solutions, we can find the answer to tough problems. We propose a method in this paper for constructing a machine learning model that can use hidden insights into vehicular movements to predict traffic volume. share their contribution of predicting traffic in In this article, they share their contribution of predicting traffic in the future, in order to make life on a daily basis more efficient. The use of Genetic Algorithms and Machine Learning in data analysis is the machine learning community, it has not received much discussion. accuratIn addition to being more accurate, it also has a higher level of complexity. accuracy from the things algorithms, it will be enhanced.

III. METHODOLOGY

A CNN analyzes a small region in an image by using a set of neurons arranged into three-dimensional structures. The visual cortex in the human brain is the organ in which

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Object segregation using R-CNN

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ABSTRACT

Computer vision is the science of computers and package systems that can also recognize how images and scenes are perceived. PC Vision consists of a variety of solutions that include image recognition, object recognition, image generation, super resolution of images and much more. widely used in facial recognition, vehicle recognition, pedestrian counting, network mapping, security systems, and autonomous cars, but here we have a tendency to specialize in completely different sensible objects, those with different kinds of fruits, buttons, coins, etc. In this project we use extremely correct object recognition algorithms and methods like RCNN, FastRCNN, FasterRCNN, Mobilnet and fast but extremely correct methods like SSD. If we understand frameworks by using dependencies like TensorFlow, OpenCV etc., we can recognize every single object in the image through the realm object in a highlighted area and determine every single object and assign its label to the object. This also includes the precision of every technique used to distinguish between objects.

Keywords: *Object Detection, Tensorflow, Opencv, Python, Tensorboard, R-CNN*

1. INTRODUCTION

Object detection has already been the sole analysis for direction and thus the focus among the computer vision, which can be applied within the driverless car, robotics, police investigation, and pedestrian detection. Segmenting the image for object detection is the most important part of computer vision where the model needs to determine objects either from the background or any of the body parts or just static objects. Object detection could be a method wherein the objects are detected with the assistance of an algorithm detecting live or through an image or video feed. Before the emergence of deep learning technology, the ways of object detection are primarily accomplished by establishing the mathematical models supported by some previous knowledge. This further involve task that distinguish objects in digital photographs or through a live feed via a camera. Classification of image suggests that predicting the category of an object in an image. Object detection states that an image is known to examine 1 or more objects in an image and thereby encloses a bounding box around the boundary of the object detected. Object detection could also be used for detecting the hair follicles and could localize the follicles individually. First, we tend to construct different categories for training, then after training it would be able to detect an object we trained it for, and once after partitioning the image and generating records it would be able to load the model much more efficiently. The subsequent steps are mentioned below. during this project, we are going to be essentially focusing on the various reasonably objects that we see in our day to day life like different varieties of fruits, buttons, coins etcetera. The ways we tend to implement our project as:

1 Image DataSet Preparation
2 Generating TensorFlow Records
3 Implementation of R-CNN
4 coaching And Testing

Object detection will be done using R-CNN, the primary stage of R-CNN is that the generation of region proposals. It uses selective search algorithmic rules. The algorithm works by generating a sub-segmentation of the image that belongs to at least one object, either supported colour, size.

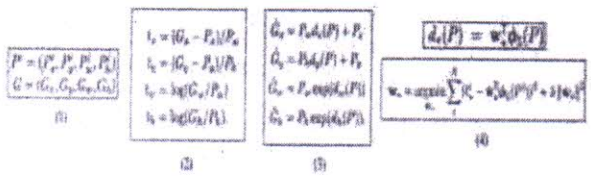

Fig 1: Bounding Box Equations used in R-CNN

The subsequent stage is property SVM categorizes and learns for every class that detects the presence or an absence of object belonging to specific category or class. The output of each stage could be a set of positive object proposals for every class. The

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Brain Tumor Detection And Classification Using Deep Neural Network In Machine Learning Techniques

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ABSTRACT: A brain tumor is a form of cancer that has originated in the brain or has migrated there. Much further, no major reason for the creation of tumours in the brain has been found. Though brain tumours are uncommon, the death rate from malignant brain tumours is quite high due to the tumour's location in the body's most vital organ. As a basis, it is critical to accurately detect brain tumours at an early stage in order to reduce mortality. As a result, we've suggested a project to forecast and diagnose a patient's brain tumour using machine learning techniques, which would analyse brain cancers using MRI images for brain tumour diagnostic management. In this study, we applied pre-processing and also the convolution neural network technique to create a model. The study was conducted using a database retrieved from keggel.com, which is an open database that contains a set of MRI brain pictures that are then utilised in the pre-processing step. The findings show that techniques and methodologies may be trained to estimate the likelihood and kind of brain tumour in the MRI imagery produced. Image processing, pattern analysis, and computer vision techniques are used in the system, which itself is aimed at increasing the sensitivity, specificity, and efficiency of brain tumour screening.

KEYWORDS: Machine Learning, Brain Tumor, Convolution Neural Networks.

I. INTRODUCTION

The human body is composed of a large number of cells. The excessive collection of cells turns into a tumour when cell expansion becomes unchecked. CT and MRI scans are analysed to measure the tumour's location. The objective of this research is to properly identify and classify brain cancers using only a blended approach including medical image processing, pattern analysis, and computer vision for brain diagnostics enhancement, segmentation, and classification. Neurosurgeons, radiologists, and other medical practitioners can use this technology. The technology is expected to rise brain tumour screening sensitivity, specificity, and diagnostic efficiency.

The identification of brain tumours is a difficult process for analyzing tumours in respect of their categories. To categorise diverse features of brain tumours, a deep learning model based on a convolution neural network is presented. Primary and secondary tumours are two types of brain tumours that can be characterized in a variety of ways. The first divides malignancies into 3 groups: Meningioma, Glioma, and Astrocytoma. One of the most prevalent non-invasive techniques for detecting brain tumours is magnetic resonance imaging (MRI).

We mainly depend on information from the website kaggle.com. The material we've collected is in MAT format. Users may use Kaggle to discover and publish data sets, investigate and develop a model in an internet data-science environment, engage with other data scientists and machine learning engineers, and participate in data science events.

Our report concentrated on the automated segmentation and classification of brain tumours. MRI scans may usually be used to diagnose the anatomy of the brain. Because brain tumours can cause unanticipated neurological damage to the body, early diagnosis is critical for effective treatment. It's critical to predict the tumour and classify it early on so that appropriate treatments may well be performed. Different types of algorithms have already been created for the diagnosis of brain tumours, however they all have faults in terms of tumour detection and extraction.

Our vision is to develop an automated system for brain tumour enhancement, segmentation, and classification. Machine learning algorithms can potentially forecast the risk of a brain tumour given the necessary data. The outcomes of this study can help medical authorities and policymakers implement appropriate and effective brain tumour preventive actions. Neurosurgeons and healthcare experts can utilise the system.

Image processing, pattern analysis, and computer vision techniques are used in the system, which is intended to increase the sensitivity, specificity, and efficiency of brain tumour screening.

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A speculation technique for the stock market using time series

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ABSTRACT

Using ARIMA (Auto Regressive Integrated Moving Average) which is a model, this research study presents a method for anticipating stock market values. To begin, historical stock price data is gathered and pre-processed. Pre-processing which is a subcategory of Data Mining in which raw original data is processed into a specified format so that the model can use it. Pre-processing is done to fill in the missing values and arrange the data based on the qualities required for developing the prediction model because the raw data to be processed is partly partial or inconsistent with certain errors and missing values. After the data has been filtered and classified, it is standardized by transforming it into a common format that can be used to train the prediction model. The obtained data is then divided into two data - training and testing data, with the majority of the data being used to train the model. And using the variables linked with the stock price, the testing data is fed to the ARIMA model to predict the corresponding stock price on a particular date. The results are used to determine the model's accuracy.

Keywords *- Machine Learning, Dicky Fuller Test, NSE India, Data Extraction, L-jung Box Test.*

1. INTRODUCTION

Attempting to evaluate stock valuation and providing investors with a better grasp of business and stock price information is known as stock market prediction. Because stock market trends are dependent on a variety of variables and events, a single dataset may not be sufficient to forecast stock market trends, and a single data set may produce inaccurate results. Using a traditional classifier makes it unreliable and fails when circumstances alter in some way. Our fundamental idea was that by using machine learning and training it on historical data from websites, we could forecast the stock price closing rate. We may not always be able to discover patterns because of the complex interactions between inputs and outputs. It has a strong ability to find relationships in input data sets without making any assumptions about how the input and output data are related.

2. LITERATURE SURVEY

The impact of social media tweets on stock exchange in Jamaica is seen, according to SA Bogle and WD Potter [1]. Sentiment analysis necessitates the employment of a pre-processing technique due to the unstructured nature of tweets.[1]Different Machine learning predictors such as neural networks, support vector machines SVM, and decision trees all of them were used to construct stock projections based on news sentiment data. The accuracy of motion prediction was determined and calculated to be 87 percent, while the correlation coefficient for price prediction was 0.99, indicating that there is still space for improvement. [1]. Similarly, by analysing tweet sentiments, [2] discovered a high correlation between a company's stock price and the emotions or public opinions stated about it on Twitter. Using Ngram and Word2vec textual representations in combination with logistic regression is another technique to detect public viewpoints in tweets. The link between market sentiment and public sentiment was proven in a study that used Twitter data to gauge public mood and used previous day's values to forecast changes. The method for forecasting is based on past stock market values and sentiment analysis of financial news. The model achieved accuracy rates ranging from 72 to 86.21 percent by taking into account historical stock prices as well as various types of business and market news.[4]. Combining past stock prices with news headlines helps improve prediction accuracy. [5]. Similarly, [6] discusses strategies for predicting Indonesian stock market movement based on sentiment values in tweets, such as margin percentage prediction, stock price prediction, and price fluctuation prediction. In compared to other commonly used classification algorithms, random forest and nave bayes classification algorithms of prediction fared well. [6]. On the other hand, the prices from the prior five days are extremely useful for forecasting. Bing used a model [7] to analyse hourly stock price trends and public tweets. [7] discovers connected relationships between quantitative stock prices and public mood using data mining and natural language processing technologies. The

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BONE CANCER DETECTION USING MACHINE LEARNING

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Abstract - *Cancer is a fatal condition that affects people of all ages. With over one out of every three people will experience cancer and at a certain point in their lives. By evaluating diagnostic medical techniques such as X-ray scans, CT scans, and PET scans, the overall purpose is to accurately determine the afflicted area in the bone tract, i.e. abnormal growth and disease phase. Because the scanned visuals may not have a high resolution due to the sheer number of slices per pixel and noise, it is necessary to pre-process the images with a median filter to eliminate the noise. Specific characteristics in the pre-processed image will be evaluated using a genetic approach and retrieved employing CNN. The retrieved pictures are categorized and recorded using a CNN classifier in order to determine the stage of illness, which helps the clinician make treatment recommendations. The outcomes of the suggested method demonstrate a higher incidence of early diagnosis of bone cancer.*

***Key Words*: Bone Cancer Detection, Cancer stage classification, CNN Algorithm**

1.INTRODUCTION

Bio Medical pictures are one of the most useful diagnostic tools since they show the function and structure of human bodily organs. Medical pictures are a unique tool for monitoring the therapeutic effect. There are a variety of diagnostic imaging technologies utilized within our bodies to detect disease or contaminated tissue. Cancer is a leading cause of death in both men and women. Early cancer detection has the potential to totally cure the disease. Because bone cancer is caused by the uncontrolled development of bone structures, the demand for methods to detect the existence of a cancer nodule in its early stages is identified. The growth expands beyond the bone and potentially spreads to other parts of the body in a stage known as metastatic illness. Many malignancies that arise from epithelial cells, known as carcinomas, develop in the bone.

Excessive expansion has been effectively detected at an early phase, but it prefers to pursue numerous therapeutic methods, lowering the danger of needless operation and boosting survival rates. Surgical intervention, chemotherapeutic, and radiation are all options for treatment. Life expectancies vary depending on the kind of cancer, overall health, and other factors, but on average, around 14% of individuals treated with bone cancer live five years following their diagnosis. There are often a few medical images that are difficult to understand and accurately describe the phase of illness. X-Ray is a diagnostic imaging method or technique that uses a single gateway system that includes both a positron emission tomography scanning and a computer tomography scanner, allowing pictures from both devices to be captured in much the same appointment and then combined into a single overlaid picture.

The degree of the condition can be described by X-Ray, both anatomically and functionally. Bone cancer develops in the body when cells become feral, and malignancy develops. Tumors can form in practically any part of the body and spread to other parts of the body. Due to a variety of hereditary and physiological variables, bone cancer is considered a multi-disease. It causes unregulated cell growth, resulting in demonic bone tumors that spread throughout the body. The current system technique is utilized to determine the size of the bone tumor and the cancer levels discovered. A randomized area growth algorithm was employed to segment bone MR images. The algorithm's efficiency is determined by a sufficient seed point collection, from which the regions begin to extend to surrounding points based upon particulars.

After segmenting the tumor, a formula is used to determine the tumor region, from which the stage of bone cancer is derived. The proposed technique recognizes bone characteristics that allow them to improve input efficiency. Bone density indicates the specific amount of density as well as the position of all compounds in the bone in this example. It has a multiple peaks for assessing the extent of a malignancy and a dislocation in the picture of a bone. It's a way of distinguishing bone characteristics that uses a combination of methods. The application of a good imaging method is considered as a crucial stage in improving the overall visual representation of medical pictures and, as a consequence, improving diagnostic and stage classification outcomes. Numerous image analysis techniques and tools, including as edge detection, contrast enhancement, and image fusion, are used in this study to provide a simple,

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A speculation technique for the stock market using time series

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ABSTRACT

Using ARIMA (Auto Regressive Integrated Moving Average) which is a model, this research study presents a method for anticipating stock market values. To begin, historical stock price data is gathered and pre-processed. Pre-processing which is a subcategory of Data Mining in which raw original data is processed into a specified format so that the model can use it. Pre-processing is done to fill in the missing values and arrange the data based on the qualities required for developing the prediction model because the raw data to be processed is partly partial or inconsistent with certain errors and missing values. After the data has been filtered and classified, it is standardized by transforming it into a common format that can be used to train the prediction model. The obtained data is then divided into two data - training and testing data, with the majority of the data being used to train the model. And using the variables linked with the stock price, the testing data is fed to the ARIMA model to predict the corresponding stock price on a particular date. The results are used to determine the model's accuracy.

Keywords *- Machine Learning, Dicky Fuller Test, NSE India, Data Extraction, L-jung Box Test.*

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Forecasting air quality using Machine Learning techniques

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ABSTRACT

Air pollution, in general, implies to discharge of impurities into atmosphere which are harmful in human life and in universe. It has the potential to be most destructive menace humanity has always faced. It gives problem to animals, birds, yield, crops and forest among other things. To overcome the difficulty, machine learning techniques must be used to anticipate air quality from pollutants. As a result, forecasting quality of air monitoring and prediction of it has been a significant study area. The actual objective is looking for a machine learning-based solutions for forecasting air quality with the highest level of accuracy. The entire dataset will be analysed using machine learning technique to calculate large bits of data which are variable identification, uni-variate analysis and multi- variate analysis, also bi-variate analysis, missing value treatments, and data validation, data cleaning/preparing, and visualization. Our paper offers a detailed guide to model parameter risk assessment in terms of performance in forecasting air quality pollution calculating prediction accuracy. For presenting a technique using machine learning for reliably predicting the Air Quality Index value by comparing various classifying machine learning methods and producing calculation results in the type of highest accuracy. In addition, the outputs of several machine learning methods from the provided datasets will be compared and discussed, along with estimation of user interface which is GUI based for forecasting air quality using attributes present in the dataset.

Keywords: *Machine Learning Algorithms, Pollutant, Air Quality Index, Datasets, Data Visualization, Accuracy, Air Pollution, Prediction.*

1. INTRODUCTION

The contaminants entering to the air environment which can cause problems to healthy human and also to air environment is known to as air pollution. particle matter (PM), Ozone (O3), sulfur dioxide (SO2), nitrogen oxides (NO), carbon monoxide (CO), volatile organic compounds (VOCs), fertilizers, pesticides, and metals too are pollutants present in outdoor. Increased levels of polluted air has been linked with higherrates of death and morbidity. The particle size plays a big role in deciding where particles go into respiratory system. PM2.5, which refers to pollutants with diameter are lesser than 2.5m or equals to 2.5 m, is a growing source of concern since many particles which can be put down in alveoli, the lungs exchange zone of gas. According to 2016 data from a research, minimum 140 million Indian people breatheair which is 10 times more polluted air which is WHO acceptable guideline, and in the world 13 out of 20 city with the best yearly Indian pollution levels. Economic pollution contributes 51% of pollution, whereas automobiles contribute around 27%, burning the crops accounts to 17%, and fireworks for 5% respectively.Two million Indians die prematurely each year as a result of air pollution. Emissions come from automobiles and industry, but biomass burning for cooking and heating is a major source of pollution in rural regions. Forecasting Air pollution which has a number of negative consequences in the society, including soil depletion, affects to wildlife habitat, depletion-of ozone layer, many crop and forest are damaging, and universal climate alterates. Air pollution is causing a manmade phenomenon in environmentknown to as Global warming. As it means global warming of the land and sea temperature. The temperature is raising at the minimum of highest due to a growth in greenhouse gases, which generate heat as more of Earths heat escapes into space it increases heat in Earth's atmosphere.

The popular greenhouse gas is Carbon dioxide that has highest effects on global warming. When fuels are burned, many gases are released in atmosphere which one among them is carbon dioxide. Humans are been confident that fossil-fuels are necessary to run automobiles and flights smoothly, to operate factories. CO2 is released into the atmosphere as a result of doing this. Methane,

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Imbalanced data handling using Machine Learning

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ABSTRACT

Machine learning algorithm applications still control Internet trade with their seemingly endless options for customisation. Great fast data is continuously passed through socially important forecasts to improve online shopping. In the absence of analytical instruments to manage homogeneous data sets and outlines, unforeseen occurrences of data known as imbalanced data are unfortunately still overlooked. Rare cases of substantial use are therefore still ignored, causing costly losses or even tragic circumstances. A number of methods have been successfully implemented to meet this challenge over the past 10 years. In many cases, however, there are significant disadvantages due to the non-uniformity of the relevant data when used for diverse application domains.

Keywords: *System Testing, System Architecture, Existing System, Proposed System*

1. INTRODUCTION

Every experienced data scientist or statistician knows that data collections are rarely divided equally between interests. Naturally, the vast majority and a small percentage of these transactions are fraudulent. We must find fraudulent transactions with credit cards. Likewise, a small percentage of those tests are (hopefully) positive rates, whether we test cancer or not.

Further examples are:The consumer on the platform will be purchased by an email company.A company checks finished products for defects.Spam-screening tries to differentiate between "ham" and "spam."Intrusion detection systems that are searching for malware signatures or typical port behaviours. Companies predict customer turnover rates. Font-size 11 and font-weight bold should be used to detect hardware faults. The font size and justifiable font should be in every paragraph related to your research. Furthermore, all paragraphs should be similar in style. There is some content on your research in the running paragraphs. Some contents relate to your research in the following paragraphs.

1.1 Existing System

Intrusion detection systems that are searching for malware signatures or typical port behaviours. Companies predict customer turnover rates. Font-size 11 and font-weight bold should be used to detect hardware faults. The font size and justifiable font should be in every paragraph related to your research. Furthermore, all paragraphs should be similar in style. There is some content on your research in the running paragraphs. Some contents relate to your research in the following paragraphs.

1.2 Proposed System

This report presents an in-depth study classification method to identify people who were incorrectly classified and classified in an internal or multimodal material of a third party. This method can be used. We also look at how changing forecasts for e-commerce behavioural personalization affects consumers' unique experience.System advantages proposed Increased precision.This is cheap..

1.3 Motivation

A balanced data set is the main objective of the project. As so much unbalanced data is available, it affects the accuracy of the results and must categorise the unbalanced data in order to achieve the correct results.

1.4 Objectives

1. The project's main objective is to develop a balanced dataset. As so much unbalanced data is available, it affects the accuracy of the results and must categorise the unbalanced data in order to achieve the correct results.
2. The aim is to develop user-friendly data management interfaces. The design of the input is aimed at simplifying and freeing inputs. The data entry panel is configured to allow everyone to modify the information frequently. Equipment for recording is also available.
3.Enhanced algorithm for sampling and integration, integrated alga.

1.5 Scope

The aim of this project is to devise a new approach to the management of unequalled data, multi-modal data mixing and algorithmic changes so that prediction precisity, accuracy and specificity can be optimally balanced using sample techniques.

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Asthma prediction using Machine Learning

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ABSTRACT

Patient telemonitoring brings about a conglomeration of huge measures of data about quiet illness direction. Notwithstanding, the possible utilization of this data for the early expectation of asthma in grown-ups has not been methodically assessed. The point of this examination was to investigate the information for building AI calculations that anticipate asthma before they happen. The investigation dataset involved 278847 records presented by grown-up asthma patients. Prescient displaying included readiness of preparing informational indexes, prescient component choice, and assessment of coming about classifiers. AI classifiers are utilized to foster these prescient models; including Random Forest, Logistic Regression, Decision Tree, and Naïve Bayes strategy. Of the multitude of classifiers carried out, strategic relapse classifier brought about the most elevated expectation precision. Our investigation showed that AI methods have huge potential in creating customized choice help for ongoing illness telemonitoring frameworks. Future examinations may profit with a far-reaching prescient system that consolidates information with different elements influencing the probability of creating asthma. Approaches carried out for cutting edge asthma expectations might be stretched out to early mediation of persistent ailments in patients.

Keywords: *Decision Tree, Random Forest, Naïve Bayes, Logistic Regression*

1. INTRODUCTION

Asthma, a chronic inflammatory disorder that affects the airways, is characterized by obstruction of airflow. It can be treated with or without therapy. Interactions between cells, cellular elements and cytokines are the cause of airway inflammation. Recurrent or persistent bronchospasm can occur in those who are susceptible to the disease. This includes symptoms such as wheezing and breathlessness. Asthma can be characterized by a polymorphic phenotype that is affected by many environmental and genetic factors. These factors play an important role in the development of the disease and its persistence. These factors include a family history of asthma, allergic rhinitis or atopic dermatitis, wheezing episodes in childhood, maternal smoking during pregnancy and several other prenatal and environmental factors.

Most asthma sufferers develop symptoms by the age of five years. Because the symptoms of asthma are so similar, it can be difficult to distinguish between them and other wheezing disorders. As a result, asthma can often be mistakenly diagnosed as bronchiolitis, common cold, or pneumonia. A detailed medical history and physical exam are required to diagnose asthma. However, a lung function test can be difficult to perform in children under five years of age. Preventive medicine is all about identifying those who are most at risk and who need intervention. Particularly important in the case asthma is the accuracy of the risk classification. Patients at high risk of developing asthma disease may be identified early, which can lead to better treatment options and hopefully better outcomes for patients in adulthood.

Asthma is a common disease that affects millions of people around the globe. It can be described clinically as a combination of variable symptoms and significant changes in the function of the lungs. This disease is diagnosed using international guidelines. It includes symptoms like wheezing, shortness or coughing, and shortness of breath. These symptoms are not associated with asthma and 30% of asthma patients are misdiagnosed when a doctor relies on only the symptoms. Misdiagnosis can lead to incorrect treatment, and possibly financial and physical complications.

2. PROPOSED METHODOLOGY

The motivation behind this study is to make a relative model for recognizing highlights that are the most characteristic of the advancement of asthma in youngsters. The proposed model is not difficult to use for clinical experts and over comes the restriction of existing framework, for example, the way that

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Identifying defects during semiconductor manufacturing using Machine Learning

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ABSTRACT

Semiconductor production is the most technically advanced or difficult operations in the world. Old approaches of machine learning techniques, such as univariate and multifactor analysis, have been used to create prediction models for fault detection. In the last ten years, large joint research efforts between semiconductor manufacturing industry and academics have been launched in the field of fabrication. We explore some of these study topics in this paper and present techniques of machine learning which are used for automatic generation of a predictive model of maximum accuracy to detect defects throughout the semiconductor industry's wafer fabrication process. This research work attempts to develop a decision model that will assist in recognizing any equipment failures as fast as possible in order to maintain high productivity in manufacturing of semiconductors.

Keywords— *Semiconductor, Manufacturing, Equipment's, Delicate, Machine Learning, Algorithms*

1. INTRODUCTION

One of the most advanced and capital-intensive commercial areas are semiconductors manufacturing. Effective defect detection prediction in equipment is required to avoid equipment failures, as well as to increase production, lower costs, and reduce maintenance time. The creation of systems that allow computers to adjust their behavior depending on empirical data is known as machine learning (ML). ML analyses data and using statistical theory to create mathematical models that predict future events. Machine learning approaches are increasingly used in a range of manufacturing and scientific settings, involving technology-intensive production and, more broadly, any field which is data-intensive that could benefit accurate prediction proficiency, like the semiconductor manufacturing industry Manufacturing of semiconductors includes compound procedures. The number of stages in wafer manufacturing, which is often over 500, along with the amount of data gathered throughout the whole manufacturing process results in a massive amount of data which needs to be monitored .

The major manufacturing procedure in semiconductor manufacturing is: Manufacture of integrated circuits onto raw bare silicon wafers ,assembly of the integrated circuit into a package to make a ready-to-use product, and testing of the finished products. Majority of semiconductor production or manufacturing machines are fitted with detectors or sensors in over the last few years to enable the monitoring of the production process in real time. These sensor data from the production and equipment states allow for more optimization and efficient control. Sadly, such data which is measured is so profuse that it is difficult to come across any issue throughout the manufacturing process in a well-timed manner. The topic of reliable identification of failure of the manufacturing equipment in the wafer production process is investigated in this work. Machine learning techniques can be used to automatically create a fault detection model from existing sensor data. The hunt for an effective and efficient method to keep an eye on the equipment health and detect at hand breakdown and has long piqued of both researchers and industry.

2. RELATED WORK

Cost, quality, and delivery time are all important variables in most manufacturing processes if businesses want to compete in the long run. Process engineers must detect or monitor and find the unique specifications/characteristics of aberrant goods as

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Topic modelling on Twitter Tweets based on Public Health and Medical Topics Sources

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Abstract – *This paper will describe a new text mining technique. Utilizing the ever so present unstructured data. The previous iteration of text mining though effective have been unable to extract useful information out of the vast presence of unstructured data. This paper walks through the previous text mining techniques and audio transcription models. Using the above two methods to extract information particularly in the field of health and science. This system converts embedded Video in text sources such as Twitter and converts them to audio. This audio is further converted to textual data through transcription models. This textual data is subjected to preprocessing and other NLP techniques along with the original mined text and is piped to the topic modeler algorithm to model the documents to their topics.*

Key Words: **LDA, Text Mining, Machine Learning**

1.INTRODUCTION

Twitter is a social networking platform used by people all over the world, from celebrities to businesses, to communicate their thoughts on a certain topic. Twitter gives developers access to their tweets, allowing them to take advantage of the potential benefits of analyzing the data gathered via the API. The nature of Big Data and the attribute of velocity that it entails. The extraction of useful latent data and topics from the created and assembled vast number of tweets. The topic modeler technique described in this paper seeks to extract relevant and accurate information from a variety of sources.

Open borders in the sphere of study and news are becoming increasingly open. This system is capable of allocating these broad and diverse subjects, as well as processing them to provide an organized picture of all research and key health headlines. This enables researchers and other agencies who use open API to access or be alerted to news of their interest, as well as other relevant news related to it, in order to examine and evaluate it. There are a variety of alternatives for their use with such a large volume of data readily available. Companies could check product reviews to see their audience's real-time opinions on their products, researchers could use tweets to find the latest trends on certain topics or ideas, and organizations could use real-time updates from users to direct help and support during an emergency are just a few examples of how these large data sets could be put to good use. Although these data might be segmented by tagged tweets and hashtags, the insights into the themes inside each subtopic are as wide and complex. For example, using health-related tags, 1 million tweets can be reduced to 300,000 tweets. Differentiating tweets for cardiovascular and medical equipment could also assist users acquire better insights. The relevance of information to the research space, as well as a local and worldwide coordinated effort to address this and future emergency situations, is critical in this global pandemic. As a result, we're encouraged to develop a system that will allow real-time access to vast amounts of data while filtering for their specific needs.

Tokenization, Stop words, and other NLP techniques are used by the system to extract relevant information from tweets. Using a topic modeler called Latent Dirichlet Allocation to pass this processed tweet to (LDA). This unsupervised Machine Learning model will produce tweets that are related to each other. Organizing a large number of tweets into a single dashboard for further analysis. This papers technique hopes to deliver as accurate and aggregated data to the users of the space as possible by leveraging the Twitter API to take in the massive datasets. The Topic Modeler seeks to extract relevant and accurate information from a variety of sources, including historical veracity sources.

2. LITERATURE SURVEY

Scott Deerwester et al. described a technique in "Indexing by Latent Semantic Analysis" [1] that discusses a new method for automatic indexing and retrieval. This method uses implicit higher-order structures ("semantic structure") in order to detect relevant documents more quickly based on queries. It is called a one-value decomposition. This is a method of reducing large terms from a document matrix to a smaller set of ca. To approximate the original matrix, 100 orthogonal elements may be used. Documents can be represented using approximately. 100 item vectors can be represented with factor weights. Queries can be represented using pseudo-document vectors that are made of weighted combinations terms. Documents with supra-threshold cosine values are returned. Initial tests have shown that this retrieval method is fully automated.

Both the latent and singular semantic indexing techniques tested were able to improve how

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Human Disease Predictor Using Machine Learning with Claims Data

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ABSTRACT: "Disease Prediction" system based on prognostic modelling predicts the disease of the client based on the symptoms that user gives as an input to the predictive system. The system analyses the symptoms provided by the user as inputand gives the probability of the disease as an output Disease Prediction is done by implementing the information mining calculations like Decision Tree, Random Forest and Naïve Bayes calculations can give a solution for the present circumstance. Thus, we have fostered a mechanized framework that can find and concentrate covered up information related with the infections from a verifiable (illnesses manifestations) data set by the standard arrangement of the particular calculations. This paper presents a thorough relative investigation of three calculations execution on a clinical record each yielding an exactness up to 95 percent. The presentation is dissected through disarray grid and precision score.

KEYWORDS: Dataset, Machine learning-Classification method, Python IDE, Decision Tree, Random Forest, Naive- Bayes Classifier, Support Vector Machines, Human Symptoms, Accuracy Score.

I. INTRODUCTION

At this point of time, when patient suffering from any disease, then it is necessary for a people to visit a doctor which very risky and have to spend money more. In adding, if the user is not reachable to doctor and hospitals are far, it may be difficult for the client as the disease cannot be acknowledged. Hence, if the above procedure could be accomplished using an computerized program which can save lot of timeas well as expenditure, it is easier to the patient or the client, which makes the procedure much more easier. There are many more Heart related Disease Calculation System using data mining procedures that analyzes the risk level of the client or the patient. Disease Predictor is aweb based submission that forecasts the disease of the client with respect to the symptoms which is provided by the client. Disease Estimate system which collects the diseases from many health disease related website. Hence , we can say that with the help of the disease estimator we can analyse the diseases based on the input given by the client or the patient.

Artificial Intelligence completed computer made more intelligent and can allow the computer to analyze and decide. AI by studying determines the machine learning as the sub group of research work. Different analysts makes us to realize without learning we can't decide it. There are numerous kinds of Machine Learning Procedures like Unsupervised, Semi Supervised, Reinforcement, Supervised Evolutionary Learning and Deep Learning. These learnings classify the gaint data efferently and quickly. The medical services and clinical area are more needing datamining today. At the point when certain information mining techniques are utilized in a correct manner, significant data can be extricated from enormous data set and that can assist the clinical expert with taking early choice and further develop wellbeing administrations. The soul is to utilize the characterization to help the doctor.

Much more tools are available which relates to disease forecast. But particularly every diseases have been analyzed and generates the risk level. But generally there no tools that are used for forecast of general diseases. Therefore, DiseaseForecaster helps for the prediction of the diseases in general. It is dangerous to know the accurate analysis of clients by Medical examination and assessment. For convincing willpower, decision support systems that depends on computer thatmay accept an indispensable task. Health care ground creates huge information about Medical estimation, report in esteems to client, cure, succeeding meet-ups, remedy and so forth. It is complex to compose appropriately. Quality of the data suggestion has been prejudiced due to improper organization of the data. Elevation in the amount of data needs some sincere way to essence and process data viably and professionally.

The disadvantages of the existing system is as follows :

BATCH - 12

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Detection of Glaucoma Disease By Using Retinal Eye Images

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Abstract- *Glaucoma is one of the severe visual diseases that lead to damage the eye irreversibly by affecting the optic nerve fibers and astrocytes. Consequently, the early detection of glaucoma plays a virtual role in the medical field. The literature presents various techniques for the early detection of glaucoma. Among the various techniques, retinal image-based detection plays a major role as it comes under noninvasive methods of detection. While detecting glaucoma disorder using retinal images, various medical features of the eyes, such as retinal nerve fiber layer, cup-to-disc ratio, apex point, optic disc, and optic nerve head, and image features, such as Haralick texture, higher-order spectra, and wavelet energy, are used. In this paper, a review and study were conducted for the different techniques of glaucoma detection using retinal fundus images. Accordingly, 45 research papers were reviewed and the analysis was provided based on the extracted features, classification accuracy, and the usage of different data sets, such as DIARETDB1 data set, MESSIDOR data set, IPN data set, ZEISS data set, local data set, and real data set. Finally, we present the various research issues and solutions that can be useful for the researchers to accomplish further research on glaucoma detection..*

I. INTRODUCTION

In all over the world, there are more than 66.8 million people who are blind due to Glaucoma, a multifactorial neurodegenerative disease that deteriorates vision over time. It takes a considerable amount of time to assess the potential risk of glaucoma disease in diagnosis as well as in treatment. Blood pressure in the eye increases due to intraocular pressure (IOP), and this leads to the break of the optic nerve axon due to its progression to dangerous levels. Therefore, the most important risk factor in the development of glaucoma is an increase in IOP. Blindness may result if this slows down vision loss. In addition to the intra ocular hypertension disease, glaucoma is also accompanied by optic nerve damage. The brain is unable to detect images because of the damaged optic nerve. An optic nerve degeneration is the complaint of the physiologist, which manifests in the optic nerve head and also in the visual area. Glaucomatous damage is irreversible, but being detected early as well as receiving the recommended treatment helps reduce the risk of vision loss. As a result of fluid pressure, glaucoma eyes have a smaller diameter than normal eyes. Fluid usually accumulates in the front part of the eye when this happens. Anormal eye has a pressure of 21 millimeters of mercury. We suffer damage to our optic nerves as the pressure in our eyes increases with fluid levels in our eyes. There is the potential for both eyes to lose vision as the disease progresses. With early detection and treatment, glaucoma can often be prevented from leading to blindness. It is rare to notice any symptoms during the early stages of glaucoma, since it progresses inside theeye.

In Glaucoma, the optic nerve is continuously damaged. Fluid usually accumulates in the front part of the eye when this happens. A normal eye has a pressure of 21 millimeters of mercury. We suffer damage to our optic nerves as the pressure in our eyes increases with fluid levels in our eyes. There is the potential for both eyes to lose vision as the disease progresses. With early detection and treatment, glaucoma can often be prevented from leading to blindness. It is rare to notice any symptoms during the early stages of glaucoma, since it progresses inside the eye. Gloucoma is the leading cause of blindness, contributing to approximately 5.2 million cases of total blindness worldwide and potentially affecting 80 million people within 10 years, according to the World Health Organization (WHO).Glaucomatous damage is determined primarily by the appearance of the optic cup. Glaucoma causes the cup to enlarge. extending to the disc area. Glaucoma is an eye disease that can cause blindness if not detected in the early stages. The optic cupto disc ratio measures the diameter of the optic cup portion compared to the diameter of the optic disc. Eye blindness is caused by it a second most common cause. In order to perform analyses of eye's internal structure, fundus cameras have been used. In order to perform analyses of eye's internal structure, fundus cameras have been used. There are a number of techniques used to detect glaucoma, including Topcon image net system, optical coherence tomography, and retinal nerve fiber layer analysis.

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Online interview based on facial expression

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ABSTRACT

Facial expressions of humans carry more information visually than they do verbally. Human machine interaction is a crucial part of facial expression recognition. The automated facial expression reputation system can be used for many purposes, including detection of intellectual issues and human behavior information. It is still difficult to recognize facial expressions using computers with high recognition charges. The most well-known techniques used in automatic FER systems are based on look and geometry. Normally, facial expression recognition works in four stages, which include preprocessing , face identification, Feature extraction and Classification. We also used feature extraction and expression classification to identify the seven key human emotions.

Keywords: *Haar Cascade, Face Detection, Recognition, Nice Face, Terrible Face.*

1. INTRODUCTION

Our desires have become more possible with modern technology.The field of digital image processing is undergoing a lot of research. This has led to an exponential growth in the field of image processing and digital images. The expressions on our faces reveal how we feel. Interpersonal verbal communication is a lot easier when you use facial expressions. A facial expression is a non-verbal scientific gesture that's expressed in the face to express our emotions. Artificial intelligence and robotics are dependent on facial recognition. This has several benefits, including non-public identification, get access to control, videophone, teleconferencing and forensic application. It also allows for human-computer interaction, cosmetology, and computerized surveillance. Human emotion detection can be used in many places. This may require additional security information or information about the individual. This is a step beyond face detection. In some cases, we might need to add a layer of security. The second layer will detect the emotion and the face.

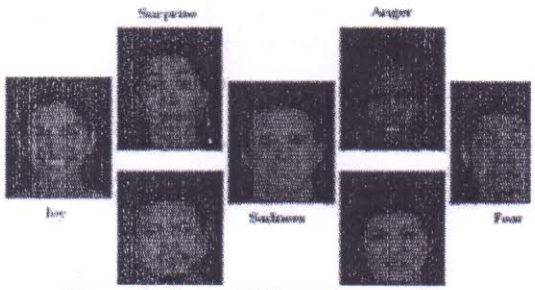

Figure 1: Seven Different expressions

A system has been developed that can detect stress levels and provide feedback to help reduce stress. Modern people are often under extreme stress. We proposed a system that the Panel be updated with an emotion recognition system for the candidate. This makes it possible for panel monitoring to be done about the understanding of the online test for candidates. The body must have the biosignal measuring device. So Many studies have been performed on stress detection using thermal images.However, this has the disadvantage that it can be difficult to recognize stress in everyday life without thermal imaging equipment. However, the majority of studies on stress recognition using a general photo have used a simple feature. We propose a method to recognize stress using high-dimensional features extracted from images of faces taken with a general camera. There have been many projects in this area. Our intention is to not only expand the Automatic Facial Expression Recognition System, but also to improve the accuracy of the system relative to other systems.

2. PROPOSED METHEDOLOGY

Facial feature extraction is difficult, even though the photos were taken in controlled settings. Masses of artwork are created to deal with expression model photos or function extraction approaches in part-occluded situations. Figure 2 shows the architecture of our proposed system.

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DETECTION OF AUTISM SPECTRUM DISORDER IN EARLY STAGE USING MACHINE LEARNING MODEL.

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Abstract: ASD studies has yet to take advantage of "big data" on the very same extent as other areas; but, advances in accessible, inexpensive data gathering and processing may eventually begin this an actuality. Consequently, there's been a significant rise in peer reviewed literature examining the usefulness of computer vision for classifying ASD, investigating its genetic origins, and developing effective treatments. This study presents a thorough overview of 45 studies that use neural network classifier in ASD, including categorisation and text analysis techniques. The purpose of this study is to identify and explain word embedding trends in the ASD community, as well as to provide information to a readership interested in the topic.

Keywords: Autism Spectrum Disorder, Machine Learning, Classification, Medical, Diagnosis.

1. INTRODUCTION

It takes a longer amount of time of money to diagnose autistic children. Early autism diagnosis is advantageous since it lets practitioners to practice proper medication to toddlers. It has the power to block the person's condition from deteriorating further, as well as reduce the hard costs associated with delayed diagnosis. As a basis, a cheap, reliable, and easy high clinical tool to detect autistic traits in individuals and evaluate not just whether the allow a full autism examination is urgently needed. The objective of this project is to provide an autism predictor computational intelligence and to create a mobile phone app that can be used to help people with autism. Autistic diagnosis takes a long time and costs a lot of money. Early diagnosis of autism can be extremely beneficial, since it allows doctors to provide appropriate medicine to individuals at a young age. It has the potential to prevent the patient's condition from worsening further, as well as decrease the long-term expenses of delayed diagnosis. As a result, a quick, reliable, and simple screening test tool is desperately needed to predict autistic characteristics in

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An efficient quality-driven of face occlusion detection and recognition

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ABSTRACT

This paper affords a identify and discover human faces is an photograph irrespective of their position, scale, in-aircraft rotation, orientation, pose, illumination etc. To efficaciously become aware of the individual through surprising the history and different noises within side the photograph. It have to be easy and powerful for the customers and become aware of faces which might be covered with scarf, mask, shades etc, is one of the vital components that influences the overall performance of face reputation. Many algorithms and technology are proposed to clear up the occluded face reputation wherein we use haar cascade set of rules that is simplest one. Initially this set of rules wishes loads of nice pix(pix of faces) and terrible pix(pix without faces) to teach the classifier then we should extract features from it. Facial detection is prompted through readability of the photograph, colored or black and white pix. It can simplest help frontal detection of pix and the education does takes loads of time with a purpose to separate a terrible face from a terrible face from a nice face.

Keywords—*Haar Cascade, Face Detection, Recognition, Nice Face, Terrible Face.*

1. INTRODUCTION

Over the years, several answers to this difficulty had been suggested, starting from breaking the face into a chain of neighborhood areas to superior statistical methods. In the existing paper, we increase the problem as one in every of reconstruction. The elements that degrade the overall performance of a face recognizer encompass presence of illumination differences, intensive pose variations, and facial expressions. This system consists of segmentation, isolation, and validation of facial functions from the risky surroundings and probably actual faces [1][2][3][4].

The system of face reputation incorporates the faces in two fundamental steps, the extraction of the characteristic and the classification. Face reputation is one of the maximum critical issues of verifying and figuring out a face from question or enter picture. This device has emerged has an critical discipline in case of surveillance systems Face recognition is an extremely powerful tool for video surveillance, PC interaction, face reputation management, and photo databases.. It performs a essential position in identity and verification in diverse security based systems. Face reputation is broadly taken into consideration as one of the maximum promising biometric.

Haar cascade may be used to come across any styles of items so long as we've got the proper XML for it. Haar cascade is a system studying item detection set of rules used to pick out items in an picture and primarily based totally at the idea features. It is widely recognized for being capable of come across faces however may be educated to pick out nearly any item. This uses "inner images" standards to compute the "features" detected.

Partial face detection, closing the face, aims to find out the occluded area of the face in a given photo. When the environment and type of occlusion are unknown, facial occlusion management is difficult. First find the occlusion by accident, and then mainly rely on the uncovered part of the face to understand the face. Feature extraction is the important thing approach on this process. A sure variety of functions for every photo are extracted, defining its excessive stage content material data then in keeping with the similarity of these vectors [5].

Positive snap shots are in which incorporates the snap shots which we need our classifier to become aware of and Negative snap shots are in which incorporates snap shots of the whole lot else, which do now no longer incorporate the item we want to detect.

2. PROPOSED METHODOLOGY

The facial function extraction and class is taken into

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DATA ANALYTICS BASED COST PREDICTION FOR A LOGISTICS APPLICATION

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Abstract - *In the present situation, people want all their work to be done with one click. In the current situation, people are scared to step out of the house again and again to get the essentials. A reliable pick and drop service has become a major necessity. We have come across many applications and platforms that deliver things from one place to another, like , etc, that provide pick up and drop services. But none of those applications allows anyone to involve in their services. They have their own agents working for their applications to perform these tasks. These applications charge based on distance and include delivery charges which usually makes the cost high. This makes it tough for a lay man to use because of the charges. We have come up with an idea which is feasible for anyone to use. Let's say a person travels from point A to point B, and he is willing to pick up a package or a parcel and drop it to its destination which is on his way, he can do it using this application. In this application, he can enter his start location and end location and check if there are any packages that need to be dropped. If there are any, if he is willing to drop it, then he schedules a pick-up, collects the package and drops it to the respective location. The main element of the project is calculating the amount to make the payment which will be done using ML or Data Analytics algorithm. The cost is calculated with respect to distance and time.*

Key Words*: *Machine learning, data analytics, linear regression, application.

1. INTRODUCTION

The times have changed, and people are looking for contactless deliveries more than ever now! No matter if you have forgotten something at home such as a charger, mobile, or any other important documents, we are there to pick it for you in no time! Or if you simply want to delegate your daily pick up and drop activities and effectively manage your time, this is a go to application. Logistics is widely recognized as the most complex among business processes. In the contemporary times, it's not money but TIME that's the most valuable asset. There is so much to do and so less time to manage it all. Obtaining maximum profit is also an important aspect. It's very easy to fall into the trap of thinking that you must do everything yourself if you want it to be done right. Trying to accomplish too many tasks often leads to burnout, poor quality and missed deadlines, not to mention time management problems. Hence to overcome these problems, door-to-door services was introduced which does not require additional costs at every stage of the process. This project aims at calculating the minimal transportation cost considering the optimum size of the package with respect to distance. The main objective of this application is to minimize the total cost considering the optimum size of the package and calculate the transportation costs with respect to distance.

2. METHODOLOGY

In this paper, we propose a application which can be used by any common man to make pick and drop services. Here, in our application, the cost is calculated based on distance and time.

A. Application Development

An application has to be developed to support and hold all these features. A web application is designed which acts as a front-end for the users. The application consists of 4 different personas. They are:

- Admin.
- The person who wants to deliver.
- The receiver.
- The person who wants his parcel to be delivered.

Here, the user can perform different operations such as,

- Register as a new user
- Login to an existing account
- Deliver a booking

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Efficient Underwater Image Reconstruction using Deep Convolutional Neural Network

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Abstract: *To crack the difficult of chromatic dispersion humiliation caused through disorder in addition to particles during marine images, toward advance develop the efficiency and effectiveness of deep knowledge base method, this article proposes a better high-resolution rebuilding algorithm for images base on a profound convolutional neural network. The technique future in this article have been established in laboratory channels, community data, and real water bodies. It preserves therefore be fulfilled that the planned technique can successfully develop the excellence of the reconstruction base on deep learning for images inside normal wet.*

Keywords: convolution system[1], excellent declaration[2], sign toward sound relation[3], at the bottom of the sea picture.

1.INTRODUCTION

Image recognition is a hot study area in martial battle, underwater reserve progress, plus green monitor.

Earlier study has found that substantial loss in underwater picture value is affected through lighting combination and diffusion, airborne particle, and turbulence-induced alteration, etc. The most severe issue in natural waters is going to reduce turbulence.

Image enhancement techniques can be optimized by modeling degradation to improve image quality while reducing hardware costs. Neural network fusion, contrast enhancement, and depths mixing to enhance the quality of underwater image reconstruction and restoration.

Image developed an underwater image deterioration model and researched the impact of airborne particles, turbulence, and trajectory dispersion on optical underwater images.

2.PROPOSED SYSTEM

The wavelet base, which preserve successfully replicate the waveform in addition to properties of submarine turbulence, to change the neural adaptation role, to develop a correctness as well as effectiveness of the function, improve a block structure of dense in a system and work out the difficulty effectively resolve. The loss of a neural network of deep convolutional along with improves a teaching tempo on the equal point.

Advantage of proposed system:

1. It improves efficiency.
2. It solves the slope loss crisis in a neural network of deep convolutional.
3. It improve the teaching speed at the same time.

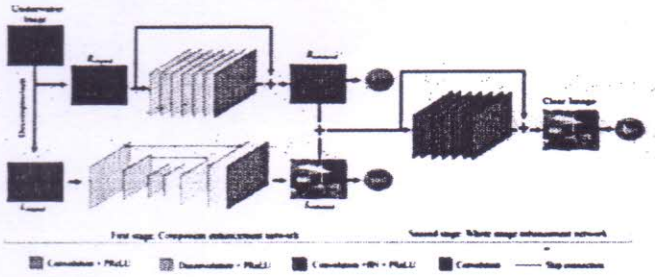

Fig - 2.1: System Architecture

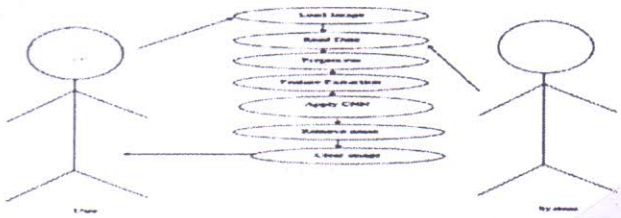

Fig - 2.2: Use Case Diagram

3.IMPLEMENTATION

CPython be mention in performance of Python. It is wrote in C, gathering the C89 standard through some top quality C99 features. It run in Python program into an extreme byte code which be followed through execute with its effective device. CPython is published with an outsized set records written during a combination of C and native Python. It is presented in favor of several platform, include

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Unusual Event Detection for Enhancing ATM Security

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Abstract In real life applications, identification of unusual events in low resolution video is a challenging task because of fact that there is loss of discriminative detail in the visual appearance of moving object. The current techniques are generally based on the upgrade of LR (low resolution) video by super resolution technique. These strategies require high computational expense. We present a design which can recognize unusual event such as weapon, face covered with helmet or multiple person detection without such kind of transformation and appropriate for upgrade of safety of ATMs where conventional low-resolution cameras are generally used due to their low fee/cost.

In proposed system we have used two techniques to detect the motion and image of particular object. Open CV algorithm is used for motion and Haar cascade is used for image recognition. These techniques have high accuracy and speed of operation. It has been analysed with the help of raspberry pi. This proposed method is applied to enhance the ATM security. Algorithm utilizes rolling average background subtraction method to identify foreground object from dynamic background in a scene. Our proposed system can observe the occurrence of unusual events in low- resolution video simply by using statistical property, standard deviation of moving objects and also send alert message to the authorized person.

Keywords: Object Tracking, Unusual event, Background subtraction, ATM security.

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I. INTRODUCTION

ATM allows the client to deal with the bank customer to handle without the requirement for a human teller. Utilizing ATM card, customers can withdraw cash from existing or savings accounts, make deposits or transfer the cash starting with one record then onto the next or execute different tasks. In most of endeavours of attacks, the aggressor/attacker has prevailing in various degrees. To shield from this kind of tricks some wellbeing highlights have been added/created for ATM's from sometimes yet the wrongdoers keep these security measures in charge.

Inside an ATM there are various assaults, since they are an enticing decision. ATM assaults come in three basic sorts:

1. Physical Attack.
2. Attack with weapons.
3. Person entering ATM wearing masks/helmet.

In the previous few decades, huge efforts in the field of moving object recognition and tracking have been done to make following applications reliable, robust and effective: video surveillance, authentication framework, media creation, alert system and so forth. There are numerous difficulties which produce obstacles in the improvement of these applications. These difficulties may incorporate illumination change, dynamic background, processing time, shadow and so on. These hindrances become more troublesome when we perform object detection in low resolution video.

The majority of the conventional tracking follows the methodologies depending on the high resolution (HR) video to extract definite form [4] and shape [5] features of goal. However, these methodologies require more computational expense since they work on high- resolution frames. A few methodologies in the literature utilize low resolution video as an info however a short time later these recordings are upgraded to high resolution with the assistance of any super resolution techniques, which proves to be not cost producing.

In the literature of abnormal event detection, the majority of the techniques as in [6], [7] and [8] utilizes classifiers to perceive the events and doesn't utilize low resolution video technique. These classifiers require learning time and cautious consideration on preparing dataset. A few methodologies as in [9] require manual arrangement at first in automated event identification framework and have high computational expense. From the literature we come to the way that we need an algorithm which manages unusual event detection in low resolution video to assist completely robotized/automated surveillance system.

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Cyber Space of Issues Relate To Wild Creature Intrusion Detection, Distraction and Vigilant System

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Abstract: In areas with high inhabitants and human convenience, interruption of natural life is toxic for people just as the creatures. Because of the unique idea of development along with actual ranges of wild animals, it is a running chat with trace these organisms or else present observation. Like an way out for this problem, this article aims a structure that can help in identifiable proof of imposition of feral creatures by rural estates through Cyber space of issues along with a Wi-Fi focused remote microcontroller entity. Prototyping occurs accomplished applying Energeia integrated development environment (IDE) meant for broadcast of experience in the direction of the woods administrator as of the source hub. Columns containing of an automatic division along with clone, pulsation radar, laser finder, laser junction rectifier, RF phone as well as ultralow power micro-controller remain set on the sides of the ground. On infraction, an alarm bell communication is conveyed via the Wi-Fi section. A creature information set is built for analysis of the projected context. The woodland official stands advised via a Python operative. Avoidance of delays in zones anywhere nearby a better pace of support among people after those feral organisms is vested all across this outline.

Keywords: Wi-Fi, IoT, Energeia IDE, Creature Intervention Detection, Python Attendant, wireless micro-controller.

I. INTRODUCTION

Our uncultivated life population is gradually cooperated since human conduct is shifting the usual outline through energetic asset positioning and scene changes. Also, the development of our general public has lessened the assistance between people and untamed life, and various open air entertainment exercises have weakened in fame. Because of this issue, our public has messed more up for natural life, while the same minimizing the emphasis on natural life species and feature biological practices. This has made a considerable margin to compelling organization of characteristic skills and physical life safeguarding. Researching and ensuring natural life can be realized through non-obtrusive analysis techniques, for example, the camera spotting procedure. This scheme catches automated pictures of wild animals, exploiting little appliances made out of an enhanced camera and an unfriendly infrared instrument. Camera trapping assists the scholar with reviewing animal inhabitants and to detect species for defense purposes, for illustration showing species conveyances, testing creature conduct, and spotting infrequent species. Backwoods fire overwhelms many large trees as well as destroys the vegetation around there. The fire will consume the trees and also the dirt is burned thus abundant sections of land turn into water repellant.

Wood's fire is some of the important reasons for an abnormal weather adjustment as tones of ozone destroying substances are emitted into the ecosystem. The Asian elephant also recognized as alphas maximus holds have being co-operated all across the moment via a limited reasons like contentions with people, misfortune and fracture of natural surroundings. Additional than 60% of this form of elephants resides around India of which over 6,300 elephants remain located here the southerly areas of India. Over two-tierce of them have being stationed inside or nearby spaces of great creature partnership [1]. This is as of the drive of progressive along with horticultural happenings affected with the emerging populace besides shift of backwoods territories obsessed by mortal neighborhoods.

This initiates lack of assets as diet and water meant instead of the feral creature populace, for example these elephants producing them meander into zones by human natural atmospheres. This prompts battles amongst people and these animals [2]. In woods boundaries, the position between men creatures is persistently enlarging as creatures desire in overall wander keen on zones of anthropological house. It happens unbelievably tricky to screen then trail particular creatures, for example wild pachyderms because of their propensityof growth besides mass [3,4]. The elimination of the ranches happens on a more famous intensity and thus the misfortune given about is as well as high ranking. Be that as it can, it needs irrelevant portion of season towards recuperate since peril. Comparably, just as feral creatures have being

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Covid-19 Monitoring and Detecting Band

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Abstract:- The Novel Coronavirus (COVID-19) has infected more than 16 crores people throughout the world. Most of the healthcare systems in advanced countries have become worse because of the coronavirus and people who are affected with COVID-19 are asymptomatic or manifest mild symptoms. The new framework helps in tracing along with temperature and oxygen saturation level that is used to, monitor person health status. It provides an alert message for the person and for the respective health department if there is any variation in health status it also alerts to maintain social distance.

Keywords:- *COVID-19, Temperature, Oxygen Saturation.*

I.INTRODUCTION

From 2019, the occurrence of respiratory disease caused by SARS-COV2 virus is called as coronavirus (COVID-19) which has been affected many people globally. Initially it was discovered in China, the spread increased in less span of time. On June11th, 2020 the total number of infected cases was 12,653, 45 and the death number was 563,517 lives worldwide. The most common symptoms of coronavirus is tiredness, fever, sore throat, loss of smell and taste, nasal congestion. It transmits directly from person to person through respiratory droplet. During the incubation period, the symptoms increases and depends upon the patient condition. The usage of sanitization facemask, face shield and social distance has shown positive results in disease spread.

The IoT plays an important role in the present century since they are been embedded in electronics, software, sensors, and network links, such as computers, houses, vehicles, and perhaps other structures, allows these structures to collect and share information. The paper introduces an IoT based band that can monitor and detect symptoms of COVID-19 of the individual with the help of various sensors. Monitoring is process of keeping continuous track of individuals temperature, oxygen saturation, the location information are live streamed on health department website. The detection is an action of identifying variations in the monitored information along with the location of the person. According to WHO monitor, detect and track is a measure taken to reduce the spread of virus hence tracking also plays an important role in the band. The location is live streamed on on the website in the form of longitude and latitude with the help of GPS.Social distancing is a method similar to bird behavior where one person is separated from another person of atleast 6 feet which is also included in the band by sending an alerting message to maintain distance with the help of ZigBee technology which is a WLAN.the website in the form of longitude and latitude with the help of GPS.

II.MATERIALS AND METHODS

A. Wearable sensing and Telehealth Technology with potential applications in the coronavirus pandemic.

The paper depicts about the COVID-19 tracing model that helps tracing infected with the help of IoT. The model is divided into features like mobile server provider application, citizen- application and IoT based. Contemporary steps for COVID-19 virus control are not applicable for animals and other moving objects. This model provides proof for RFIID concept which helps in contact tracing.

The system presents three prototype block chain smart contracts which will be used in further development. In addition it can be used in understanding human connectivity; contact spread and develops policies to reduce the future increase of COVID-19 virus. The panic of mass surveillance and the data misused has quick containment of outbreak like corona-virus (COVID-19) pandemic. According to the paper the number of COVID-19 infected

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Research Article

Segmentation and Classification of Glaucoma Using U-Net with Deep Learning Model

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Glaucoma is the second most common cause for blindness around the world and the third most common in Europe and the USA. Around 78 million people are presently living with glaucoma (2020). It is expected that 111.8 million people will have glaucoma by the year 2040. 90% of glaucoma is undetected in developing nations. It is essential to develop a glaucoma detection system for early diagnosis. In this research, early prediction of glaucoma using deep learning technique is proposed. In this proposed deep learning model, the ORIGA dataset is used for the evaluation of glaucoma images. The U-Net architecture based on deep learning algorithm is implemented for optic cup segmentation and a pretrained transfer learning model; DenseNet-201 is used for feature extraction along with deep convolution neural network (DCNN). The DCNN approach is used for the classification, where the final results will be representing whether the glaucoma infected or not. The primary objective of this research is to detect the glaucoma using the retinal fundus images, which can be useful to determine if the patient was affected by glaucoma or not. The result of this model can be positive or negative based on the outcome detected as infected by glaucoma or not. The model is evaluated using parameters such as accuracy, precision, recall, specificity, and F-measure. Also, a comparative analysis is conducted for the validation of the model proposed. The output is compared to other current deep learning models used for CNN classification, such as VGG-19, Inception ResNet, ResNet 152v2, and DenseNet-169. The proposed model achieved 98.82% accuracy in training and 96.90% in testing. Overall, the performance of the proposed model is better in all the analysis.

1. Introduction

It is important to diagnose glaucoma early on, which can reduce damage and loss of vision and ensure prompt and appropriate care. The worldwide prevalence of glaucoma for people ages 40 to 80 years is 3.54%. Each one out of 200 individuals aged 40 have glaucoma, which ascends to one in eight by age 80 [1]. Various glaucoma-related risk factors have been established, where the elevated intraocular pressure (IOP) that damages the optic nerves and blood vessels is the significant one. It can lead to total damage to the optic nerves and cause vision loss, if glaucoma is left

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Research Article

A Torn ACL Mapping in Knee MRI Images Using Deep Convolution Neural Network with Inception-v3

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The anterior cruciate ligaments (ACL) are the fundamental structures in preserving the common biomechanics of the knees and most frequently damaged knee ligaments. An ACL injury is a tear or sprain of the ACL, one of the fundamental ligaments in the knee. ACL damage most generally happens during sports, for example, soccer, ball, football, and downhill skiing, which include sudden stops or changes in direction, jumping, and landings. Magnetic resonance imaging (MRI) has a major role in the field of diagnosis these days. Specifically, it is effective for diagnosing the cruciate ligaments and any related meniscal tears. The primary objective of this research is to detect the ACL tear from MRI knee images, which can be useful to determine the knee abnormality. In this research, a Deep Convolution Neural Network (DCNN) based Inception-v3 deep transfer learning (DTL) model was proposed for classifying the ACL tear MRI images. Preprocessing, feature extraction, and classification are the main processes performed in this research. The dataset utilized in this work was collected from the MRNet database. A total of 1,370 knee MRI images are used for evaluation. 70% of data (959 images) are used for training and testing, and 30% of data (411 images) are used in this model for performance analysis. The proposed DCNN with the Inception-v3 DTL model is evaluated and compared with existing deep learning models like VGG16, VGG19, Xception, and Inception ResNet-v28. The performance metrics like accuracy, precision, recall, specificity, and F-measure are evaluated to estimate the performance analysis of the model. The model has obtained 99.04% training accuracy and 95.42% testing accuracy in performance analysis.

1. Introduction

ACL tear is a typical physical problem among young athletes with an annual occurrence of 0.8 per 1000 in the general population but as high as 100 for professional football players for every 1000. With the noncontact loading of a valgus knee, ACL injuries most commonly occur when turning the other direction, causing a constrained internal rotation of the tibia [1].

ACL tear might be partial and completely teared. Partial tear ranges from the small tears, including only few fibres, to

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Research Article

Mechanical and gamma radiation shielding properties of natural rubber composites: effects of bismuth oxide (Bi_2O_3) and lead oxide (PbO)

Ekwipoo Kalkornsuranee, Sirilak Intom, Nussana Lehman, Jobish Johns, Suchart Kothan, Karnda Sengloyluan, ...show all

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ABSTRACT

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This work aims to compare the performance between natural rubber (NR) composites with lead oxide (PbO) and bismuth oxide (Bi_2O_3) as shielding fillers for gamma radiation shielding applications. Modulus at 100% elongation, tensile strength, elongation at break, hardness and a specific gravity of the NR composites were investigated. The results indicated that NR/Bi_2O_3 and NR/PbO composites

In this article

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Research article

Mechanical, thermal and optical properties of natural rubber films with different types of bifunctional aldehydes as curing agents

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Abstract. A new simple system to vulcanize natural rubber (NR) latex at low temperature (50 °C) using different bifunctional aldehydes has been proposed. Bifunctional aldehydes with different number of carbon atoms present in the chemical structure, including glyoxal (GX) with 2 carbon atoms, glutaraldehyde (GA) with 5 carbon atoms and phthaldialdehyde (PA) with 8 carbon atoms were added into natural rubber latex. The mechanical, thermal and optical properties of the crosslinked NR were studied. The formation of crosslinking in the cured NRs was confirmed using infrared spectroscopy (ATR-FTIR). A new absorption peak was found at 1589 cm^{-1} for –NH bending of secondary amine in the case of cured NRs when compared to uncured NR. Universal testing machine (UTM), dynamic mechanical thermal analysis (DMA), thermogravimetric analyzer (TGA) and temperature scanning stress relaxation (TSSR) were employed to study the tensile and thermal properties of cured NRs. Results revealed that the GA cured NR exhibited superior mechanical properties in terms of 100% modulus, tensile strength and hardness up to 2.13, 6.38 MPa and 54.67 Shore A, respectively. Furthermore, GA cured NR showed the highest crosslink density (72.40 mol/m^3) and also showed better thermal properties among the different curing systems. The optical properties in terms of transparency of cured NRs were studied. It was noticed that PA cured NR gave more transparency and hence it can be introduced in developing materials for sensor applications.

Keywords: *rubber, mechanical properties, thermal properties, bifunctional aldehydes, transparency*

1. Introduction

Natural rubber (NR) is a renewable resource collected from the tree *Hevea brasiliensis* with the chemical structure of *cis*-1,4- polyisoprene [1, 2]. NR is an important elastomeric material used to produce rubber articles such as tires, automotive parts, gloves, condoms, medical devices, and so on [2, 3]. Various outstanding properties of NR including elasticity, strength, elongation at break, and resilience make the material suitable for many flexible engineering applications. However, NR consists of a small amount of non-rubber components such as proteins, lipids, carotenoids *etc.* [4, 5]. Polyphenol is the most important component that causes discoloration of NR [6, 7]. It is due to the presence of polyphenols that *ortho*-quinones are generated by oxidation. These quinones react with the non-rubber constituents such as protein present in the NR latex that, changes the color

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Open Access Article

Influence of Non-Rubber Components on the Properties of Unvulcanized Natural Rubber from Different Clones

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Journal of Physical Science, Vol. 33(1), 65–82, 2022

Leather-Like Material Based on Natural Rubber Composites

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ABSTRACT: *In-house leather like material based on filled natural rubber (NR) with various filler types (i.e., clay, SiO_2, and $CaCO_3$) was prepared by calendaring method. NR/SiO_2 exhibited the highest tensile strength, 100% modulus, elongation at break, and tear strength. The lower wear index and % weight loss in case of NR/SiO_2 indicated the best abrasion resistance among the other fillers due to the fine dispersion of SiO_2 in the NR matrix. Also, the uniform dispersion of SiO_2 together with high surface area of SiO_2 enhanced the interaction with NR matrix led to the higher elasticity of NR/SiO_2 vulcanisate. Therefore, NR/SiO_2-based leather was prepared and exhibited no significant difference in the abrasion resistance compared to the commercial leather. Furthermore, it was observed that NR/SiO_2-based leather exhibited higher skid resistance than the commercial one. Therefore, NR/SiO_2-based leather has been proposed to use as commercial artificial leather.*

Keywords: natural rubber, leather-like material, abrasion resistance, filler

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Mechanical, Thermal and Solvent Transport Properties of Glutaraldehyde Cured Natural Rubber/Cotton Fabric Composites

Thanuj Kumar M, S. G. Sangashetty, Ekwipoo Kalkornsurapranee, Ladawan Songtipya, Yeampon Nakaramontri & Jobish Johns

Fibers and Polymers **23**, 1068–1076 (2022)

27 Accesses | Metrics

Abstract

Composites of cotton fabric reinforced cured natural rubber (NR) as matrix material were prepared. Glutaraldehyde (GA) was used as a curing agent to cross-link the matrix material. The cured composites showed excellent mechanical, thermal, physical and solvent resistance properties. Cotton fabric has the preparties like eco-friendly and biodegradability with excellent tensile strength. When such kind of fabrics is introduced into the vulcanized rubber, it is expected to enhance the stability considerably. A significant improvement in the stability of natural rubber in terms of tensile properties was noticed on reinforcing cotton fabric into matrix. An increase of 110 % in the tensile

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Published: 11 April 2022

Dielectric Properties of Banana Fiber Filled Polypropylene Composites: Effect of Coupling Agent

Mahesh Doddashamachar, Raju Nama Vasudeva Setty, Maraluru Venkataravanappa Hemantha Reddy & Jobish Johns

Fibers and Polymers **23**, 1387–1395 (2022)

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Abstract

The goal of this article is to examine the effect of MAPP (malic anhydride grafted polypropylene) used as a coupling agent on the dielectric properties of polypropylene filled banana fiber composites. Banana fiber reinforced polypropylene composites were prepared by using twin screw extruder and injection molding apparatus. The dielectric parameters of both coupled and uncoupled composites were calculated in the experiment with temperatures from 30 °C to 150 °C in steps of 10 °C and frequencies in the 20 Hz to 10 MHz range. Composites prepared using a coupling agent and increasing the content of the banana fiber was found to have a major change in dielectric properties. Compared to un-coupled composites,

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Research article

Effect of plasma-polymerised acetylene-coated silica on the compound properties of natural rubber composites

Prachid Saramolee [a, b, c], Suchanat Trubmusik [a], Thirayu Sunthondecha [a], Mudtorlep Nisoa [d], Jobish Johns [e]

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Abstract

Silica-filled natural rubber (NR) encounters incompatibility problems, owing to the strong particle-particle interaction arising from the hydrogen bonds of hydroxyl groups, which generally leads to the formation of agglomerates. The addition of coupling agents, especially silane coupling agents, reduces the agglomeration. However, this has some disadvantages, such as toxicity, a risk of pre-curing, and the generation of ethanol during mixing. This work aims to focus on the effect of filling the plasma-polymerisation of polyacetylene-coated silica into natural rubber compounds. The deposition of plasma-polymerised acetylene applied to silica particles was firstly carried out using a radio frequency (RF) with an input power of 20 kW for 60 min and further incorporated into NR compounds. On the surface of the coated silica analysis, the formation of a polyacetylene layer on the silica surface was obviously confirmed that it exhibited more stability in water. The following polyacetylene-coated silica (PA-coated silica)-filled NR compound properties were analysed: mixing energy and temperature, Payne effect, complex viscosity, and cure characteristics. The NR compounds mixed with PA-coated silica showed a lower mixing torque, dumping temperature, Payne effect, and viscosity, when compared to NR compounds with unmodified silica and ordinary silane systems. However, the differences were insignificantly noticed in the cure characteristics of the compounds. Polyacetylene-coated silica developed from plasma polymerisation can be used to improve the uniformity of dispersion, as well as the compatibility of silica in a natural-rubber matrix, without changing its cure characteristics, compared to the one with a silane coupling agent.

Previous Next

Keywords

Natural rubber; Silica; Silane; Acetylene; Plasma polymerisation

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1. Introduction

The chemical compatibility between a filler and a rubber matrix plays an important role in the dispersion of the filler in the matrix, and also the adhesion between the two phases, which determines the final properties of filled-rubber compounds. The mixing of silica-filled natural-rubber compounds is more difficult and complicated, compared to that of black carbon. This is because silica is an inorganic filler that has a high concentration of very polar hydroxyl groups on the surface. Therefore, a basic difficulty lies in the incompatibility of highly polar silica and non-polar hydrocarbon rubbers.

Various strategies have been applied to improve silica–rubber interactions, including modifying the silica surface using a coupling agent, and applying polar or functionalised rubbers that can enhance the compatibility between the rubber and filler (Cataldo 2002; Choi 2002; George et al., 2002). Silane coupling agents are commonly used to chemically bond a polymer to silica to improve the filler dispersion and to increase the reinforcement level. The processing conditions and mixing step need well-controlled to allow

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Industrial Crops and Products

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Synergistic effects of soap nut extract and glutaraldehyde on the properties of natural rubber: A waste to wealth approach

K.S. Krishna Kumar [a], S.J Varuni [b], Rawiporn Promsung [c], Ekwipoo Kalkornsurapranee [c], Yeampon Nakaramontri [d], Jobish Johns [a]

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https://doi.org/10.1016/j.indcrop.2021.114063 Get rights and content

Abstract

This study aimed at the extraction of soap nut fruit to blend with natural rubber as a natural additive. The effectiveness of blending at various blend ratios has been studied in detail. The effects of soap nut extract on the tensile properties, thermal stability, glass transition and crystalline melting temperatures, solvent transport properties, morphology and antibacterial properties were investigated. FTIR was employed to confirm the presence of functional groups and the interaction between both the blend constituents. Enhancement in the tensile and thermal properties of natural rubber was noticed upon the incorporation of soap nut extract. The increased glass transition and crystalline melting temperatures suggests the miscibility of both blend components. Solvent transport study in benzene showed an increasing trend upon the addition of soap nut extract into natural rubber. SEM microphotographs showed a fine and continuous surface morphology in case of the blend when compared to pure natural rubber. Antibacterial studies revealed that the incorporation of soap nut extract makes natural rubber more stable. The blend with 5 % soap nut extract exhibited superior properties than that of the other blend components.

Introduction

Polymer blends are the physical mixtures of two or more polymers. Blending of polymer is an alternative method instead of synthesizing a new polymer or monomer and it reduces the production cost (Muthuraj et al., 2018). Blending provides materials with excellent properties that vary in between the properties of individual properties. Materials with desired stability can be developed by varying blend ratio. Natural rubber (NR) is a natural polymer with excellent elasticity but poor physical properties (Roslim et al., 2018; Thongnuanchan et al., 2017). Generally, NR must be modified by adding curing agents such sulfur, peroxides etc. to improve its stability (Ghosh et al., 2003; Lorenz and Parks, 1961; Makuuchi et al., 1990). Recently, it was reported that, glutaraldehyde can be used to cure NR as an effective crosslinking agent for NR in latex stage at low temperature (Johns et al., 2012; Johns and Nakason, 2012; Johns et al., 2015; Kalkornsurapranee et al., 2017). The crosslinking reaction of NR with glutaraldehyde was accomplished in two steps. The first step involved the creation of pentane-1,5-deylidenediamine by allowing glutaraldehyde to react with the ammonia. The second step was the formation of crosslinks via an "ene" reaction between molecules of NR with pentane-1,5-deylidenediamine. Considerable enhancement in the stability of rubber in terms of physical and chemical properties was also noticed more than for other crosslinkers.

The main source of rubber is *Hevea Brasiliensis* tree and it gives natural rubber latex. The latex consists of mainly water and rubber suspension and proteins, lipids and organic salts in relatively small amounts (Jacob et al., 1993). NR is generally used in food and medical industries. The final product of NR must be safe while in contact with human body. Addition of anti-bacteria agent is an effective method to improve the antimicrobial properties of NR and it prevents microbial contamination in NR products. Bacteria are grown on NR due to the presence of protein, amino acids and carbohydrates (Moneret-Vautrin et al., 1993; Yeang et al., 2002; Bode et al., 2001; Berekaa et al., 2000; Jendrossek et al., 1997). Attack of micro-organisms on NR deteriorates its physical properties.

Cardanol, extracted from cashew nut shell liquid was used as a natural additive to NR in the form of cardanol-formaldehyde (Vu et al., 1999). The incorporation of cardanol formaldehyde significantly improved the tensile and thermal stabilities of NR along with the oxidative stability. An optimization study on grafting of cardanol on to NR in the latex stage was reported by Mohapatra and

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Composites Communications
Volume 27, October 2021, 100880

Improved adhesion properties of natural rubber-based pressure-sensitive adhesives by incorporating particulate fillers

Ladawan Songtipya [a], Ponusa Songtipya [a], Theerarat Sengsuk [a], Ekwipoo Kalkornsurapranee [b], Yeampon Nakaramontri [c], Jobish Johns [d]

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Highlights

- A novel tack enhancer system of natural rubber (NR) -based pressure-sensitive adhesives have been successfully developed.
- Several fillers such as xyloglucan, $CaCO_3$, and SiO_2 can be used as tack enhancers for the NR-based PSA development.
- The developed PSA can adhere well to the polypropylene substrate without remaining any adhesive residue after peeling.
- The fillers increase the PSA adhesion by decreasing the relaxation and molecular weight as well as increasing the tan δ.
- Aged hardening of the NR-based PSA can be retard by the large rigid particle of XG for 180 days.

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Abstract

A new concept of producing natural rubber (NR) based pressure-sensitive adhesive (PSA) using solid particles relatively at a low-cost as tack enhancer has been proposed. The effect of tack enhancer (i.e., xyloglucan (XG), rice flour (RF), calcium carbonate ($CaCO_3$), and silica (SiO_2)) on the adhesion properties of the PSA was investigated. Moreover, stress relaxation, tan δ, initial plasticity (Po), and molecular weight of NR which relates to the adhesion properties were also determined. The study found that XG, RF, and SiO_2 can be used as tack enhancers for NR-based PSA. The obtained PSA from those tack enhancers can adhere and peel off on a polypropylene (PP) substrate without any adhesive residue. An increase in the adhesion properties of NR-based PSA can be expl by the effect of fillers on the viscoelastic properties and molecular weight of the PSA. Stress relaxation and molecular weight of the NR-based PSA were significantly found to be decreased, while the tan δ was increased by the addition of particulate tack enhancers compared to the masticated neat NR. NR-based PSA with the highest peel strength (2.11×10^2 N/m) was successfully developed by using XG (40 phr). The NR-based PSA with XG was also showed the ability to resist the unfavorable aged hardening of the NR-based PSA in 180 days.

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Disinfectant natural rubber films filled with modified zinc oxide nanoparticles: Synergetic effect of mechanical and antibacterial properties

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Abstract. Disinfectant natural rubber (NR) film filled with nano-zinc oxide (ZnO_{np}) was prepared *via* latex processes. In addition, modification of ZnO_{np} was done by coating calcium carbonate ($CaCO_3$) at the ratios of 90:10 and 60:40 (ZnO_{np}-Ca_{10} and ZnO_{np}-Ca_{40}). Mechanical and thermo-mechanical properties, together with the unique anti-microbial activity of the resulting NR film products, were studied in detail. It was found that the nature of ZnO dispersion plays an important role in the improvement of the properties of NR films. Enhancement in the properties of NR was noticed for the films by the addition of ZnO_{np}-Ca_{10} and a reduction in properties was observed in the case of unmodified ZnO_{np}. Van-der Waals force of attraction among the ZnO_{np} particles and the improved degree of crosslinking of NR molecules are the reasons for the property enhancement. The results are well correlated with qualitative and quantitative determinations against gram-negative *E. coli* anti-microbial studies. Usage of modified-ZnO_{np} effectively kills bacteria through the formation of ROS and Zn^{++}, which transfer across the NR molecules *via* electrostatic forces. Hence, it can be effectively used in the dipping process to develop gloves, condoms, clothes etc.

Keywords: *nanocomposites, rubber, material testing, mechanical properties, anti-microbial properties*

1. Introduction

Natural rubber (NR) is a widely used material in various industrial applications. Due to its excellent elasticity and mechanical properties, NR has been used in the manufacturing of tires, sports articles, sealing materials, gloves, rubber boots, and dairy rubber items [1]. In order to reach the specific properties of products, the addition of several fillers such as carbon black, silica and clay were incorporated. Fillers affect the intrinsic properties of NR significantly;

- Changes the insulating NR to a conducting elastomer for electronic devices [2–5],
- Increases abrasion resistance and wet traction of NR used in car tires [6–9],
- Improves the hydrophilic nature of NR used as organic substrates [10, 11].

NR has been used in various fields, but it is not suitable for medical applications due to its allergenic nature and inability to disinfect the microorganism. Hence, the anti-microbial property of NR has to be

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Industrial Crops and Products
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Synergistic effects of soap nut extract and glutaraldehyde on the properties of natural rubber: A waste to wealth approach

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Abstract

This study aimed at the extraction of soap nut fruit to blend with natural rubber as a natural additive. The effectiveness of blending at various blend ratios has been studied in detail. The effects of soap nut extract on the tensile properties, thermal stability, glass transition and crystalline melting temperatures, solvent transport properties, morphology and antibacterial properties were investigated. FTIR was employed to confirm the presence of functional groups and the interaction between both the blend constituents. Enhancement in the tensile and thermal properties of natural rubber was noticed upon the incorporation of soap nut extract. The increased glass transition and crystalline melting temperatures suggests the miscibility of both blend components. Solvent transport study in benzene showed an increasing trend upon the addition of soap nut extract into natural rubber. SEM microphotographs showed a fine and continuous surface morphology in case of the blend when compared to pure natural rubber. Antibacterial studies revealed that the incorporation of soap nut extract makes natural rubber more stable. The blend with 5 % soap nut extract exhibited superior properties than that of the other blend components.

Introduction

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Cardanol, extracted from cashew nut shell liquid was used as a natural additive to NR in the form of cardanol-formaldehyde (Vu et al., 1999). The incorporation of cardanol formaldehyde significantly improved the tensile and thermal stabilities of NR along with the oxidative stability. An optimization study on grafting of cardanol on to NR in the latex stage was reported by Mohapatra and Nando (Mohapatra and Nando, 2014). Physico-mechanical properties, rheological characteristics and differential scanning calorimetry confirm the plasticization effect of cardanol when grafted on to NR. An attempt has been made to replace carbon black in NR by introducing lignin as a reinforcing agent (Barana et al., 2018). Chemically modified lignin enhances the compatibility between both the constituents by improving the reinforcing ability.

Additives for NR based on petroleum products should be replaced by using natural products. Thus, natural polymers are outstanding materials to improve the physical properties of NR. In view of green movement, natural products from renewable and sustainable resources are proposed to incorporate into NR to improve the physical properties. Sapindustrifoliatus is a tree belongs to the family of Sapindaceae which is known as soap nut in English. These trees

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Electrical Studies on Silicon BJTs of Different Base Width Irradiated with Heavy Ions

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[2] *Department of Physics, Raja Rajeshwari College of Engineering, Bengaluru-560074.*

Abstract

Silicon <111> *npn* power transistors are irradiated with 50 MeV Li^{3+}, 60 MeV B^{4+}, 108 MeV O^{8+}, 110 MeV Si^{8+}, and 120 MeV Ni^{8+} – ions. The electrical measurements made on these devices show decrease in forward saturation current (I_{CEsat}) measured before and after irradiation at a fluence of 1×10^{11} ions/cm^2. These values are found to be decreased from one to three orders of magnitudes. The variation in I_{CEsat} is more pronounced for Li^{3+} – ions and B^{4+} – ions compared to other heavier ions. At reverse breakdown voltage the leakage current has been increased to two orders of magnitude. The influence of width of base on electrical measurements has been studied. It is observed that, transistors having larger base width with low electrical resistivity are of most resistant towards ionizing radiation. Hence device fabrication technology may play an important role in designing radiation hard devices.

Key words: Transistor, Irradiation, Defects, Junction

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INTRODUCTION

Silicon is a cheap material, cost effective, plays crucial role in modern microelectronics. Bipolar junction transistors made of silicon have significant applications in the circuits for space, military, medical, high energy particle accelerators and other radiation rich environments. BJTs are sensitive to both trapped charged particles and solar cosmic rays, and can suffer displacement damage. Generally, heavy ions can be used to investigate the displacement effects of the BJTs [1].

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Influence of Recombination Current on Gain of Irradiated Silicon Transistors.

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ABSTRACT

Current gain degradation in irradiated bipolar junction transistors is primarily due to excessbase current caused by enhanced carrier recombination in theemitter-base space -charge region (SCR).Trapsat oxide passivation layer of BJT leads to increase in surfacerecombination current. This recombination current leads to decrease in gain of a transistor. In the present work effected of temperature in the V_{CSat}(Saturation voltage) and I_{CSat}(Saturation current) due to ion irradiation has been reported. We have also study the effect of irradiation on switching properties of the transistors these studies help to test the device for its functionality in radiation hard environment. These studies may also helpful in development the modelfor similar applications.

Introduction:

Bipolar junction transistor (BJTs) is a key component in many applications such as linear mixed signal circuits, military, space exploration programs and high energy physics experiments. In space systems, space craft electronics are exposed to different types of a radiation such as protons, electrons, particles from solar events and particles from galactic cosmic rays [1-4]. When Si BJTs are exposed to ionizing radiation, trapped oxide charge and interface states accumulate in the oxides that lie over the surface of the intrinsic base, leading to an increase in surface recombination current in the emitter-base diode consequently, there is an increase in the base current of the devices, and the bipolar transistor suffers from a loss of dc current gain. The high-energy radiation can also create different trap levels in the band gap of silicon which reduces the minority carrier life time and in turn degrades the current gain of transistors [5].The devices used in radiation-rich environments over mission life time have to with stand long-term radiation effects such as Total Dose Displacement Damage and single event effects. Among the intense particular space radiation environment, trapped protons and electrons are potential candidates for that lead

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Materials Today: Proceedings
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Stress corrosion studies of AL 2014 alloy using synthesized pyrimidin derivative inhibitor in different concentration of HCl solution

G. Nataraja [a], B.M. Praveen [a], R.D. Pruthviraj [b], A. Sudhakara [b], S Ramesha [b], K. Sureshkumar [c], T. Ramakrishnappa [c]

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Abstract

The stress corrosion resistance of AL 2014 in high temperature acidic media usingthe inhibitors MPPA and AMPO has been evaluated using an autoclave. The liquid melt metallurgy technique using vortex method was used to fabricate AL 2014 alloy. Stress corrosion tests were conducted using weight loss method for different exposure time, normality and temperature of the acidic medium. The corrosion rates of AL 2014 alloy was lower to that of Concentration increases of the inhibitor.

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Keywords

Vortex method; Stress corrosion; Autoclave; AL 2014 alloy; Synthesized inhibitor

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Electrochemical behavior of heat treated AL 2014 alloy using Azithromycin compound in 3.5% NaCl solution

G. Nataraja [a], B.M. Praveen [a], R.D. Pruthviraj [b], Sureshkumar kempahanumakkagari [c], T. Ramakrishnappa [c]

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Abstract

In the present research work, corrosion behavior of heat treated Al 2014 alloy in 3.5% NaCl with and without heat treatment in different concentration of inhibitors is studied. Rectangular specimen 2 cm X 1 cm X 1 mm was subjected heat treatment for 2 h, 4 h and 6 h in Muffle furnace at 550 °C. The specimen were tested for corrosion characterization of Electrochemical studies test. The result obtained is compared with heat treated and non-heat treated specimen. It was found that the heat treated specimen exhibits excellent corrosion Resistance when compared to non-heated specimen.

Previous Next

Keywords

Al 2014 alloy; Muffle furnace; Potentiodynamic polarization; Impedance

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Materials Today: Proceedings
Volume 49, Part 3, 2022, Pages 693-698

Combustion synthesis of metal oxides nano particles: An efficient route to produce nano materials for diverse applications

S. Ramesha [a], Shubhra Jyotsna Aithal [b], K. Sureshkumar [c], T. Ramakrishnappa [c] ✉, B.M. Praveen [b], R.D. Pruthviraj [a]

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https://doi.org/10.1016/j.matpr.2021.05.174

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Abstract

Different nanoscale tungsten oxides with phenomenal photocatalytic properties were orchestrated through a super-fast arrangement ignition amalgamation strategy . The outcomes showed that the WO_3 and $W_{18}O_{49}$ could be orchestrated with various fills (glycine, urea, urea and citrus extract) and the powders introduced mesoporous structures with various morphologies, for example, nanoparticles, nanorods and nanoneedles. Itemized response components of different frameworks were distinguished, and the particular jobs of various powers were examined . Also, the integrated powders showed fantastic photocatalytic proficiency, debasing natural mixtures in 50 min under UV-obvious light illumination. The work recommends that arrangement ignition combination can be utilized as another procedure to plan nanosized stoichiometric and oxygen-opportunity rich nonstoichiometric oxides with brilliant properties .

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Keywords

Nanoscale; Photocatalytic; Ignition combination; UV-obvious light; Fuel

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Materials Today: Proceedings
Volume 49, Part 3, 2022, Pages 789-793

Stress corrosion studies of AL 2014 alloy using synthesized pyrimidin derivative inhibitor in different concentration of HCl solution

G. Nataraja [a], B.M. Praveen [a], R.D. Pruthviraj [b], A. Sudhakara [b], S Ramesha [b], K. Sureshkumar [c], T. Ramakrishnappa [c]

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Abstract

The stress corrosion resistance of AL 2014 in high temperature acidic media usingthe inhibitors MPPA and AMPO has been evaluated using an autoclave. The liquid melt metallurgy technique using vortex method was used to fabricate AL 2014 alloy. Stress corrosion tests were conducted using weight loss method for different exposure time, normality and temperature of the acidic medium. The corrosion rates of AL 2014 alloy was lower to that of Concentration increases of the inhibitor.

Previous Next

Keywords

Vortex method; Stress corrosion; Autoclave; AL 2014 alloy; Synthesized inhibitor

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Materials Today: Proceedings
Volume 49, Part 3, 2022, Pages 693-698

Combustion synthesis of metal oxides nano particles: An efficient route to produce nano materials for diverse applications

S. Ramesha [a], Shubhra Jyotsna Aithal [b], K. Sureshkumar [c], T. Ramakrishnappa [c] ✉, B.M. Praveen [b], R.D. Pruthviraj [a]

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https://doi.org/10.1016/j.matpr.2021.05.174

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Abstract

Different nanoscale tungsten oxides with phenomenal photocatalytic properties were orchestrated through a super-fast arrangement ignition amalgamation strategy . The outcomes showed that the WO_3 and $W_{18}O_{49}$ could be orchestrated with various fills (glycine, urea, urea and citrus extract) and the powders introduced mesoporous structures with various morphologies, for example, nanoparticles, nanorods and nanoneedles. Itemized response components of different frameworks were distinguished, and the particular jobs of various powers were examined . Also, the integrated powders showed fantastic photocatalytic proficiency, debasing natural mixtures in 50 min under UV-obvious light illumination. The work recommends that arrangement ignition combination can be utilized as another procedure to plan nanosized stoichiometric and oxygen-opportunity rich nonstoichiometric oxides with brilliant properties .

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Keywords

Nanoscale; Photocatalytic; Ignition combination; UV-obvious light; Fuel

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Bismuth Nitrate Catalysed Convenient Synthesis of 1,8-DioxoOctahydro xanthene Derivatives

Sudhakara A [(1)*] Prabhakara Varma P [(2)] Pruthviraj RD [(3)] Ramesha S [(4)] Pradeep Nair [(5)]

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Abstract

Synthesis of wide variety of substituted 1, 8-dioxo-octahydro xanthene derivatives from reacting various Benzaldehydes with 5, 5-dimethyl-1,3-cyclohexane-dione via Bismuth Nitrate [$Bi(NO_3)_3\,5H_2O$] Catalysed reaction is described. The present methodology offers several significant advantages such as high yields, short reaction times, simple operation and convenient work-up.

Author Keywords

Benzaldehydes, 5,5-dimethyl-1,3-cyclohexane-dione, Bismuth Nitrate, EtOH, 1,8-dioxooctahydroxanthene

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Double Diffusive Casson Fluid Flow, Heat and Mass Transfer due to Porous Media with Effects of Richardson Number and Thermal Radiation

M. C. Kemparaju, Mahantesh M. Nandeppanavar, Raveendra Nagaraj & M. Sreelatha

International Journal of Applied and Computational Mathematics **8**, Article number: 132 (2022)

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Abstract

The present paper investigates the combined impacts of Biot number and Richardson number on Casson fluid stream with radiating porous media on flow, heat and mass transfer with convective boundary conditions. The governing flow equations are reduced into ODE's by applying similarity equations. Matlab is used to solve the reduced equations numerically. The focus of present paper is to study the effects of various constraint like porous parameter and thermal radiation on Casson mixed convection of Richardson and Biot number on stream, energy and mass transfer. Also, the energy transformation increases with rise in thermal radiation is observed. Tables and graphs are used to identify and analyse the impact of relevant limitations on various flow parameters.

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Effect of Richardson number on double-diffusive mixed convective slip flow, Heat and Mass transfer of MHD Casson fluid

Mahantesh M Nandeppanavar[1], MC Kemparaju[2] and N Raveendra[3]

Abstract

An analysis of the heat and mass transfer in a mixed-convective double diffusive flow with convective boundary conditions is carried out in this paper. The governing equations are solved numerically by using Runge-Kutta method with shooting procedure with Matlab software. An accuracy of the numerical procedure has been validated through a results of the current work when compared with prior available results in the literature. The values of shear surface stress, Nusselt and Sherwood number are increasing with increasing values of Prandtl number. The effect of Biot number $Bi > 0.1$ on flow and heat transfer are also investigated and further it is observed that friction coefficient, Nusselt number and Sherwood number are increasing due to enhancing values of Biot number. In the present paper it is noticed that the increasing in estimations of Casson parameter slowdown the heat transfer rate and accelerates mass transfer rate. The results are in good agreement with existing findings The impact of pertinent constraints on distinct flow parameters are determined and analysed through tables and graphs.

Keywords

Casson fluid, Richardson number, convective boundary conditions, shooting method, MHD

Date received: 26 May 2021; accepted: 18 January 2022

Introduction

Every one of the past scientists limited their examinations to stream and heat move for the Newtonian fluids. Various mechanical fluids, such as liquid plastics, polymeric fluids, blood, food, and slurries, have recently been observed to exhibit non-Newtonian fluid behaviour. Viscoelastic liquid, couple pressure liquid, micro polar liquid, power-law liquid, Casson liquid, and a variety of other non-Newtonian fluids are just a few examples. Non-Newtonian liquids have a lot of applications in design and industry, particularly in the extraction of unrefined petroleum from oil-based commodities. The Casson liquid is a non-Newtonian liquid with yield pressure, because of the chain structure of platelets and other variables, human blood may also be viewed as a Casson liquid. As a consequence, the Casson liquid has its own significance in both logical and designing territory. The 2D MHD stagnation-point flow of non-Newtonian Casson fluid and heat transfer towards elongating sheet was proposed by Bhattacharyya.[1] Numerical out comes for steady boundary layer stream and heat transfer in a Casson fluid over an exponentially permeable elongating surface with prescribed heat flux has been explored by Mukhopadhya et al.[2], Beg et al.[3] investigated combined heat and mass transfer through a moving radiating vertical flat plate using hydrodynamic slip and thermal convective boundary constraints. Uddin et al.[4] performed combined heat and mass transfer; the researchers used free convective flow along a moving vertical flat plate with a thermal convective boundary Conditions, Casson fluid stream over a vertical porous surface with chemical reaction in the presence of a magnetic field was considered by Arthur et al.[5] In the presence of radiation, chemical reaction, and heat generation/absorption. Ramana Reddy et al.[6] examined the impact of an aligned magnetic field on an unsteady stream of a Casson fluid past a vertical permeable oscillating plate. The theoretical analysis of the steady 2D MHD convective boundary layer stream of a Casson fluid over an exponentially inclined

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Heat Transfer Exploration of MHD Flow Stream with Changing Viscosity and Thermal Conductivity due to Expandable Surface

M. C. Kemparaju, Bommanna Lavanya, Mahantesh M. Nandeppanavar, N. Raveendra

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Research output: Contribution to journal › Article › peer-review

Overview Fingerprint

Abstract

In this paper an examination is completed to explore the influence of variable thickness and variable thermal conductivity on MHD stream. We have considered the governing stream and heat transfer conditions as partial differential equations. These non-linear partial differential equations are changed to non-linear ordinary differential equations at that point explained numerically utilizing fourth order RK strategy with shooting procedure. The influence of governing factors on velocity and temperature is concentrated through diagrams and numerical estimations of skin frictions and wall temperature inclination are determined, classified and examined

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RESEARCH ARTICLE | Free to Read

Effect of Richardson number on stagnation point flow of double diffusive mixed convective slip flow of magnetohydrodynamic Casson fluid: A numerical study

Mahantesh M. Nandeppanavar ✉, Kemparaju M. Chandrashekhar, Raveendra Nagaraj

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Abstract

An analysis of stagnation point flow of heat and mass transfer of double diffusive mixed-convective stream with radiating vertical plate and convective boundary conditions. The Runge–Kutta method with shooting procedure is used to solve the transformed equations mathematically. An accuracy of the numerical procedure has been validated through a restriction of the current work compared with prior available results. The shear surface stress, Nusselt and Sherwood number are increased with increase in Prandtl number. The Biot number $Bi > 0.1$ is investigated and observed that to increase the Prandtl number, the friction coefficient, Nusselt number and Sherwood number are increased. The impact of pertinent constraints on distinct flow parameters are determined and analyzed through tables and graphs.

CONFLICT OF INTEREST

The authors have no any type of conflict of interest.

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Effect of non-linear thermal radiation on the stagnation point flow of double diffusive free convection due to movingvertical plate

Mahantesh M. Nandeppanavar, Kemparaju M.C., Raveendra N.

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Abstract

Purpose

This paper aims to find the influence of convective heat transfer, buoyancy proportions, nonlinear thermal radiation, Prandtl number, Rayleigh number and Schmidt number on velocity, temperature and concentration profiles.

Design/methodology/approach

This paper explores the heat and mass transfer of a stagnation point stream of free convective Casson fluid over a moving vertical plate with nonlinear thermal radiation and convective boundary restrictions. The governing PDEs of stream, heat and concentration profiles were reformed into an arrangement of nonlinear ODEs by using similarity transformation. This framework was then tackled numerically by applying forth-order RK shooting strategy.

Findings

Distribution of flow, velocity and temperature profiles for different values of governing parameters are analyzed.

Originality/value

The original results are depicted in terms of plots.

Keywords

Stagnation point flow | Non-linear thermal radiation | Convective boundary condition | Similarity transformation | Casson fluid | Moving vertical plate

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Mahantesh M. Nandeppanavar et al., World Journal of Engineering, 2020

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Ioan Pop et al., International Journal of Numerical Methods for Heat & Fluid Flow, 2017

Convective heat transport in a heat generating MHD vertical layer saturated by a non-Newtonian nanofluid: a bidirectional study
M. Gnaneswara Reddy et al., Multidiscipline Modeling in Materials and Structures, 2020

Effects of internal heat generation, thermal radiation and buoyancy force on a boundary layer over a vertical plate with a convective surface boundary condition : research letter
Philip O. Olanrewaju et al., South African Journal of Science, 2011

Newtonian Heating Effect on Heat Absorbing Unsteady MHD Radiating and Chemically Reacting Free Convection Flow Past an Oscillating Vertical Porous Plate
B. Prabhakar Reddy et al., Inter Jour of Appl Mech and Eng, 2022

Implication of Bio-convective Marangoni flow of non-Newtonian material towards an infinite disk subject to

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RESEARCH ARTICLE

Double-diffusive natural convective stream due to moving vertical plate with nonlinear thermal radiation and Newton's boundary constraint

Mahantesh M. Nandeppanavar ✉, M. C. Kemparaju, Raveendra Nagaraj

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Abstract

This article investigates the heat and mass transmission of the double-diffusive convective stream over a moving vertical plate with nonlinear thermal radiation and newton boundary conditions. The governing partial differential equations of the stream, heat, and concentration profiles were transformed into a system of nonlinear ordinary differential equation by utilizing resemblance transformation. This system was then resolved numerically by applying the fourth order Runge-Kutta method with most efficient shooting technique. The effect of convection, buoyancy ratio, nonlinear thermal radiation, Prandtl number, Rayleigh number and Schmidt number are graphically scrutinized. The numerical results are obtained for velocity, temperature, and concentration profiles. It is found that when the velocity profile increases, heat and mass transfer rate decreases with an increase in the parametric value of buoyancy ratio parameter. It is found that the effect of nonlinear thermal radiation stabilizes the thermal boundary layer growth. The skin friction coefficient decreases with an increase in Prandtl number. However, the Nusselt number increases with an increase in the local convective heat transfer rate. The present results are very much promising, and further, there is a very good agreement of results when compared with earlier published results for some limiting conditions.

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DATA AVAILABILITY STATEMENT

All the data available and found are presented in the manuscript only.

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ON SOME INVARIANT SUBMANIFOLDS OF KENMOTSU MANIFOLDS

B.S. Anitha and C.S. Bagewadi

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MSC 2010 Classifications: Primary 53D15, 53C21; Secondary 53C25, 53C40.

Keywords and phrases: Invariant submanifold, Kenmotsu manifold, totally geodesic.

Abstract We show that invariant submanifolds of Kenmotsu manifolds are totally geodesic. When the second fundamental form σ is 2-semiparallel, pseudoparallel, 2-pseudoparallel, Ricci-generalized pseudoparallel, 2-Ricci-generalized pseudoparallel and establish their equivalence. Further examples are given.

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1 Introduction

In 1972, K. Kenmotsu [5] studied a class of contact Riemannian manifolds called Kenmotsu manifolds, which is not Sasakian. In fact Kenmotsu proved that a locally Kenmotsu manifold is a warped product $I \times_f N$ of an interval I and a Kahlerian manifold with a warping function $f(t) = se^t$, where s is a non-zero constant. Hyperbolic space is an example of Kenmotsu manifold.

The study of the geometry of invariant submanifolds of Kenmotsu manifolds is carried out by V.S. Prasad and C.S. Bagewadi [5], Recently A.A. Shaikh, Y. Matsuyama and S.K. Hui [20] studied on invariant submanifolds of $(LCS)_n$-manifolds and S.K. Hui, S. Uddin, A.H. Alkhaldi and P. Mandal [11] have studied on Invariant submanifolds of generalized Sasakian-space-forms. S. Sular and C. Ozgur [21] and M. Kobayashi [12]. The author [12] has shown that the submanifold M of a Kenmotsu manifold $\widetilde{M}$ has parallel second fundamental form if and only if M is totally geodesic. The authors [5] have shown the equivalence of totally geodesicity of M, parallelism and semiparallelism of the second fundamental form σ. Also they have shown that invariant submanifold M of Kenmotsu manifold $\widetilde{M}$ carries Kenmotsu structure and $K \leq \widetilde{K}$, where $K, \widetilde{K}$ are sectional curvature of M and $\widetilde{M}$ respectively and equality holds if M is totally geodesic. Further the authors [21] have shown the equivalence of totally geodesicity of M, recurrency of σ, parallelism of third fundamental form on M and generalized 2-recurrency of σ. In this paper we show that invariant submanifolds of Kenmotsu manifolds are totally geodesic when the second fundamental form σ is 2-semiparallel, pseudoparallel, 2-pseudoparallel, Ricci-generalized pseudoparallel, 2-Ricci-generalized pseudoparallel and establish their equivalence.

2 Basic Concepts

The covariant differential of the p^{th} order, $p \geq 1$ of a $(0,k)$-tensor field T, $k \geq 1$ denoted by $\nabla^p T$, defined on a Riemannian manifold (M, g) with the Levi-Civita connection ∇. The tensor T is said to be *recurrent* [22], if the following condition holds on M:

$$(\nabla T)(X_1, ..., X_k; X)T(Y_1, ..., Y_k) = (\nabla T)(Y_1, ..., Y_k; X)T(X_1, ..., X_k) \qquad (2.1)$$

respectively.

$$(\nabla^2 T)(X_1, ..., X_k; X, Y)T(Y_1, ..., Y_k) = (\nabla^2 T)(Y_1, ..., Y_k; X, Y)T(X_1, ..., X_k),$$

where $X, Y, X_1, Y_1, ..., X_k, Y_k \in TM$. From (2.1) it follows that at a point $x \in M$, if the tensor T is non-zero, then there exists a unique 1-form ϕ respectively, a $(0,2)$-tensor ψ, defined on a

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The Onset of Buoyancy and Surface Tension Driven Convection in a Ferrofluid Layer by Influence of General Boundary Conditions

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Abstract

This paper investigated the buoyancy and surface tension-driven ferro-thermal-convection (FTC) in a ferrofluid (FF) layer due to influence of general boundary conditions. The lower surface is rigid with insulating to temperature perturbations, while the upper surface is stress-free and subjected to general thermal boundary condition. The numerically Galerkin technique (GT) and analytically regular perturbation technique (RPT) are applied for solving the problem of eigenvalue. It is analyzed that increasing Biot number, decreases the magnetic and Marangoni number is to postponement the onset. Additionally, magnetization nonlinearity parameter has no effect on FTC in the non-existence of Biot number. The results under the limiting cases are found to be in good agreement with those available in the literature.

Keywords

Marangoni Number, Ferrothermal Convection, Insulating, Regular Perturbation Technique, Galerkin Technique

1. Introduction

Until recently, there were liquids which could be magnetized to be comparable with the magnetization of magnetic nanoparticles. They have developed colloidal suspensions containing magnetic nanoparticles with a carrier liquid like water, hydrocarbon such as mineral oil or kerosene, or fluorocarbon referred as ferrofluids (FFs). Hence, FFs subjects have obtained much attention among the scientific communities [1] [2] [3] [4]. The magnetization of FFs depends on its magnetic field, temperature and density. Whereas when a horizontal FF layer is pre-

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STUDY ON STRENGTH PROPERTIES OF MUNICIPAL SOLIDWASTE ASH IN CONCRETE

Shalini G V[1] Yashas R K[2], Vinay Kumar S[3], Yeshwanth Gowda M[4], Vimal Sanjeev[5][1] Assistant professor, Dept of Civil Engineering, Rajarajeswari College of Engineering [2,3,4,5] UG students, Dept of Civil Engineering, Rajarajeswari College of Engineering

ABSTRACT

:- Waste control might be a critical environmental problem in the world. As urbanization and industrialization are adding further and further day by day, there is an exaggerated and extremely high volume of Municipal Solid Wastes (MSW) produced. On a common base, the major amount of waste generated in the terrain is MSW, and this needs to be controlled. The common and the foremost system for abating the amount of the waste generated might be burning, indeed though it produces ashes that want any assessment. The other volition or common disposal system of these wastes is by landfills or the wastes are left through the runoff water bodies. Getting relieve of MSW is getting a agitated problem in the present script. Once the MSW is burned it needs to be disposed of, where this is inclined directly into runoff water bodies or landfilled in the empty places. Where these lands can't be further reused, as they lose some of the mainland parcels. And indeed the charges of operative tips, and also the inadequacy of mesa spots. Municipal Solid Waste Incinerated ash is the maturity outgrowth which is attained by the burning approach and has the capability to be used within the improvement position. Accordingly, the Strength parcels of concrete grade M30 with the aid of using MSW ash in the place of M-sand are studied. The performing outgrowth vindicated that using MSW ash as an volition to M-sand will increase the Flexural Strength, Split Tensile Strength and the Compressive Strength of concrete.

Keywords - External Solid waste ash, Flexural Strength, Split Tensile Strength, and Compressive Strength.

1. INTRODUCTION

Muncipal Solid Waste (MSW) is generated primarily through industrial waste and metropolitan cities which causes pollution and speculative health problems if not tackled properly and coping with it is one of the challenging factor India is facing. MSW also comprise paraphernalia that are thrown away in daily life like domestic, marketable, institutional ventures. For tackling the waste problem, few countries are administering advanced environmental initiatives. Still, because of the rise and increase in urbanization, MSW is adding dramatically. According to the survey, few countries are relieved of MSW in landfills itself. Imperfect MSW operation ends up in theemigration of hot house feasts that contribute to concerning five- megahit of worldwide emigrations which triggers pollution and global climate change. Recently, the COVID- 19 has developed few challenges for coping with MSW management, wherever improvement needs to be done in the system for managing the pandemic. Two main accessible strategic treatments of MSW are landfilling and thermal treatment. Landfilling, the commonest fashion of managing MSW. Problems that arise due landfilling include soil contamination and groundwater pollution. Contrarily, thermal treatment includes an correction of the organic and chemical structure of MSW by tropical temperature. In some countries like Japan, Swiss, and so on, half of MSWs are reduced to ash. Burning is predicted to cut back the amount by 90%. Reduction in bottomland areas is an added advantage for incineration but, ashes should be discarded rightly. Since, the topmost portion, the burning system by-product is municipal solid waste burning cover ash (MSW ash), there are several researches been done to find alternative methods rather landfilling. MSW ash is principally reclaimed in road base operations. As an illustration, MSW ash was vindicated to be an respectable difference for materials in hill road operations. Contribution has been made to reduce the infrastructure prices. Natural aggregates (NA), comprises sand and complexion, represent more than 75% concrete (vol). Because of the exaggerated concrete demand, excess percentage of NA are pulled out, driving hefty environment detriment. This involves dangerous diversity, water provides, and topographies. Main idea of the paper is to focus on developments made on the strength parcels of MSW ash in concrete.

II Materials

A. **COARSE AGGREGATE** Coarse summations are irregularly broken monuments or naturally being round gravels that are used to make concrete, coarse summations for structural concrete correspond to broken monuments of hard gemstone- suchlike determinedness and limestone (angular summations) or aqueduct gravels (round

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Studies of AL 1100 /SiC Nano composite for building construction

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Abstract

Based on the application prominent choice of material is essential the development and end use. Aluminium nano composite can be used to replace the conventional aluminium alloy due to its considerable strength. Normally aluminium undergoes corrosion and the corrosion rate can be reduced by reinforcing suitable fillers in nano level. This attempt was made to study the influence of chromium addition to the corrosion behavior of AL 1100/SIC composites. A stir casting technique used to prepare different % at 0 2 4 6% composite of nano sic when it was immersed in 3.5 wt % from the Nyquist plots and equaling circuit fitting results. The charge transfer resistance values was observed to change from 10 to 3.7 30 to 9.5 19 to 2.8 for 0.3 and 6 wt % chromium content respectively after 72 hours of exposure . The increase in the charge of transferred resistance has obtained with an increasing chromium content has a clear indication of improved resistance to corrosion

Introduction

Research and development (R & D) has shifted to the use of monolithic alloys to Nano matrix composite in response to the growing demand in industry for light weight, low cost and high performance materials for structural application. A tremendous progress has been made in the development and characterization of Nano matrix composite for various engineering application (1-4). According to (3), the potential advantages of Nano matrix composite over monolithic alloys may be attributed to the reason for activated research interest in the past years. Aluminum metal matrix composite have been found to offered superior combination of profile properties in such manner that up to date no existing monolithic material rival (5,6) This class of composite has been used extensively in numerous structural nonstructural and functional application. The use of Nano metal composite for building and construction purpose in shipping aerospace automotive defense and warfare common nuclear transportation and petroleum industries has attracted more considerable interest in the recent time (7-14). The numerous application of Nano metal composite can be trased to its high strength to weight ratio improved stiffness moderately high temperature properties controlled thermal expansion coefficient, enhanced and tailored electrical performance improved abrasion and wear resistance as compared to monolithic aluminum alloys (15-20). Although Nano matel composite has demonstrated excellent physical mechanical and tribological properties, the challenge of corrosion remain a consistent treat in sea water environment for modern building and construction purposes and host of other state of the art structure application except on very few resistances use of ceramic reinforcement particles in Nano metal composite have been found to experience high corrosion

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Improving Seismic Resistance Of The Structure Using Concrete Jacketing

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Keywords

Retrofitting
Concrete Jacketing
Pushover Analysis
Capacity Spectrum
Displacement Coefficient
Concrete Jacketing

Abstract

Earthquake is one of the most calamitous occurrence experienced on earth that takes thousands of lives and destroys the structures partially or fully worth millions. Recent earthquakes in the Indian subcontinent have led to an increase in seismic zoning factors in many parts of the country [1]. This has produced a need to improve the present safety levels of the existing structures. Therefore, the seismic rehabilitation of structures not designed according to the current zoning factor has become very important. Seismic rehabilitation eventually leads to the retrofitting of the weak structures. To evaluate the seismic performance Pushover analysis of structure using Capacity Spectrum Approach or Displacement Coefficient Method are increasing used. The purpose of this study is to analyse an existing structure by pushover-analysis and strengthening the vulnerable and weak components by concrete jacketing and then comparing the results.

INTRODUCTION

Earthquakes are a critical problem around the world because they lead to catastrophic damage such as failure, building collapse, loss of human life and loss of homes. In addition, the earthquake leads to a huge economic loss including the loss of built structures and the costs of recovering damaged buildings and infrastructure. Over the years, investigations have been carried out into the ability of buildings to cope with seismic impacts, showing damage to buildings that do not meet the requirements of sustainable structures for earthquake-resistant design. Therefore, regulations and standards have been developed to improve the behaviour of buildings with regard to softness and rigidity, to resist seismic work. Retrofit is necessary today because most buildings have been designed in the past with different regulations according to each country. Old ways of designing buildings against earthquakes may not be entirely effective because technology is evolving. New types of structures and applications arise as well as regulations are updated. Moreover, since the earth's geomorphology and climate change over the years, this can affect the level of earthquakes.

Pushover Analysis

Pushover is a static, non-linear analysis method where the structure is exposed to gravity load as well as the repetitious displacement-controlled lateral load pattern, which constantly increases through flexible and inflexible behaviour until the final state is reached [2]. It can help show how progressive failure really occurs, and determine how the final failure occurs. Lateral load may represent the primary shear range caused by earthquake loading, and its composition may be proportional to the mass distribution along the height of the building, mode forms or any other practical means. Simply put, PA is conducting a non-linear analysis to estimate the strength of the structure beyond its flexible limit until its final strength in the post-flexibility range. There are two types of Pushover analysis currently available, both methods depend on the contrast of side load deformation obtained by non-linear static analysis under gravity load and ideal lateral load due to seismic action.

Seismic Retrofitting

Seismic retrofitting is to modify existing structures to make them more resistant to seismic activity, ground movement or soil failure due to earthquakes. This goal can be achieved by adopting one of the following strategies, such as reducing seismic demands on members and structures as a whole, by increasing the rigidity, strength and softness of members, which are the basic seismic response criteria taken into account during the retrofitting. However, the choice of technique to be applied depends on locally available materials and techniques, cost considerations, business duration and architectural/functional and aesthetic considerations/limitations. Seismic retrofit schemes can be either global or local, depending on the number of members of structures for which they are used. Global retrofit

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Original article

Enhancing the thermal efficiency of parabolic trough collector using rotary receiver tube

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Highlights

- Present work investigates performance of parabolic trough collector by using rotary receiver tube experimentally.
- The use of rotary receiver tube leads to enhancement of thermal efficiency and friction factor.
- Enhancement of thermal efficiency is examined by increasing the mass

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Mechanical, Thermal and Solvent Transport Properties of Glutaraldehyde Cured Natural Rubber/Cotton Fabric Composites

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Abstract: Composites of cotton fabric reinforced cured natural rubber (NR) as matrix material were prepared. Glutaraldehyde (GA) was used as a curing agent to cross-link the matrix material. The cured composites showed excellent mechanical, thermal, physical and solvent resistance properties. Cotton fabric has the preparties like eco-friendly and biodegradability with excellent tensile strength. When such kind of fabrics is introduced into the vulcanized rubber, it is expected to enhance the stability considerably. A significant improvement in the stability of natural rubber in terms of tensile properties was noticed on reinforcing cotton fabric into matrix. An increase of 110 % in the tensile strength of natural rubber composite was observed upon the addition of 12 ml GA when compared to the uncured one. The observed surface hardness results also correlate well with the tensile properties of the resulting composites. Further, TGA and TSSR experiments confirmed the improved thermal properties. The solvent resistivity of NR composites was found to be gradually increased on increasing the amount of GA as a curing agent. Formation of 3-dimensional cross-linked structure in the NR molecules leads to enhance the stability of these composites.

Keywords: Cotton fabric, Natural rubber, Glutaraldehyde, Thermal stress relaxation, Solvent transport

Introduction

Applications of polymer components can be seen around us in all areas of our daily life and their stimulated functions have been used for development of future technologies around the world. Polymers are comparatively cheap when compared with metallic and ceramic materials as these are processed easily and consume less energy for wide range of products [1]. Natural rubber exhibits excellent tensile properties and thermal resistance but poor solvent resistance. Uncured natural rubber is sticky, can be easily deformed at warm temperature and becomes brittle at cryogenic conditions.

Due to this factor, it cannot be used to make articles with a good level of elasticity. Thus, chemical modification of natural rubber is necessary to improve its physical properties. Some modified natural rubber, which are still commercially available are chlorinated rubber, hydrochlorinated rubber, cyclized rubber, and oxidized rubber [2-6]. Vulcanization mainly aims at converting elastomers from soft elastomeric state to a thermoplastic state or hard elastomeric state. In this process, linkages of macromolecules occur at their reactive sites by forming a 3-Dimensional network. Mechanical properties, resistance to heat, and resistance to attack by the fluid are few improved properties that are addressed by vulcanization [7,8]. At ambient temperature, rubber is soft and deformable. The most important uses of rubber are in adhesives, automobile industry and molded flexible parts. Different types of rubber are utilized in various segments such as tires, dampers in shoe soles and insulating elements [9-11]. The cross-linking density of the elastomeric phase plays an important role in achieving higher strength. In general, there are three main types of rubber vulcanization, namely, sulfur, peroxide, and radiation vulcanization [12-16]. Sulfur vulcanization is the most popular system for general purpose rubbers. Research shows that natural rubber can be vulcanized using glutaraldehyde without any specific activator, which is highly favorable to the environment [17-19]. Liquid rubber is advantageous over solid rubber, as it is easy to produce various products from the viewpoint that it can be easily processed and requires less energy. Glutaraldehyde vulcanization is found to be a better method compared to other vulcanization techniques. Natural rubber has been blended with polystyrene, polyacrylamide, poly vinyl alcohol, poly carbonate, chitosan etc. [20].

Varity of application of polymeric materials are noted across the globe in the field of textiles, automotive parts coatings, electromagnetic shielding, electronic and household appliances. Elastomers are amorphous polymers existing elasticity above their glass transition temperatures, so that considerable segmental motion is possible [21]. In the present research article, cotton fabric is reinforced into

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