4th International Conference on Circuits, Control, Communication and Computing (I4C - 2022)

December, 21st - 23rd 2022

Theme: Smart and Sustainable Technology for Engineering & Healthcare

M S Ramaiah Institute of Technology, Bangalore, India

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2022 4th International Conference on Circuits, Control, Communication and Computing (I4C-2022), 21 - 23 December 2022

Contemporary Research Trends in Plant Leaf Disease Detection

Beena K
Department of CSE
K S Institute of Technology
Bangalore, India
beenak@ksit.edu.in

Sangeetha V
Department of CSE
Ramaiah Institute of Technology,
Bangalore, India
drsangeethav@msrit.edu

Deepa S R
Department of CSE
K S Institute of Technology
Bangalore, India
deepasr@ksit.edu.in

Vaneeta M
Department of CSE
K S Institute of Technology
Bangalore, India
vaneetam@ksit.edu.in

Abstract— **Agriculture is the backbone of Indian economy. Crop yield is decreased due to various disease-causing organism on plants. Plant disease identification has major impact on the agriculture production with respect to crop quality and quantity. Disease infected plants show symptoms on many parts of the plant like leaf, stem, bud, flower, fruit and root. Early identification of the disease will prevent further crop loss. In this paper, four different sections are covered. The first section focusses on different types of disease and its symptoms. Second section discuss about different traditional methods of disease identification. And the third section cover methodologies that can be used for disease identification in plants through image processing, deep learning and convolution neural network techniques. Fourth section highlights challenges and future trends in disease identification. Finally, this paper reveals that, particularly in rural areas and underdeveloped nations, relying solely on the expertise of professionals to identify and categorize diseases can be very much time-consuming and expensive.**

Keywords—agriculture, convolution neural network, disease detection, deep learning, plant disease.

I. INTRODUCTION

Agriculture is method to feed growing population. Indian economy is dependent on agriculture. More than 70% of Indian population rely on farming. The significance of agriculture has dropped since the revolution of industrialization. Around 17% to absolute GDP is payable by the agriculture, hence it is important to solve issues faced by farmers in the field of agriculture. One of major issue is disease detection in plant which is threat to farmers because it causes reduction in yield as wells as quality [1].

The major driving factor that provides existence of life on the earth from lowest primitive in the food chain is plants. All these plants are susceptible to various diseases as they are exposed to the different climatic conditions of nature. Rapid identification of leaf diseases remains difficult due to the lack of the necessary changes in agriculture practice and infrastructure. Plant disease can cause adverse consequences to the farmers whose livelihood mainly depend on the market of healthy crops and they are the major trouble causers for the food security. In the evolving world, greater than 80 percent of the agricultural production are risen by the farmers. Yield loss of more than 50% is due to diseases and pests. Few decades here after, population is awaited to grow by 100 million a year, hence there is a constraint on usage of water, soil and many other natural resources. Due to these circumstances developing countries like India have to increase their food production twice in number to feed the growing population.

Farmer's financial cycle is dependent on the kind of crop they produce, which in turn depends on the plant's development and the final yield that they might get. Therefore, in field of farming, identification of diseases is a critical task [2]. Plants are the essential attribute for the survival of all the creatures on the Earth. Plant diseases are the key factor for the crop losses in the agriculture. Due to the importance of plants in the food chain, focus has to be given on the measures that can be taken to detect and diminish diseases in the plants. This paper presents a brief detail about common leaf diseases and methodology used to detect the same.

II. PLANT DISEASE TYPES WITH SYMPTOMS

Plants turns into diseased due to disruption caused by the causal agent which results in an abnormal physiological process that disturbs the plant's growth, normal physical structure, and many other activities. This involvement of the agent with any of the plant's essential physiological or biochemical systems turns into a symptom which can be characterized. Diseases in the plants are classified based on the features of the agent, which can be either infectious or non-infectious [3]. Plant diseases which are infectious are caused due to pathogenic organism such as a bacteria, fungi, mycoplasma, virus, nematode, or parasitic flowering plant. An infectious agent has ability of spreading the infection from one liable host to another or reproducing inside the same host. Plant diseases which are non infectious are caused due to unfavourable growing conditions, like temperature extreme, excess or deficiency of minerals, noxious components in soil, chemical changes in the atmosphere, changes in the composition of moisture and oxygen. Non-infectious agents do not carry organisms capable of reproducing within a host nor they are contagious. The various plant leaf disease with common symptom is listed below with brief information about the symptoms of the disease

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Fig 1. Powdery mildew leaf disease

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Malware Detection on Android Apps usingRSLBO based Dense Network in Internet ofThings

Vaneeta M[1], Deepa S R[2], Jyothi R[3], Chaithra[4], Beena K[5]

[1]Dept. of Artificial Intelligence and Machine Learning, K. S. Institute of Technology, Bangalore, India, vaneetam@ksit.edu.in
[2]Dept. of Computer Science and Design, K. S. Institute of Technology, Bangalore, India, deepasr@ksit.edu.in
[3]Dept. of Computer Science and Engineering, Glabal Academy of Technology, Bangalore, India, jyothir@gat.ac.in
[4]School of CSE, Reva University, Bangalore, India, chaithra81@gmail.com
[5]Dept. of Computer Science and Engineering, K. S. Institute of Technology, Bangalore, India, beenak@ksit.edu.in

Abstract

Malware that poses a variety of cybersecurity risks is rapidly growing in both type and number as the IoT devices, which support a wide range of services including factories in smart cities, continue to grow in number and type. The ever-increasing popularity of Android applications has drawn a lot of attention from those who write malicious software. Research involving the use of identification of malware is now being carried out as part of efforts to safeguard Internet of Things devices from assaults. On the other hand, as a result of the proliferation of malicious software designed to target internet-connected devices and the many evasion strategies it employs, the likelihood of mistakenly classifying malware as harmless has also increased. Traditional techniques for detecting malware have a number of drawbacks, such as being computationally costly, having inadequate performance, or being insufficiently resistant. The research offers a answer to this badly-behaved in the form of a powered malware detection system that is both effective and efficient. For the final model, the software implements a cross entropy loss function to gain considerable performance increases while classifying malware. In addition, the Random Selected Leader Based Optimizer decides which hyper-parameter values should be optimized in DenseNet (RSLBO). In point of fact, the algorithm population update does not have to depend on a select few members, every ordinary associate of the population has the potential to be a leader in directing and informing the algorithm population. RSLBO is first explained, then theoretically modelled, and then used to the resolution of optimization issues. The consequences of the experiments reveal that the Android malware detection model based on the suggested method has a greater detection accuracy when compared to the classic techniques, and it also has a better detection impact when applied to obfuscated malware).

Keywords: *Internet of Things; Random Selected Leader Based Optimizer; Android apps; DenseNet; Malware Detection; Imbalance Data.*

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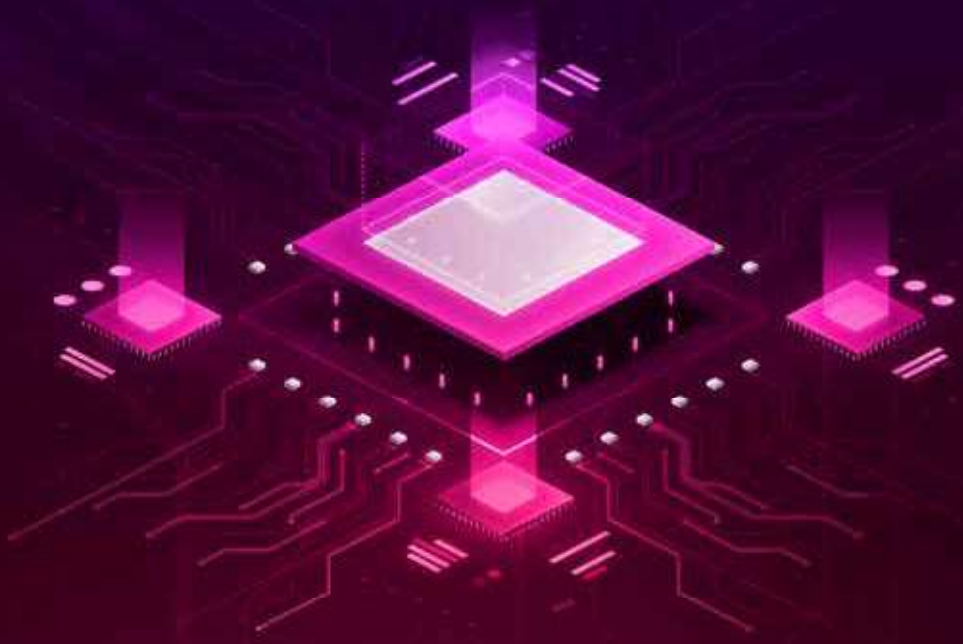

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The major driving factor that provides existence of life on the earth from lowest primitive in the food chain is plants. All these plants are susceptible to various diseases as they are exposed to the different climatic conditions of nature. Rapid identification of leaf diseases remains difficult due to the lack of the necessary changes in agriculture practice and infrastructure. Plant disease can cause adverse consequences to the farmers whose livelihood mainly depend on the market of healthy crops and they are the major trouble causers for the food security. In the evolving world, greater than 80 percent of the agricultural production are risen by the farmers. Yield loss of more than 50% is due to diseases and pests. Few decades here after, population is awaited to grow by 100 million a year, hence there is a constraint on usage of water, soil and many other natural resources. Due to these circumstances developing countries like India have to increase their food production twice in number to feed the growing population.

Farmer's financial cycle is dependent on the kind of crop they produce, which in turn depends on the plant's development and the final yield that they might get. Therefore, in field of farming, identification of diseases is a critical task [2]. Plants are the essential attribute for the survival of all the creatures on the Earth. Plant diseases are the key factor for the crop losses in the agriculture. Due to the importance of plants in the food chain, focus has to be given on the measures that can be taken to detect and diminish diseases in the plants. This paper presents a brief detail about common leaf diseases and methodology used to detect the same.

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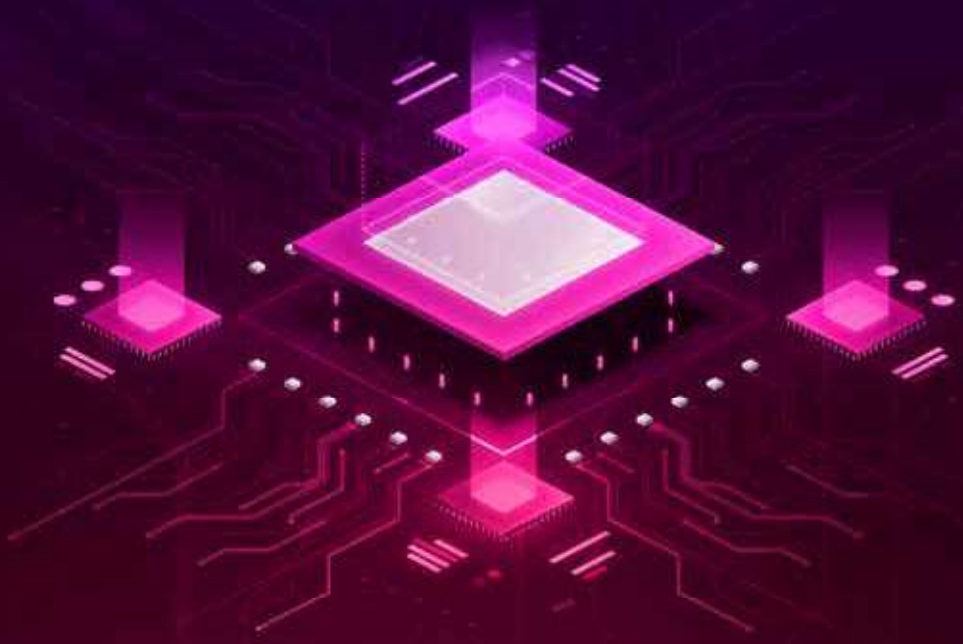

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Real-Time Piracy Detection Based on Thermogram Analysis and Machine Learning Techniques

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Real-Time Piracy Detection Based on Thermogram Analysis and Machine Learning Techniques

B. Sanjana ✉, M. Sirisha, Pruthvi Dinesh, G. R. Sunil Kumar & Surekha Borra

Conference paper | First Online: 22 July 2022

Part of the Communications in Computer and Information Science book series (CCIS,volume 1579)

Abstract

Movie Piracy is increasing these days, and it has a profound impact on the economic growth of film industries all over the world. Hence curbing piracy has become a critical step in avoiding massive losses to the film industry. This paper proposes a thermogram based anti-piracy system using Machine learning models. A local dataset is created by capturing the images in different scenarios by employing a thermal camera. AlexNet is used for extracting the features from captured images and the extracted features are trained with several Machine Learning models in MATLAB for their performance

Chronological-Squirrel Earth Worm Optimization for Power Minimization Using Topology Management in MANET

| Conference paper | First Online: 12 September 2022

| pp 219–229 | Cite this conference paper

Distributed Computing and Optimization Techniques

B. Devika & P. N. Sudha

Part of the book series: Lecture Notes in Electrical Engineering ((LNEE,volume 903))

Abstract

This paper developed a Chronological-Squirrel Earth Worm optimization (C-SEWO) algorithm in MANET for clustering using the topology management. The clustering is performed based on the developed C-SEWO approach and objective functions. The proposed

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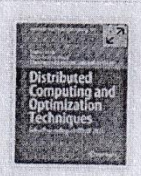

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In-Theatre Real Time Piracy Detection and Discouraging System

Authors Pruthvi Dinesh, Sanjana B, Sirisha M, Sunil Kumar G R, Surekha Borra

Pages 220 - 229
DOI 10.3233/FAIA220716
Category Research Article
Series Frontiers in Artificial Intelligence and Applications
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Abstract

Today, movie piracy is greatly affecting the economic growth of the film industry. Hence, combatting piracy is critical in averting losses for the film producers. This paper aimed to develop an anti-piracy model composed of a real time pirated video degradation system and a piracy activity estimation system, which in turn are based on Thermogram analysis and an ARDUINO programmed IR LEDs array. In the pirate estimating system, the Cubic SVM model is trained to classify the thermal images acquired from the theatre environment into normal and abnormal classes. An accuracy of about 99.9% is achieved in real time while testing for piracy actions. The proposed piracy discouraging system is programmed to real time degrade the quality of pirated video and to invisibly watermark the pirated video with the theatre name, date, and time information. The distortion created by our prototype system is evaluated by recording the video displayed on screen using different mobile cameras and the corresponding pirated video quality is compared objectively and subjectively. Based on the subject's quality rating, it was found that the system has created enough degradation in the visual quality of pirated video to discourage piracy.

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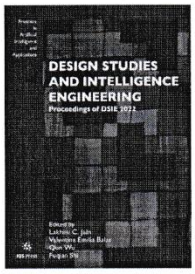

Proceedings of DSIE 2022

The technologies applied in design studies vary from basic theories to more application-based systems. Intelligence engineering also plays a significant role in design sciences such as computer-aided industrial design, human factor design, and greenhouse design, and intelligent engineering technologies such as computational technologies, sensing technologies, and video detection encompass both theory and application perspectives. Being multidisciplinary in nature, intelligence engineering promotes cooperation, exchange and discussion between organizations and researchers from diverse fields.

This book presents the proceedings of DSIE 2022, the International Symposium on Design Studies and Intelligence Engineering, held in Hangzhou, China, on 29 & 30 October 2022. This annual conference proves a platform for professionals and researchers from industry and academia to exchange and discuss recent advances in the field of design studies and intelligence engineering, inviting renowned experts from around the world to speak on their specialist topics, and allowing for in-depth discussion with presenters. The 189 submissions received were each carefully reviewed by 3 or 4 referees, and the 62 papers accepted for presentation and publication were selected based on their scores. Papers cover a very wide range of topics, from the design of a bachelor apartment, or a children's backpack for healthy spine development, to interpretable neural symbol learning methods and design elements extraction from point-cloud datasets using deep enhancement learning.

Offering a varied overview of recent developments in design and intelligence engineering, this book will be of interest to all those working in the field.

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In-Theatre Real Time Piracy Detection and Discouraging System

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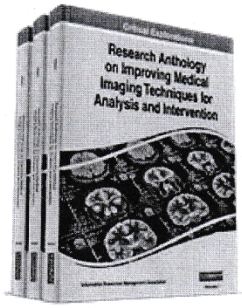
Keywords. Alex Net, Camcorder, Movie Piracy, SVM

1. Introduction

Cinema is the major source of entertainment for people all over the world. Movie piracy is the act of unauthorized acquisition of copyrighted content without the authorization of film makers. This is a new epidemic that is economically impacting the film industry on a global level. According to a survey [1-5], pirated movies gain around 230 billion views every year. It was also reported that Indian media lost about US$2.8 billion to piracy. As per the study conducted by the US-India Business Council (USIBC), the Indian film industry experiences a loss of 11% in employment due to piracy. It also influences content creation by discouraging filmmakers, directors, and producers from making sequels and remakes. Consequently, national government and entertainment firms have come up with effective strategies and tools to combat piracy. The Indian government implemented the Cinematograph Act in the year 2019 that declares piracy as a crime and penalizes pirates with three years of imprisonment and with a fine of 10 lakh rupees.

Movies can be pirated before they are released, which is known as pre-release piracy [6-10]. On the other hand, if a movie is pirated after the release, it is known as post-release piracy. In the pre-release piracy, a movie is recorded by guests or theatre operators during private screenings for VIPs and critics.

[1] Surekha Borra



Detection and Classification of Leukocytes in Blood Smear Images: State of the Art and Challenges ⊗

Renuka Veerappa Tali, Surekha Borra, Mufti Mahmud

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Abstract

Manual analysis of microscopic blood smears by highly expert pathologists is labor-intensive, time-consuming, and is subject to inter-observer variations. Recent innovations in image processing and computer vision techniques have improvised digital pathology in terms of objectivity and reproducibility. Traditional computer vision-based methods of recognition of white blood cell (WBC) from a pathological blood smear image includes the process of detection, segmentation, and classification. This paper presents a review of state-of-the-art detection, segmentation, and classification techniques for white blood cell analysis. The goal of this work is to present an introduction to the field, provide enough information about the analysis methods developed so far, and to be an appropriate reference for the researchers looking forward in this field. The methods under review are classified into intensity and feature based. The crucial steps involved in these techniques, mathematical foresights, performance evaluation techniques, issues, and future directions are discussed.

Chapter 57
Detection and Classification of Leukocytes in Blood Smear Images:
State of the Art and Challenges

Renuka Veerappa Tali
K. S. School of Engineering and Management, India

Surekha Borra
K. S. Institute of Technology, India

Mufti Mahmud
https://orcid.org/0000-0002-2037-8348
Nottingham Trent University, UK

ABSTRACT

Manual analysis of microscopic blood smears by highly expert pathologists is labor-intensive, time-consuming, and is subject to inter-observer variations. Recent innovations in image processing and computer vision techniques have improvised digital pathology in terms of objectivity and reproducibility. Traditional computer vision-based methods of recognition of white blood cell (WBC) from a pathological blood smear image includes the process of detection, segmentation, and classification. This paper presents a review of state-of-the-art detection, segmentation, and classification techniques for white blood cell analysis. The goal of this work is to present an introduction to the field, provide enough information about the analysis methods developed so far, and to be an appropriate reference for the researchers looking forward in this field. The methods under review are classified into intensity and feature based. The crucial steps involved in these techniques, mathematical foresights, performance evaluation techniques, issues, and future directions are discussed.

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Government of Karnataka

Department of Collegiate and Technical Education

International Conference on Advances In Engineering and Technology

(ICAET2023)

12th and 13th April, 2023

(Hybrid Mode)

Government Engineering College

K R Pet – 571426, Mandya District,

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Dr. Sowmyashree M S
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Mobile No.: 9880831010

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Mobile No.: 9110261122

Mr. Nandeesh R
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Address for Correspondence

Dr. Rudresh B M
Organizing Chair, ICAET2023
Mobile Number: 9731147430
Email:bmrudreshan@gmail.com

Dr. Nagabhushana H M
Organizing Secretary, ICAET2023
Mobile Number: 9986703094
Email:bhushana.hm@gmail.com

EMISSION REDUCTION OF DIESEL ENGINE BY USING COMBINATION OF AFTERTREATMENT DEVICES

Nagaprasad K S[1], Molakalu Punith[2], Rajesh Kumar Kodi[3], Ranganatha Swamy L[4], Shankara Naik L[5], D Madhu[6]
[1]Associate Professor, [2]Assistant Engineer, [3]Bio-energy research and quality assurance laboratory,.[4]Associate Professor,[5]Associate Professor, [6]Professor
[1]K.S. Institute of Technology, Bengaluru, India,
[2]Abamka Technical Pvt. Ltd., Kolar, India,
[3]University of Agricultural Sciences, Bangalore, India,
[4]BGS Institute of Technology, B.G.Nagara, India,
[5]Government College of Engineering, Haveri, India
[6]Government College of Engineering, Ramangaram, India

Abstract: Engine manufactures efforts to meet more and more stringent standards is done by adopting aftertreatment devices. Many aftertreatment devics viz; Diesel particulate filter (DPF), Diesel oxidation catalyst (DOC), Selective Catalytic reduction (SCR), NOx traps etc., induce significant gain in emissions reduction were tried. In this study, three post treatment devices viz; diesel particulate filter, diesel oxidation catalyst and new catalytic converter were fixed at exhaust pipe of engine. Experiments were conducted on a diesel engine adopted with these aftertreatment devices individually and also combined. All tests were conducted at different loads viz. 4 kg and 6 kg load. At 6 kg loads, the thermal efficiency of engine is found to be 21.45%. Overall comparison of all the results, the least emission level was recorded when engine is operated at sixty percent full load with combined DPF, DOC and new catalytic converter; with emissions values were HC 40 ppm, CO 0.1 %, and NO 332 ppm.

Keywords: Compression Ignition engine, Catalytic Converter, Diesel Engine Exhaust.

1. INTRODUCTION

The capability to operate with leaner air fuel ratio and utilization of higher compression ratio are the two integral determinants that validates the immense thermal efficiency and substantial specific power output of the CI engines concurrent with fuel economy that publicizes their deployment as most proficient prime movers in the areas of farming, industries and transportation across the globe. In contrast, diesel engines are the leading benefactor of oxides of nitrogen (NOx) and particulate matter (PM) emissions erupted due to cumulative premixed flame combustion and diffusion flame combustion that ruins the health of an individual. In spite of an injection of water and hydrogen peroxide and Exhaust Gas Recirculation (EGR) in to combustion chamber of a CI engine are the renowned approaches of mitigating the in-cylinder formation of NOx and particulate emission, EGR and water injection routines exceptionally cut down NOx and no sizable betterment in the attenuation of PM could be perceived; while, conflicting sequel is derived with an injection of hydrogen peroxide. Refinements in the engine geometry and revisals of diesel fuel with an addition of oxygenating agents such as biofuels to enhance the cetane number and fuel volatility are the supplementary means that setback to concurrently downsize the in-cylinder formation of NOx and PM. The use of after treatment devices such as Diesel particulate filter (DPF), Selective Catalytic Reduction (SCR), Diesel oxidation catalyst (DOC), NOx traps etc., are the post combustion techniques adopted to reduce the tailpipe emission of NOX and PM.

Although, the usage of water-in-diesel emulsions for diesel engine applications exhibited optimistic consequences, showed trade-off in terms of efficiency and NOx emissions. The blends of diesel-biodiesel 80:20 by volume have shown favourable sequels in terms of engine emissions and performance parameters. The outcome of the experimentation with a fuel composed of blend of Diesel-Neem biodiesel (80:20) supplemented with 5% water (by volume) and 1% surfactant (by volume) along with 0.5% Di-tertiary butyl peroxide (by volume) unveiled the improved performance with diminished specific energy consumption and attenuated NOx emission of 45% and 29% compared to that of diesel-biodiesel blend and

diesel fuel respectively [1]. The exertion of DPF instigated in the diminishment of soot by 40% was noticed at full loading conditions [2]. The experimentation with the utilization of low-cost catalyst composed of silica, alumina and activated charcoal on single cylinder engine under full loading conditions ascertained that emission of NOx shortened by 21% in contrary to the engine operation with catalyst of noble metals [3]. The demonstration on diesel engine fuelled with the blends of diesel-biodiesel with electrochemically activated cells composed of CuO–YSZ electrolyte and CuO–YSZ electrolyte with BaO coating has concluded the considerable NOx adulteration with coincidental decrement of emissions of HC and PM [4]. The engine ran with blend of 40% biodiesel extracted from chicken skin-diesel incorporated with copper doped zeolite coated catalyst at 4.3 kW load have shown explored the slashed emissions of HC, CO, NOX and smoke 9.71%, 5.32%, 11.3%, and 34.9% analogous to the catalysts available commercially [5]. The exploitation of urea -water SCR system with an engine operated with a blend of 25% madhuca indica bio-diesel -diesel blend shown-off declined emissions of HC and NOx by 5.8% and 1.2% in contrast to base diesel fuel [6]. Exertion of nanoparticles in the biodiesel-diesel blends results in better atomization of the fuel, reduced ignition delay and hence accelerates the combustion and inevitably decline the particulate emission. The deployment of Al_2O_3 nanoparticles 25-100 ppm in steps of 25 ppm with 20% microalgae biodiesel-80% diesel blend has shown positive impact on the thermal efficiency and considerable decrement in the NOx emission with 50 ppm of Al_2O_3 nanoparticles in the blend compared to the biodiesel-diesel blend [7]. Addition of 25 ppm zirconium oxide (Zr2O3) nano additives in B20 spirulina microalgae biodiesel blend (20% spirulina microalgae biodiesel + 80% diesel fuel) revealed that inhabitance of Zr2O3 nano additives in B20 blend effectuated in lowering BSEC by 4.9%, elevated BTE by 7.9% and adulterated NOx emissions by 9.4%. [8]. The adoption of multiwalled carbon nano-tubes in the mass fraction of 25 ppm palm methyl ester/ jatropha methyl ester on the diesel engine exhibited a considerable betterment in performance and minute attenuation in terms of emissions [9]. The trials on the diesel engine with the nanoparticles unveiled the substantial decline in the emissions of NOx and CO compared to that with the base diesel operation alone [10].

2. EXPERIMENTAL SETUP

Fabrication of New Catalytic Convertor

Catalytic converter consisted of platinum, paladium and rhodium metals with the composition of 3:1:1. Platinum was dissolved in the solution of hexa hydrated aluminium chloride ($AlC_3.6H_2O$). The prepared solution was washed, coated to the ceramic substrate which is honeycomb structure. Two-dimensional design and three-dimensional model of catalytic convertor is shown in figure 1 and 2 respectively. The photograph of cutting process and welding of catalytic convertor during the fabrication is shown in figure 3 and 4 respectively.

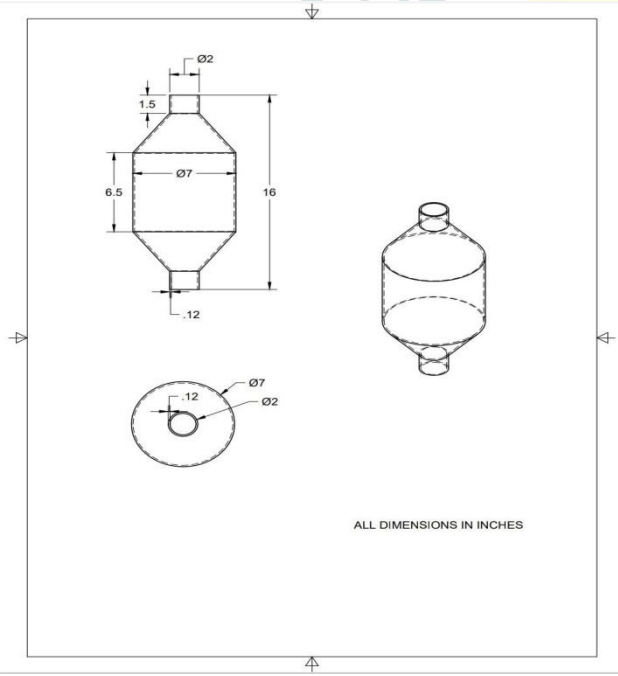

Figure 1 Two-dimensional design of Catalytic Converter

Figure 2 Three-dimensional design of Catalytic Converter

Figure 3 Cutting of sheet metal

Figure 4 Welding of New Catalytic Converter

Experiments were conducted on a diesel engine having three aftertreatment devices. The engine specifications are shown in the table 1. All tests were conducted at different loads like, zero, sixty percent and eighty percent full load. The engine speed was maintained at 1500 rpm. After every load, the engine was allowed to attain steady state for 15 minutes. The specification of DPF, DOC and Catalytic Convertor is given in table 2, 3 and 4 respectively. Figure 5 shows the Diesel Engine used for the test runs. The three aftertreatment devices are shown in Figure 6, 7 and 8 respectively. The photograph of Diesel engine's exhaust having DPF,DOC and Catalytic converter and Diesel engine's exhaust having Catalytic converter only shown in figure nine and ten respectively.

Figure 5.Diesel engine test rig

Table 1 Specification of the compression ignition (CI) engine

Type of Ignition	CI
No of Cylinders	1
Rated Power	3.68K W
Rated Speed	1500RPM
Bore × Stroke	80mm × 110mm
Compression ratio	18:1

Figure 6 Diesel Particulate Filters

Table 2 Specifications of Diesel Particulate Filter

DPF core	150mmX150mm
Volume	2Liter
Cell Density	100cpsi
Material	Cordierite
Chemical Composition	Al2O335.2±1.5 % SiO250.9±1.5 % MgO13.9±1.5 %
Compressive Strength	=10Mpa
Porosity	=45 %
Maximum Use Temperature	=1200 ℃
The average of pore diameter	7-10 μm
Can thickness	1.2 mm
Total Length	400 mm
PGM	15 g/ft Pt/Pd=3/1
PGM loading	15 gm/ft^3

, , , ,

Figure 7 Diesel Oxidation Catalyst

Figure 8 Catalytic Converter

Table 3 Specifications of Catalytic Converter

Cell Density	500 cpsi
Material	Mild Steel
Total Length	375 mm
Ceramic Substrate	Honey Comb Structure

Figure 9 Diesel engine exhaust having DPF,DOC and Catalytic converter

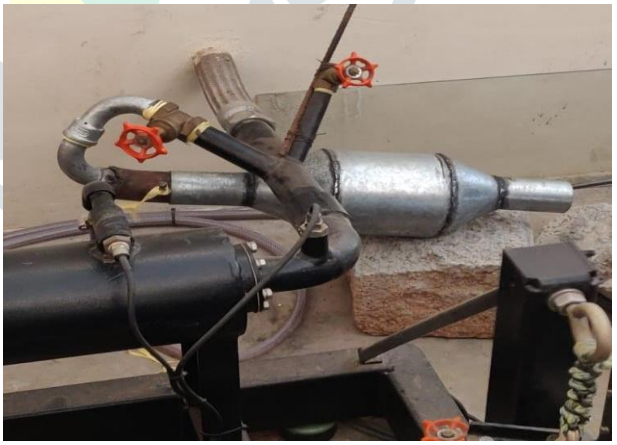

Figure 10 Diesel engine exhaust having Catalytic converter only

3. RESULTS AND DISCUSSION

Experimentations were carried out on a CI engine with diesel fuel and speed is maintained at 1500 rpm. The IP is 205 bar, IT is 23° BTDC, having HCC and three hole injector; each hole being 0.3 mm diameter as specified by manufacturer were adopted.

BTE of the engine with/without devices was found to be 15.77 % and 16.47 % at 4 kg and 6 kg loads respectively. In addition, the measured emissions are HC is 91 ppm, CO is 0.14 %, CO_2 is 6.62 % and NO is 435 ppm at 4 kg load.

3.1 HC emissions

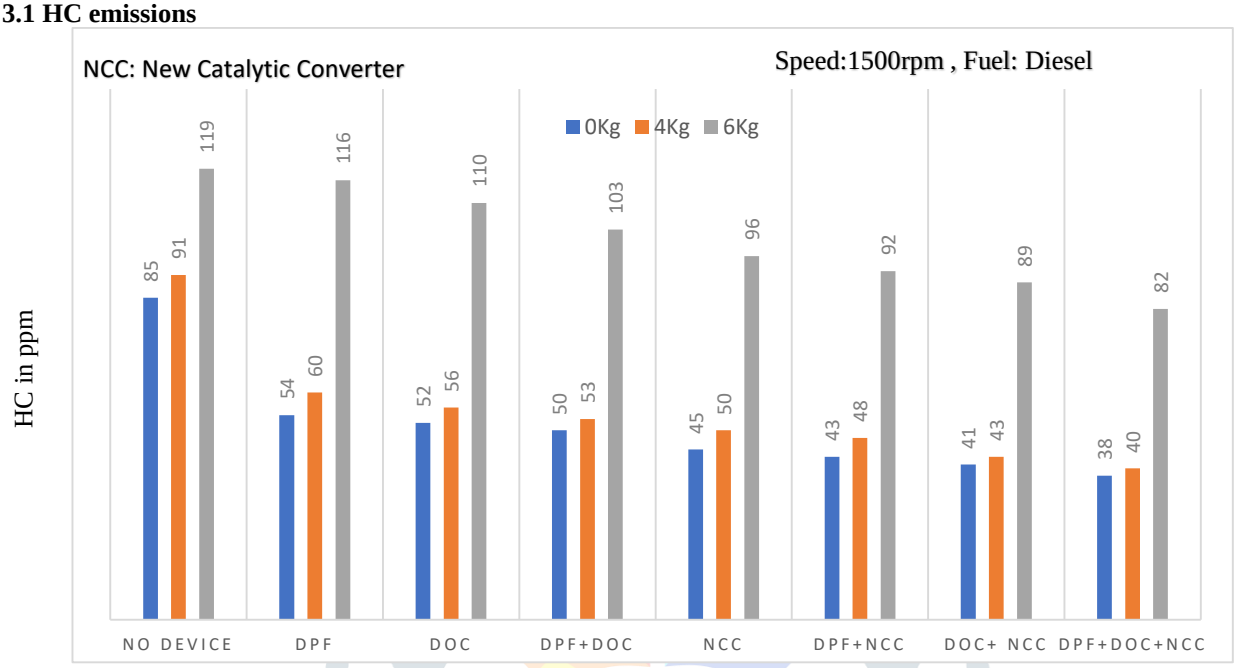

Figure 11 HC emissions at 0 kg, 4 kg and 6 kg load

Without incorporating any post treatment devices, HC emissions was found to be 85 ppm in the exhaust at no load condition as shown in figure 11. It reduces further to 54 ppm with DPF only, 52 ppm with DOC only, 50 ppm with both DPF and DOC; 45 ppm with new catalytic converter only, 43 ppm with both DPF andCatalytic converter, 41 ppm with both DOC and new catalytic converter and 38 ppm with combination of all three devices viz; DPF, DOC and new catalytic converter. Emissions were reduced because of New Catalytic Converter has been used. Emissions, which are released from diesel engine, were reacted with Platinum Group Metals (Platinum, Palladium, and Rhodium) which is coated inside the New Catalytic Converter. Platinum and Palladium are acts as oxidation process while Platinum and Rhodium are acts as Reduction process [6]. Emissions are decreased more when the combination of these three aftertreatment devices.

3.2 CO emissions

At 6 kg load and without incorporating any devices, CO emission is 0.26 % in the exhaust as shown in figure 12. It reduces further to 0.24 % when DPF is used, 0.22 % when DOC is used, 0.19 % when DPF and DOC used, 0.17 % New Catalytic Converter is used, 0.148 % when DPF and Catalytic converter is used,0.138 % when DOC and Catalytic converter is used and 0.13 % when combination DPF, DOC and Catalytic Converter is used.

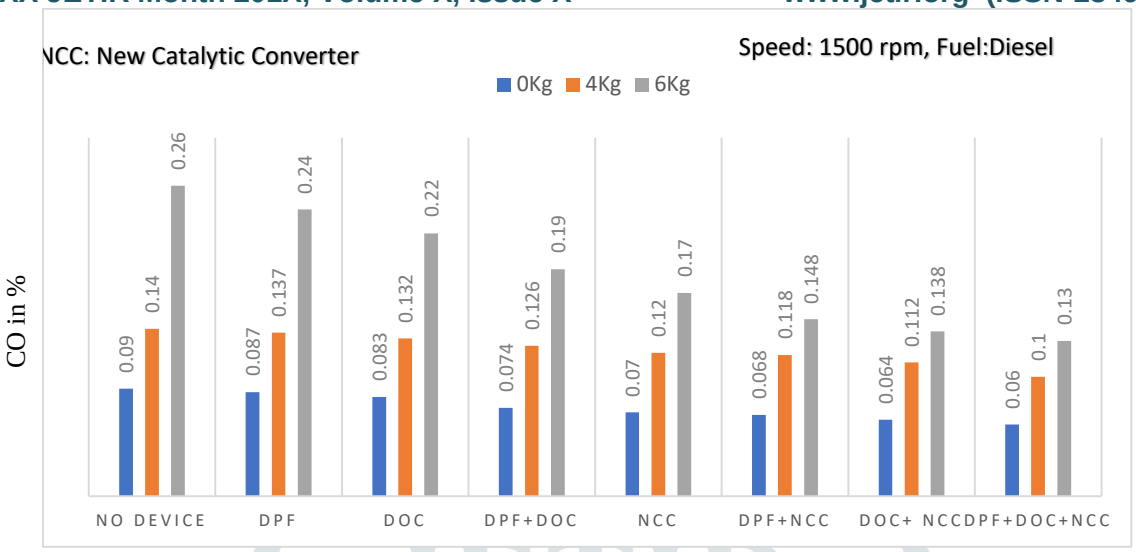

Figure 12 CO emissions at 0Kg, 4Kg and 6Kg

3.2 NO emissions

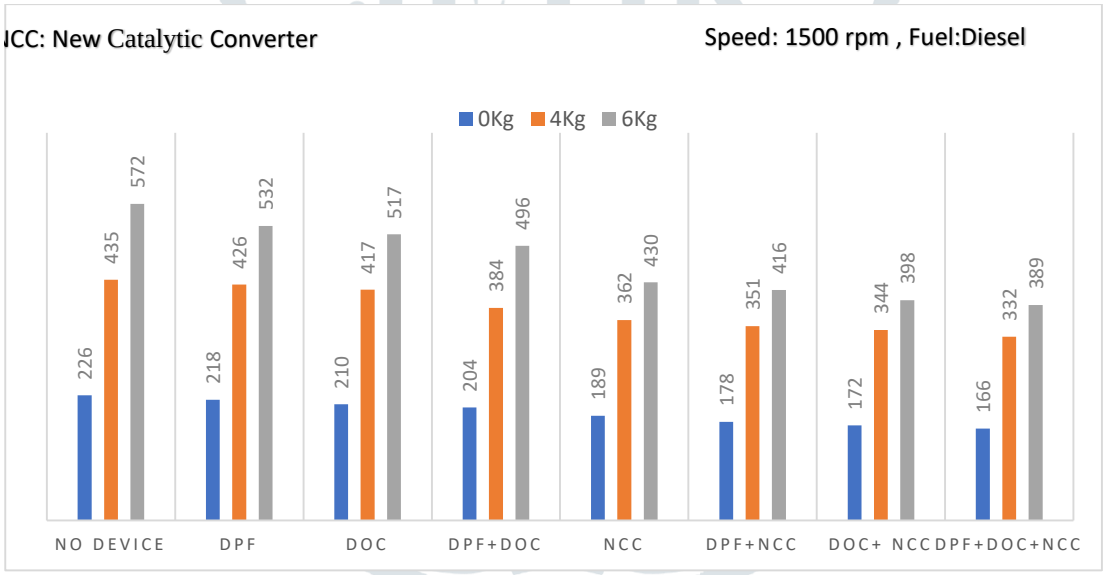

Figure 13 NO emissions at 0Kg, 4Kg and 6Kg

At 4 kg load and without incorporating any devices is 435 ppm of NO emissions present in the exhaust as shown in figure 13. It reduces further to 426 ppm when DPF is used, 417 ppm when DOC is used, 384 ppm when DPF and DOC used, 362 ppm New Catalytic Converter is used, 351ppm when DPF and Catalytic converter is used,344 ppm when DOC and Catalytic converter is used and 332ppm when combination DPF, DOC and Catalytic Converter is used.

4. CONCLUSION

The effects of diesel engine fitted with DPF, DOC and New Catalytic Converter on engine emissions were investigated. Overall comparison of all the test runs, the least emission values were recorded when engine is loaded with sixty percent full load and having combined three aftertreatment devices including new catalytic converter. At this load, the emissions are HC is 40 ppm, CO is 0.1 %, and NO is 332 ppm. Hence, combined DPF, DOC and new catalytic converter for diesel engine provides reduction in exhaust gas emission.

5. ACKNOWLEDGEMENTS

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graphene/h-BN heterostructure is investigated. The variations of lateral force during the sliding process with SW defects on the topmost layer are measured and compared with defect-free heterostructure cases.

PAPER ID - 23

An Investigation on the Mechanical and Durability Properties of Concrete structures incorporated with Low Carbon Steel – Industrial Waste

Nirmala L[a]*, Tejaswini M L[a] , Shilpa M L[b] and Bhavan Kashyap K[a]
[a]K.S.Institute of Technology, Bangalore, Karnataka, 560109.
[b]Christ University, Bangalore, Karnataka, 560029.
Corresponding author email: bhavankashyap201@gmail.com

Abstract
This work focuses on the use of steel slag of low carbon – an industrial waste as a fractional substitution of coarse aggregate for its utilization in cement concrete and building construction. The waste material produced annually during the manufacturing of low carbon steel components leads to major economic and environmental problem. Hence the work aims at utilizing the waste in concrete to develop sustainable building materials. In this study, two samples of concrete mixture were set with 0% and 20% low carbon steel as coarse aggregate. Initially mix design of concrete for M40 grade was done. The strength of compression, tension, and flexure for low carbon admixed concrete increased substantially. Water absorption of concrete admixed with low carbon steel was substantially minimum in contrast with concrete without low carbon steel. The outcome of acid attack and sulphate attack tests infer that the properties of both admixed and normal concrete were not substantial. This work suggests 20% low carbon steel slag is an optimum content as a fractional substitution to coarse aggregate.

PAPER ID - 24

Synthesis and characterization of Al7075 Micro composites with MgO/Mn

Avyakth S Shekar, Balgopal C, Akshay Vasista B, Taniya Kaushik, Sateesh Mudalagi
Department of Mechanical Engineering, PES University, Bangalore, Karnataka, 560085
Corresponding author email: avyakthshekar007@gmail.com

Abstract
The evaluation of corrosion resistance, hardness and tensile strength of the stir casted Al7075 alloy and Al7075 with 4%MgO and 4%MgO/1.5%Mn has been done via Salt spray analysis, Rockwell's Hardness Machine and Universal Testing Machine. Al7075 alloy was melted at 700°C with reinforcements added, the mixture was then poured into sand molds. The microstructure of the casted samples of compositions Al7075+4%MgO and Al7075+4%MgO+1.5%Mn were studied using scanning electron microscope (SEM) which shows the presence and even distribution of the reinforcements added. Hardness test was conducted on all the compositions of the casted and heat-treated samples prepared with a steel tip indenter of diameter 10mm. Tensile test was conducted at an ambient temperature of 27°C. The yield stress, percent elongation, and ultimate tensile strength were determined for the cast and heat-treated samples. The corrosion test was conducted in a salt

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K .S INSTITUTE OF TECHNOLOGY

BOOK OF ABSTRACT

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Organized by

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Computer Science and Engineering

on

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in association with

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It is matter of great pride that, KSIT as a premier institution imparting technical education is adopting innovative practices in creating an environment that fosters the achievement of academic excellence and the pursuit of research activity. Paper Presentation contest organized by Department of Computer Science & Engineering is a part of this initiative that will provide a platform for budding researchers and practicing professionals to discuss and deliberate on the latest technologies and trends in engineering.

We extend our warm greetings and best wishes for the success of the contest.

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A progressive institution imparting technical education should be always vibrant and keep pace with the happenings throughout the world. This can only happen when there is a strong zeal to continuously learn on the part of both teachers and the taught. In order to encourage and promote continuous learning attending or organizing a Paper Presentation Contest is one of the ways.

I am very glad that Department of Computer Science and Engineering, K.S. Institute of Technology is organizing "PAPER PRESENTATION CONTEST-2023" on 28th and 29th April 2023. I wish all the student participants a great deal of knowledge sharing and learning. My best wishes for the organizers.

Dr. K V A Balaji

CEO,KSGI

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PRINCIPAL's MESSAGE

It is heartening to note that the Department of Computer Science and Engineering, KSIT, Bangalore is organizing the "PAPER PRESENTATION CONTEST-2023". This is a prestigious event for the Institute that will provide exposure to innovation & design concepts and will be a valuable learning experience for the students. My best wishes to the organizers and all the participants.

Dr. Dilip Kumar K.

Principal & Director

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We at KSIT aim at overall development of the students by providing various opportunities for them to exhibit their talent. We believe that Knowledge is power and education is the most powerful weapon to change the world.

In Department of Computer Science and Engineering, we work with the theme of imparting quality education by exposing our students to recent innovations & developments in various fields in Computer Science as Internet of Things, Data Science, Cyber Security, Block Chain, Image Processing, Computer Vision, Networking and Software Engineering through technical talks, Guest lectures, Workshops and Industrial Visits. The main goal of PAPER PRESENTATION CONTEST -2023 is to create a platform for students to share their knowledge and expertise in various domains

I would like to thank our Management & Principal for providing this opportunity. My heartfelt thanks to Project coordinators, Faculty members & supporting staff of CSE dept. My best wishes for the organizers.

Dr. Rekha B Venkatapur

Professor & Head

Dept. of Computer Science & Engineering.

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PROJECT COORDINATORS

Mr. Roopesh Kumar B N, Assistant Professor
Mr. Raghavendrachar S, Assistant Professor

COORDINATORS

Dr. Prashantha H S, Professor
Mr. Harshavardhan J R, Associate Professor
Dr. Vijayalaxmi Mekali, Associate Professor
Mr. Sanjoy Das, Assistant Professor
Mr. Kushal Kumar B N, Assistant Professor
Mr. Kumar K, Assistant Professor
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NBA Accreditation Criteria 3 Attainment Automation System

Group 1 Batch B1
Dr.Rekha B Venkatapur HOD, Dept. of CSE
Prajwal Kulkarani- 1KS19CS070
Preethi K P- 1KS19CS071
Shreesha S- 1KS19CS088
Akshay R- 1KS19CS115

ABSTRACT

Outcome Based Education (OBE) is a type of Education system where a student obtain certain attributes (in terms of knowledge, skills, attitudes, and behavior) after completing their degree, which is called Program Outcomes (PO). There are 12 POs that can be obtained through courses that the student takes up throughout their degree. To achieve that, Program Outcomes have to be mapped with Course Outcomes which helps to determine what the student obtains by studying that particular course. For an Institution to be accredited by NBA, the students have to attain all the POs in their 4-year program. The institution has to present certain documents to prove that their students are attaining/attained the POs. Generating these documents is a lengthy, tedious process that has to be done by the institution's staff, which is manual and time-consuming. To address these problems, we propose an automation system that manages all the procedures required for NBA attainment criteria. This automated system uses a centralized database to collect and store information from the faculty. Faculties can enter the required information through an easy-to-use web-based UI. Institute's NBA in charge can generate required reports using the system. These reports are presented during the process of NBA accreditation. The system also helps increase the efficiency of an Institution's workflow as all the required information is available in a centralized database.

Keywords: Outcome Based Education (OBE) Program Outcomes(PO) Course Outcomes(CO) NBA Criteria 3 SEE Prediction Cloud Database

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Birds recognition based on their sounds

Group 1 Batch B17
Mr. Harshavardhan J R, Associate Professor
Sai Shirisha S B- 1KS19CS081
Shivani G K - 1KS19CS087
Shreya R Kiran - 1KS19CS089
Tanushree R- 1KS19CS101

ABSTRACT

In our world, there are above 9000 bird species. Some bird species are being found rarely and prediction becomes very difficult if found. In order to overcome this problem, we have an effective and simple way to recognize these bird species based on their features. Also, the human ability to recognize birds through images is more understandable than audio recognition. So, we have used Convolutional Neural Networks (CNN). CNNs are a strong assemblage of machine learning which have proven efficient in image processing.

Keywords: Bird species, Machine Learning, Convolutional Neural Networks.

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Computer Vision Application in Agriculture for Pest Control

Group 3 Batch B7
Mr. Krishna Gudi, Assistant Professor
G Sarayu Chowdary- 1KS19CS021
Pothuru Sai Priyanka- 1KS19CS068
Vaishnavi.G- 1KS19CS109
Anusha A R- 1KS20 CS401

ABSTRACT

According to one of the survey report, 70% of India's population depends on the agricultural sector. A wide variety of diseases and various types of pests affect crop production, resulting in loss of quality and quantity of the yield. In current scenario farmers are opting for the option of pesticides to get rid of the pest, but the pesticides are ruining the soil quality level and effecting our environment. For this problem faced by many farmers across states the key solution is to detect the pests as early as possible and cut down the use of pesticides over vast areas and concentrate on particular areas where pest is been detected and destroy them as early as possible .Hence this paper gives a solution of such problem that is “Computer vision application in agriculture for pest control”.

Keywords: Pest detection, agriculture computer vision,testing, CNN

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Save the Seva- Digital Payment Solution

Group 6 Batch B10
Mr. Roopesh Kumar B N, Assistant Professor
Keerthan Gowda S 1KS19CS043
Satish V 1KS19CS085
Amrutha KH 1KS19CS011
G Preritha 1KS19CS030

ABSTRACT

Fintech is also known as financial tech. It has revolutionized the market since its inception. Multiple payment applications are possible to fully utilize fintech as well as make it useful in real life. Fintech is about technology and its application to solve all financial problems. It also aims at providing the best service for customers in real-time. This model combines the different methods of digital payment with cashless integration of payments. It helps to understand these payments' use cases to create a stronger financial system benefitting globally.

Keywords: Fintech, Centralized payment gateway, Payment Digitization/Cashless

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Stress Detection using Machine Learning

Group 1 Batch B6
Mr. Krishna Gudi, Assistant Professor
Kumar S 1KS19CS047
Rajkumar 1KS19CS076
Sankalp Kesti 1KS19CS084
Vishal Gupta 1KS19CS112

ABSTRACT

The prevalence of both non-melanoma and melanoma skin cancers has been increasing over the past decades. Skin cancer diagnosis can be a cathartic experience, however a physician can face with many trials and tribulations. The personal burden of skin cancer can be significant, if detected at an early stage, 5-year survival rates are over 90%. Image processing has always the potential to improve the diagnostic accuracy, Recent research in dermatology exemplify that image processing using ML for selected lesions is similar or of higher-ranking when compared to human experts in image based diagnosis under experimental conditions. This paper defines the best approach to identify/diagnose the cancer at an early stage by distinguishing the Benign from Melanoma skin cancer with CNN algorithm. The performance of this method is experimented on 2000 training samples. Accuracy for this method was encouraged and can reach up to 87%.

Keywords: Fintech, Centralized payment gateway, Payment Digitization/Cashless payments, Payment aggregators, Two-way Reconciliation, Data Visualization

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Student Information System Using Blockchain

Group 5 Batch B9
Mr.Kushal Kumar B N, Assistant Professor
Geethanjali B K Prasad 1KS19CS033
Indrajith H M 1KS19CS036
Karthik S Morajkar 1KS19CS041
N P Shashanka Rao 1KS19CS058

ABSTRACT

Blockchain involves series of tasks and transaction performed in decentralized form with high security, trust and reliability of transaction that creates meaningful information. Blockchain technology has the potential to revolutionize the way information is stored and managed in various industries. In the education sector, a student information system (SIS) using blockchain can provide a secure, decentralized platform for storing and accessing student data. This can improve data privacy and security, as well as reduce the burden of administrative tasks for educators. The report presents the design and implementation of an SIS using blockchain technology. The system allows students to store and manage their personal and academic information, on a decentralized platform. It also enables educators to easily access and verify student data, streamlining the process of enrollment and grading.The effectiveness of the SIS has been evaluated using a combination of user studies and technical assessments. The results demonstrate that the system provides a secure and efficient way to store and access student data, while also reducing the workload for educators. Overall, the report highlights the potential of using blockchain technology to improve the management of student information in the education sector. Blockchain's immutable solution offers more secure, reliable, and useful blocks of data that are advantageous to educational institutions or higher management organisations and build valuable relationships with their stakeholders. A distributed ledger with proof of work, encryption, and an immutable block chain record influences domain information. Future development include better student monitoring and secure marks relay from the teacher to parents and students on the website.

Keywords: Block Chain, Security, Management, Technology.

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Multi-Classification Of Brain Tumor Images Using Deep Neural Network

Group 1 Batch B19
Mr. Kumar K, Assistant Professor
Bhumika M 1KS19CS047
Anusha B 1KS19CS014
Raksha T M 1KS19CS078
Bharath R 1KS18CS011

ABSTRACT

Brain tumor classification is a crucial task to evaluating the tumors and make a treatment decision according to their classes. There are many imaging techniques used to detect brain tumors. However, MRI is commonly used due to its superior image quality and the fact of relying on no ionizing radiation. Deep learning (DL) is a sub field of machine learning and recently showed a remarkable performance, especially in classification and segmentation problems. In this paper, a DL model based on a convolutional neural network is proposed to classify different brain tumor types using available datasets. The former one classifies tumors into (meningioma, glioma, and pituitary tumor). The datasets include patients with a total of 3064 MRI images, respectively. The proposed network structure achieves a significant performance with the best overall accuracy. The results indicate the ability of the model for brain tumor multi-classification purposes.

Keywords: Convolutional neural network , Deep learning ,Grid search, Hyper-parameter optimization, Tumor grading.

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Driver Drowsiness Detection and Alert System using Deep Learning

Group 2 Batch B8
Mrs.Supreetha Ganesh, Assistant Professor
Amit K B 1KS19CS009
C N Shreyas 1KS19CS020
Gagndeep K 1KS19CS032
Akif Delvi 1KS20CS400

ABSTRACT

Drowsiness has significant contribution to the accidents on road. Accurate measurement is required to track the state of the driver. It has various shortcomings. Convolutional neural networks(CNN) developed using Keras were utilized to create the model that we employed. CNN is a branch of deep neural networks that is appropriate for image classification. It consists of many layers that include input, output and hidden layers. Driver drowsiness detection systems that work well should be able to recognize when a driver is starting to get sleepy or distracted and send out alerts in a timely manner to stop accidents.

Keywords: Convolution Neural Network, Deep Neural Network, CNN-LSTM Architecture.

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Discernment of Nutritious Mulberry leaves for cocoon formation using Autoencoder

Group 2 Batch B3
Mr.Raghavendrachar.S, Assistant Professor
Bhoomika.A M. 1KS19CS017
Bhoomika.K .1KS19CS018
.K Kishan 1KS19CS038
K.R.Vageesh1KS19CS039

ABSTRACT

Several studies have been made on identifying diseases in mulberry leaves, however, identifying nutrient deficiency in mulberry leaves has not been accomplished. The silkworms that feed on nutrient-deficient mulberry leaves produce low-quality silk. There is a great need for identifying nutrient-rich and healthy mulberry leaves for feeding the silkworm to get good quality silk yield. This paper is focused on segregating nutritious mulberry leaves for feeding the silkworms for cocoon formation. The process involves image acquisition, image pre-processing, feature extraction, and classification. Auto-Encoder is used for feature extraction from mulberry leaves and for discrete them into nutritious and nutrient-deficient leaves. The real-valued feature vectors are passed to machine learning algorithm Support Vector Machine (SVM).

Keywords: Nutrient deficiency, Support Vector Machine (SVM), Auto-Encoder

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Exam Surveillance using Machine Learning

Group 2 Batch B22
Mrs.Beena K, Assistant Professor
Kothapalli Sreeja 1KS19CS044
M Spurthi Reddy 1KS19CS051
N Ashok 1KS19CS056
N Bhavya 1KS19CS057

ABSTRACT

Students that cheat on their exams by employing other methods instead of their own learning are engaging in malpractice. They should be using their own learning and study methods. There are invigilators, although only a small number cheat when writing exams. This should be avoided, Corners of a room are equipped with surveillance cameras, but watching every footage is necessary to spot fraud. We require a programme throughout the exam to catch the errors. This assignment involves designing and putting into action a system that will keep an eye on the activities of the students. Our technology will recognize cheating by the student and notify the monitor if it is found. As the camera is mounted in front of the students, we will keep an eye on the student activities that are recorded. The footage we recorded and stored on our server will then be examined. Then, in order to identify the malpractice and notify the examiner, we will evaluate the video that was recorded on our server side.

Keywords: video surveillance system, CCTV, Foundation Layer, Network Infrastructure Layer, Processing Layer, Communication Layer, Application Layer

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Bone Age Detection

Group 3 Batch B27
Mrs.Pallavi R, Assistant Professor
Prajwal N 1KS18CS068
Likith G K 1KS19CS048
Mohammed Noor Aman 1KS19CS053
Nithin S 1KS20CS403

ABSTRACT

In the work, an automated skeletal maturity recognition system is proposed. It first accurately detects the distal radius and ulna (DRU) areas from hand and wrist X-ray images by a faster region based convolution neural network model. Then, a well-tuned convolution neural network (CNN) classification model is applied to estimate the bone ages. We discussed the model performance according to various network configurations. After parameter optimization, the proposed model finally achieved 92% and 88% accuracy.

Keywords: convolution neural network; skeletal maturity; classification

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Image Security Enhancement Using Cryptography

Group 3 Batch B14
Mr. Manoj Kumar S, Assistant Professor
Chaitanya Shivaraju 1KS19CS021
Deepa G 1KS19CS024
Deepthi N K 1KS19CS025
Mythreyi U 1KS19CS055

ABSTRACT

In the recent years, the trends in technology have come up with a solution to share digital media in an easier and rapid manner which leads to the use of media in an illegitimate manner. In order to make this problem less severe, various cryptographic techniques can be used to secure the digital media by encrypting them.

Keywords: Cryptography, Double Random Phase, Chaos encryption, image security.

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Food Adulteration Detection and Sorting Solution

Group 4 Batch B4
Mr. Lakshmikantha, Assistant Professor
Syed Zainul Abidin 1KS19CS099
Udhay Kumar G 1KS19CS108
Varun Kambali 1KS19CS111

ABSTRACT

Food adulteration is a critical issue that endangers public health and safety. Cheaper and potentially dangerous substitutes are used to increase profits, resulting in severe health problems. To address this problem, our project proposes a machine learning-based solution that detects and sorts adulterated food products through a web-based application. Our primary focus is on identifying khesari dal in the mixture of toor dal, which contains a neurotoxin that can cause paralysis, cancer, and skeletal deformity. The aim of our system is to replace the manual inspection process to speed up the process while improving precision and efficiency. The system takes a picture of the dal and analyses it to extract grain features such as size and color. Tampered dal can be identified based on picture pixels. Sorting is done based on visual characteristics such as size and color. Our proposed solution is cost-effective, efficient, and scalable, offering a reliable and practical solution to food adulteration while ensuring consumer safety and protecting the interests of honest producers.

Keywords: Food adulteration Machine learning Detection Sorting Neurotoxin Paralysis Size Cost-effective Efficient Scalable solution.

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Detection of Diabetic Retinopathy

Group 4 Batch B20
Dr. Vijayalaxmi Mekhali, Associate Professor
Nethra R 1KS19CS061
Nithya S N 1KS19CS063
Priya E 1KS19CS072
Shanvi B P 1KS19CS086

ABSTRACT

Diabetic Retinopathy is a complication of diabetes that targets the eyes by damaging the retinal blood vessels. Initially, it is asymptomatic or causes fluctuating vision problems. As it becomes severe, it affects both eyes and eventually causes partial or complete vision loss. Primarily occurs when the blood sugar level is unmanageable. Therefore, a person with diabetes mellitus is always at a high risk of acquiring this disease. Early detection can deter the contingency of complete and permanent blindness. Thus, requires an efficient screening system. The present work considers a deep learning methodology specifically a residual network (ResNet-50), a deep Convolutional Neural Network, which is applied for the early detection of diabetic retinopathy. It classifies the fundus images based on their severity levels as No DR, Mild, Moderate, Severe and Proliferative DR. The datasets that are taken into consideration are Diabetic Retinopathy detection 2015 and Aptos 2019 blindness detection which are both obtained from Kaggle. The proposed method is accomplished through various steps: Data collection, visualization, Augmentation, and Modelling. The main aim of this work is to develop a robust system for detecting DR automatically.

Keywords: Diabetic Retinopathy (DR), CNN, Deep Learning, ResNet-50, Fundus images, Classification

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A Two Stage Convolutional Neural Networks for Lung Nodule Detection

Group 4 Batch B24
Mr. Somasekhar T, Assistant Professor
Kavyashree S L 1KS19CS042
Priyanka R 1KS19CS073
Ranjitha D V 1KS19CS079
Thriveni U 1KS19CS107

ABSTRACT

Lung cancer is one of the dangerous and life taking disease in the world. However, early diagnosis and treatment can save life. Although, CT scan imaging is best imaging technique in medical field, it is difficult for doctors to interpret and identify the cancer from CT scan images. Therefore computer aided diagnosis can be helpful for doctors to identify the cancerous cells accurately. Many computer aided techniques using image processing and machine learning has been researched and implemented. The main aim of this research is to evaluate the various computer- aided techniques, analyzing the current best technique and finding out their limitation and drawbacks and finally proposing the new model with improvements in the current best model. The method used was that lung cancer detection techniques were sorted and listed on the basis of their detection accuracy. The techniques were analyzed on each step and overall limitation, drawbacks were pointed out. It is found that some has low accuracy and some has higher accuracy but not nearer to 100%. Therefore, our research targets to increase the accuracy towards 100%

Keywords: Deep Learning, Machine Learning, Lung Nodule Detection, CNN, Sequential Model.

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Identification Of Medicinal Plants By Image Processing Of Leaf Samples

Group 4 Batch B15
Mr. Somasekhar T, Assistant Professor
KRISHNA K R 1KS19CS046
SUSHMITHA K 1KS19CS097
TEJASWINI NAYAKA S 1KS19CS104
THIRUMAL R 1KS19CS106

ABSTRACT

It takes time and effort to develop an automated system for classifying medicinal plants. There are many different plant species in India, each with its own special set of medicinal properties. The names of all plant species and their uses are difficult for humans to remember, thus prior information is crucial for manual identification and categorization. It is essential to preserve these medicinal plants because doing so will benefit a wide range of fields, including medicine, botanic research, and plant taxonomy studies, among others. The variety of medicinal plant species that are present in India cannot be replicated by current technologies. The suggested method makes it easier to classify medicinal plants by utilising textural characteristics that are essential for recognising and identifying leaves. The suggested method's three main steps are feature extraction, classification, and picture improvement. The traits that can be compared between the leaves' images were extracted using digital image processing algorithms after the leaves photos were taken with cellphones. Finally, a machine learning classifier is created using the CNN classifier.

Keywords: Convolution Neural Networks Deep learning, Pre-processing, Feature Extraction, Classification, Segmentation.

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BOOD TRANSFUSION SYSTEM USING BLOCKCHAIN

Group 5 Batch B13
Mr. Prashanth H S, Assistant Professor
RV Yashvanth 1KS19CS075
Rakesh M J 1KS19CS077
Sahana S 1KS19CS080
Naveen K M 1KS19CS059

ABSTRACT

Current day Blood donation systems fall short in providing the solution for real-time time transfusion of blood, where the systems deal with Information which only responsive not dynamic. Starting from donation to transfusion. In present-day situations, there is no platform for blood transfusion, where blood present in one region is requested from the different regions where blood is scarce, which may lead to the wastage of blood. Lack of transparency and proper blood quality checks have led to several cases of blood infected with a transmitted disease such as HIV, hepatitis (HVB), or hepatitis(HVC) being used for transfusion, In addition to this, this system also deals with the blood mafia problem by providing transparency. This System aims at solving the issues regarding the supply chain. The system provides a facility for the blood donation process to be transparent by tracking the blood passage way and also helps to avoid wasting blood by providing a platform for the exchange of blood between blood banks. For ease of use, a web application is also built for accessing the system.

Keywords: donation , transfusion, responsive not dynamic.scarce, transparency

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BLOCKCHAIN BASED SMART CONTRACT FOR BIDDING SYSTEM

Group 5 Batch B 30
Mr. Raghavendrachar S, Assistant Professor
AMOGHA.HS 1KS19CS010
ADITH KARTHIK RAJU 1KS19CS004.
GAGAN REDDY 1KS19CS031.
MAURYA T 1KS19CS100

ABSTRACT

Due to the wide spread use of the Internet, integration services have steadily transformed how people live their daily lives, including how they conduct business online, travel, and other things. One of the most well-liked forms of online commerce is the E-auction, which enables bidders to place direct bids on things. Regarding sealed bids, an additional transaction fee is necessary for the middlemen because they play a crucial role in facilitating trade between the buyers and sellers throughout the auction. Furthermore, it never guarantees the dependability of the third party. In order to resolve the concerns, we propose leveraging blockchain technology, which has low transaction costs, to develop smart contracts for open and sealed bids. The smart contract, first conceived in 1990 and implemented via the Ethereum system, may guarantee the bill is secure, private, unreliable, and unalterable because all transactions are recorded in the same but decentralised ledgers. The smart contract contains the following information: the address of the auctioneer, the start and end times of the auction, the deadline, the location of the current winner, and the most recent price.

Keywords: Trasparency. Elimination of 3rd party. Easily available. Its responsive. Guarantee the immutability of the data.

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Instigation of Detected Potholes

Group 5 Batch B 29
Mr. Roopesh Kumar B N, Assistant Professor
Nikhil Chowdary V R 1KS19CS062
Pavan B Indresh 1KS19CS064
Pavan L 1KS19CS065
Srujan K 1KS19CS091

ABSTRACT

One of the main reasons for auto accidents across the world is potholes. It is believed that poor road conditions, of which potholes account for a sizable portion, are to blame for around one-third of all traffic accidents. Traffic jams and accidents are often caused by bad road conditions. You risk losing control of your vehicle if the pothole is really bad or if your vehicle isn't designed to withstand the impact. This frequently results in vehicle accidents, which cause needless deaths. When riding over potholes, motorcycle riders are particularly vulnerable to harm. A bike only has two wheels on the ground, and although being lighter than a car, a motorbike cannot cope up with potholes in the road. The prototype described in this article locates potholes on the road and updates them in the cloud. This method aids in keeping the road in good condition. The suggested architecture additionally makes advantage of IoT to store in the cloud the geographical location of found potholes. For management experts, this data is a valuable resource.

Keywords: Hump Detection, PotHole Detection, Animal Detection, Conventional Neural Networks Algorithm.

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Land Registry using blockchain

Group 5 Batch B 12
Mr. Kumar K, Assistant Professor
Nikhil Chowdary V R 1KS19CS062
Pavan B Indresh 1KS19CS064
Pavan L 1KS19CS065
Srujan K 1KS19CS091

ABSTRACT

One of the main reasons for auto accidents across the world is potholes. It is believed that poor road conditions, of which potholes account for a sizable portion, are to blame for around one-third of all traffic accidents. Traffic jams and accidents are often caused by bad road conditions. You risk losing control of your vehicle if the pothole is really bad or if your vehicle isn't designed to withstand the impact. This frequently results in vehicle accidents, which cause needless deaths. When riding over potholes, motorcycle riders are particularly vulnerable to harm. A bike only has two wheels on the ground, and although being lighter than a car, a motorbike cannot cope up with potholes in the road. The prototype described in this article locates potholes on the road and updates them in the cloud. This method aids in keeping the road in good condition. The suggested architecture additionally makes advantage of IoT to store in the cloud the geographical location of found potholes. For management experts, this data is a valuable resource.

Keywords: Hump Detection, PotHole Detection, Animal Detection, Conventional Neural Networks Algorithm.

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Home Automation and Security System

Group 6 Batch B2
Mr. Sanjoy Das, Assistant Professor
Aman Kushwaha 1KS19CS007
Mukesh Kumar 1KS19CS054
Sangharsh Rai 1KS19CS082
Chandan B.V 1KS19CS022

ABSTRACT

The Internet of Things (IoT) has the potential to revolutionize the way we live and work by connecting a wide variety of devices and systems to the internet. One area in which the IoT has seen particularly rapid adoption is home automation, with a growing number of products and services available to help homeowners control and monitor their homes remotely. In this paper, we present a comprehensive review of the state of the art in IoT home automation systems. We begin by discussing the key components of such systems, including sensors, actuators, and control devices, as well as the various protocols and technologies used to connect them. We then review a range of applications for IoT home automation, including energy management, security and safety, and entertainment. We also examine the challenges and opportunities presented by the adoption of IoT home automation, including issues of interoperability, security, and privacy. Finally, we discuss the future direction of IoT home automation and its potential to transform the way we live and work.

Keywords: Internet of Things Arduino Security System DC Motor H-Bridge Sensors and Actuators.

ISBN: 978-81-929425-1-3

Food Wastage Management

Group 6 Batch B5
Mrs. Beena K, Assistant Professor
Prajwal G 1KS19CS069
Shri Harsha S 1KS19CS090
Suhas S 1KS19CS096
Tejas N 1KS19CS102

ABSTRACT

This project's objective is to efficiently manage food waste. Every day, a lot of food is wasted by people. So, to be able to address the problem of leftover food, we must use the internet. If someone has extra food, they can fill out the application with the quantity and their address, and the administrator will record the information for the food donor. The donor can create an account, log in anytime food is wasted, and send an administrative request. And the admin can also keep track of the buyer's (orphanages, underprivileged individuals) information. The alert message, such as the time to come pick up the food, will be sent by the admin after viewing the donor's request. And the administration receives food from donors through a local agent before distributing it to the impoverished or orphans closest to them. He will send the contributor a warning mail after giving the agent from the admin the meal. The administrator might get a request from the donor and gather any information they require regarding the orphanage they are supporting. This project, which focuses on food redistribution and fights food waste and hunger, has been a huge social innovation success. Because there is a different account for each user, the user's information is kept private.

Keywords: Application Android Social Service Privacy

ISBN: 978-81-929425-1-3

Prediction of Star Rating Based on Deep Learning

Group 2 Batch B23
Mrs. Kavya M S, Assistant Professor
Anagha A Hebbar 1KS19CS012
Deeksha Naidu R 1KS19CS023
Lisha C 1KS19CS049
Sindhu 1KS19CS091

ABSTRACT

One of the main reasons for auto accidents across the world is potholes. It is believed that poor road conditions, of which potholes account for a sizable portion, are to blame for around one-third of all traffic accidents. Traffic jams and accidents are often caused by bad road conditions. You risk losing control of your vehicle if the pothole is really bad or if your vehicle isn't designed to withstand the impact. This frequently results in vehicle accidents, which cause needless deaths. When riding over potholes, motorcycle riders are particularly vulnerable to harm. A bike only has two wheels on the ground, and although being lighter than a car, a motorbike cannot cope up with potholes in the road. The prototype described in this article locates potholes on the road and updates them in the cloud. This method aids in keeping the road in good condition. The suggested architecture additionally makes advantage of IoT to store in the cloud the geographical location of found potholes. For management experts, this data is a valuable resource.

Keywords: Hump Detection, PotHole Detection, Animal Detection, Conventional Neural Networks Algorithm.

ISBN: 978-81-929425-1-3

Cloud Based Patient health Record

Group 5 Batch B18
Mrs. Pallavi K N, Assistant Professor
Tejas P 1KS19CS103
Tanushree S 1KS19CS105
Varsha Bai R 1KS19CS110
Yashwanth S R 1KS19CS113

ABSTRACT

Cloud-based Patient Health Record System is an electronic medical record that offers advantages for storing and accessing patient health information n in a multi-source cloud. Patient recording management is an integral component of modern-day healthcare management systems. The patient reports do not only depend on the medical record storage but also the accuracy. All the data are stored in the cloud by the doctor and hospital management system which can be retrieved by patients using their unique id, this process of retrieving data and storing data can only be done between the patient, doctor, and management system henceforth this has been secured by the cloud. Access control is made between the patients, one patient can't access another patient's record. The creation of the patient is done by the doctor or technicians, the patient gets their credentials through emails, and they can change their password whenever they want.

Keywords: Health records Patient, Doctor, Technician Cloud Access control.

ISBN: 978-81-929425-1-3

A FRAMEWORK FOR CONTACT SAVING THROUGH VOICE RECOGNITION

Group 5 Batch B25
Mr.Manoj Kumar S, Assistant Professor
Manasa GL 1KS19CS103
Vrathika Billava 1KS19CS105
Pranav Chandran P 1KS19CS110
Keerthi Kumar V 1KS19CS113

ABSTRACT

In modern times, everyday life has become smarter and more sophisticated. We already know some voice services like google, and Siri. etc. Now in our voice support system, it can work like automatic contact saving through voice. This project works by entering voice and rendering voice output and displaying text on the screen. Our main voice help agenda makes people smarter and deliver faster results. Voice Help captures voice input with our microphone and transforms our voice into understandable computer language providing the necessary solutions and answers that the user asks. The Natural Language Processing algorithm enables computer systems to engage in communication using the natural human language in many ways.

Key Words: Virtual Personal Assistant, Natural Human Language, Speech to text, Artificial Intelligence, Natural Language Processing, Machine Learning

ISBN: 978-81-929425-1-3

INFORMATION SECURITY USING BIOMETRIC WATERMARKING

Group 5 Batch B16
Mr.Prashant HS, Assistant Professor
Deviprasad N, 1KS19CS026
Dheemanth G, 1KS19CS028
Kalyan C, 1KS19CS040
Kottala sai venkata suchith,1KS19CS045

ABSTRACT

Securing user data is important given the quick development of technology. It is vital to choose a strong approach that not only protects data against attackers but also secures it. This article suggests one such approach in use now is biometric authentication. Unlike other types of authentication, biometric recognition creates a solid connection between a data record and a specific person and ensures a high degree of security and accuracy.However, attackers may utilise this biometric information to gain unauthorised access. In this research, a resilient zero-bit watermarking method is suggested as a defence against such crimes.

Key Words: convolutional neural network, image processing, cryptography

ISBN: 978-81-929425-1-3

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14, Kanakapura Rd, Raghuvanahalli, Bangalore City Municipal Corporation Layout, Bengaluru, Karnataka 560109

K.S. SCHOOL OF TECHNOLOGY AND MANAGEMENT AND K S POLYTECHNIC

Holiday Village Road, Vajarahalli Village, Mallasandra, off, Kanakapura Rd, Bengaluru, Karnataka 560109

K.S. SCHOOL OF ARCHITECTURE

Holiday Village Road, Vajarahalli Village, Mallasandra, off, Kanakapura Rd, Bengaluru, Karnataka 560109

K.S. PU COLLEGE

14, Kanakapura Rd, Raghuvanahalli, Bangalore City Municipal Corporation Layout, Bengaluru, Karnataka 560109

K.S. INSTITUTE OF TECHNOLOGY

Bengaluru, Karnataka, India

BOOK OF ABSTRACT-2023

PAPER PRESENTATION CONTEST

Organized by

DEPARTMENT OF ELECTRONICS
&
COMMUNICATION ENGINEERING

in association with

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It is matter of great pride that, KSIT as a premier institution imparting technical education is adopting innovative practices in creating an environment that fosters the achievement of academic excellence and the pursuit of research activity. Paper presentation contest organized by Department of Electronics and Communication Engineering is a part of this initiative that will provide a platform for budding researchers and practicing professionals to discuss and deliberate on the latest technologies and trends in engineering.

We extend our warm greetings and best wishes for the success of the contest.

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CEO's message

A progressive institution imparting technical education should be always vibrant and keep pace with the happenings throughout the world. This can only happen when there is a strong zeal to continuously learn on the part of both teachers and the taught. In order to encourage and promote continuous learning attending or organizing a National Conference is one of the ways.

I am very glad that Electronics & communication Engg department of K.S. Institute of Technology is organizing "**PAPER PRESENTATION CONTEST-2023**" on 29th April 2023. I wish all the student participants a great deal of knowledge sharing and learning. My best wishes for the organizers.

DR. K.V.A. BALAJI
CHIEF EXECUTIVE OFFICER
K. S. GROUP OF INSTITUTIONS

Principal's Message

It is heartening to note that the Department of Electronics and Communication Engineering, KSIT, Bangalore is organizing the "**PAPER PRESENTATION CONTEST-2023"**. This is a prestigious event for the Institute that will provide exposure to innovation & design concepts and will be a valuable learning experience for the students. My best wishes to the organizers and all the participants.

Dr. Dilip Kumar K.
Principal & Director
K.S. Institute of Technology

HOD's Message

We at KSIT aim at overall development of the students by providing various opportunities for them to exhibit their talent. We believe that Knowledge is power and education is the most powerful weapon to change the world.

In ECE department we work with the theme of imparting quality education by exposing our students to recent innovations & developments in various fields in Electronics, Electrical and Communication engineering through technical talks, Guest lectures, Workshops and Industrial Visits. The main goal of **PAPER PRESENTATION CONTEST -2023** is to create a platform for students to share their knowledge and expertise in various domains.

I would like to thank our Management & Principal for providing this opportunity. My heartfelt thanks to Project coordinators, Faculty members & supporting staff of ECE dept. My best wishes for the organizers.

Dr. P.N Sudha
Professor and Head
Dept. of Electronics & Communication Engg.
K.S. Institute of Technology

Project Coordinator

Dr. B. Sudarshan, Professor ECE dept., KSIT

Dr. N. Rekha, Associate Professor ECE dept., KSIT

Coordinators

Dr. B Surekha, Professor

Dr. Sangappa.S.B, Professor

Dr Chanda V Reddy, Professor

Dr. Dinesh Kumar, Associate Professor

Mr. B. R. Santhosh Kumar, Associate Professor

Dr. Devika B, Associate Professor

Mrs. Ramya K R, Associate Professor

Mrs. Vishalini Divakar, Assistant Professor

Mrs. Sangeetha V, Assistant Professor

Mr. Praveen. A, Assistant Professor

Mr. Christo Jain, Assistant Professor

Mr. Saleem S Tevaramani, Assistant Professor

Mr. Satish Kumar. B, Assistant Professor

Mrs. Pooja . S, Assistant Professor

Mrs. Bhargavi Ananth, Assistant Professor

Mrs .Shruthi Joshi, Assistant Professor

Mrs Bhanumathi, Assistant Professor

Mrs Kavya, Assistant Professor

Mrs. Anitha, Assistant Professor

Mrs Suma Santosh, Assistant Professor

K.S. INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

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Team -1

IoT Based School Bus Monitoring System

SRINIVAS S
Dept. of Electronics & Communication Engg
K S institute of Technology
Bengaluru, INDIA

SHREYAS V BHARADWA.
Dept. of Electronics & Communication Engg
K S institute of technology
Bengaluru, INDIA

SRIRAM
Dept. of Electronics & Communication Engg
K S institute of technology
Bengaluru, INDIA

VISHNURAATA YADUNANDAN
Dept. of Electronics & Communication Engg
K S institute of technology
Bengaluru, INDIA

P N SUDHA
Prof. Head ECE dept.
Dept. of Electronics & Communication Engg
K S institute of technology
Bangalore, INDIA

Abstract **-** An IoT-based school bus monitoring system is a technology solution that utilizes the Internet of Things (IoT) to monitor and track school buses and send alerts in real-time. These systems use Internet of Things (IoT) devices and sensors to track the location, and safety of school buses in real-time, allowing schools and parents to monitor their children's travel to and from school. The system enables real-time tracking of the location, speed, and route of school buses, as well as the identification of any potential safety issues such as sudden stops, collisions, or breakdowns. It also allows parents and school administrators to monitor the location and status of the school bus in real-time, and to receive notifications in case of any delays or emergencies. The use of an IoT-based school bus monitoring system can provide numerous benefits, including improved safety and security for students, reduced fuel consumption and maintenance costs, and enhanced communication and coordination between parents, school administrators, and bus drivers. It can also help to improve the overall efficiency and effectiveness of school bus transportation, by enabling more accurate scheduling and routing, and by providing valuable data for decision-making and continuous improvement.

Team -2

Automated and Movable Waste Segregator

Rangaswamy U
dept. of Electronics and Communication Engg.,
K S Institute of Technology,
Bangalore, India

S K Bharatesh
dept. of Electronics and Communication Engg.,
K S Institute of Technology,
Bangalore, India

Shreyas B Aradhya
dept. of Electronics and Communication Engg.,
K S Institute of Technology,
Bangalore, India

Tushar R Vasishta
dept. of Electronics and Communication Engg.,
K S Institute of Technology,
Bangalore, India

Dr. B Sudarshan
Professor, dept. of Electronics and Communication Engg.,
K S Institute of Technology,
Bangalore, India

Abstract **-** The problem of improper waste management is becoming increasingly critical in many urban areas around the world. To address this issue, an automated and movable waste segregator is proposed. The segregator can be moved to different locations to collect waste from various sources, such as households, offices, and public places. This project presents Smart Dustbin-Separation of metal and non-metal by using IOT and ROBOTICS. Now a day, due to the busy work schedule people are not able to separate metal and non -metal waste. As we know, metals get corroded due to moisture, these moisture's are naturally obtained by decaying process of fruits and vegetables. This leads to diseases. Finally, we are step forward to keep the environment hygienic and clean. In this project, we are using conveyor belt along with the robotic arm assembly for separating the metals and non -metal wastes. These wastes are stored in different bins. When the dustbin is about to reach the full capacity this frame work sends a message to the operator. This process is done by using telegram application. The proposed automated and movable waste segregator offers a promising solution to the growing problem of improper waste management. By automating the waste segregation process, it can significantly reduce the amount of waste that ends up in landfills and improve the efficiency of waste collection and management.

Team -3

Fruit Categorizer Using pH Sensor

RadhaKrishna L
dept. of Electronics and Communication Engg.,
K S Institute of Technology,
Bangalore, India
radhakrishnarox@gmail.com

Rajalakshmi S
dept. of Electronics and Communication Engg.,
K S Institute of Technology,
Bangalore, India
hnan@gmail.com

Shreyas Gowda
dept. of Electronics and Communication Engg.,
K S Institute of Technology,
Bangalore, India
shreyasgowda1902@gmail.com

Dr. P.N Sudha
Head of Department
Dept. of Electronics and Communications Engineering
K.S. Institute of Technology
Bengaluru, India
pnsudha@ksit.edu.in

Abstract- The process of grouping or sorting fruits till date is carried out using manual methods & this process is time consuming & can be erroneous. To minimize the sorting time & error, many automation techniques are designed based on image classification & other methods. This paper summarizes all the existing techniques designed to group & sort fruits using image classification and Convolutional Neural Network.The fruit categorizer using pH sensor is a system that utilizes a pH sensor to categorize fruits based on their acidity level. This system is designed to assist in fruit sorting and grading by automating the process and providing accurate results. The pH sensor measures the acidity level of the fruits, and based on the predetermined thresholds, the system categorizes the fruit into different classes. This system can significantly reduce the manual effort and increase the accuracy of the fruit sorting process, leading to improved quality control and customer satisfaction.

Team -4

Soil Moisture Detection with Automatic Water Pump Control

Vikas S
Dept. of Electronics and communication engineering
K S Institute of technology
Bangalore, India

Vishal Sanjay Raju
Dept. of Electronics and communication engineering
K S Institute of technology
Bangalore, India

Mrs. Vishalini Divakar
Asst. Professor
Dept. of Electronics and communication engineering
K S Institute of technology
Bangalore, India

Abstract **-** In India irrigation is mostly dependent on water and in most places the consumption of water in agricultural field will vary and it will directly depend on the type of crop which they are growing and in which place they are growing. As some crop need more water to grow and some crop need less water to grow, likewise some places in India have more water resources available and some places have very dry land and less water is available. When we observe, it also depends on what type of soil is present at that particular place as some soil have more retention capacity and some soil have less water retention capacity.

So, keeping this in mind there is a need to control the water supply to the crops based on the requirement of that particular crop soil moisture level. In this project we will be using 4 different types of crops having different soil moisture threshold values and we will be controlling the water pump automatically, which is responsible to supply water to the crops by using the soil moisture sensor which will keep monitoring the soil moisture levels of the soil. It will also send the message to the user's registered mobile number using GSM whenever the water pump is turned ON.

Team -5

Anti Corruption Traffic Management System

Abhishek C
ECE
K S Institute of Technology
Bengaluru, India
abhishekchandresh@gmail.com

Jayanth M B
ECE
K S Institute of Technolog
Bengaluru, India
mb.jayanth@gmail.com

Chandan Raj Y
ECE
K S Institute of Technology
Bengaluru, India
chandanshetty3101@gmail.com

Karthik K
ECE
K S Institute of Technology
Bengaluru, India
karthik200153@gmail.com

Santhosh Kumar B R
ECE
K S Institute of Technology
Bengaluru, India
santoshkumarbr@ksit.edu.in

Abstract: Present day, technology has emerged in such a way that it can provide solutions to any real-life problems but in our daily life, traffic is the major issue, parking the vehicle in no parking place is the one of the major reasons for increasing traffic. We do not have a perfect system which finds the vehicle standing in no parking place. One such solution to the problem of towing vehicles is done efficiently by using embedded systems and IoT Technology. When a vehicle is parked at NO PARKING ZONE knowingly or unknowingly the owner is punished with a penalty and a notification will be sent to the consignment officer for registering a complaint against the vehicle. Every day public and traffic police wasting their time just for verification of documents. Helmet is mandatory but people neglect to wear the helmet, so every time traffic police must monitor this operation. Here penalty part is done manually so there may be a chance of misuse which leads into corruption. The role of traffic police is very helpful for the society. They are meant to be controlling the heavy traffic flow but, they control the drink drive, they control without helmet ride to save the lives. They always try to bring traffic awareness to the people. But unfortunately, some of our traffic police became corrupted, they always try to find different ways to hold people accountable for money in the name of traffic rules. Many time Traffic police stop us to verify our documents, so we have to carry our documents. Which is not feasible and it is also waste of time and will disrupt the traffic flow. Hence, we need a system which can overcome all the major imperfections in the present traffic control system.

Team -6

Forest Monitoring System

Aishwarya M G
Dept. of Electronics and Communication Engg., K S Institute of Technology, Bangalore, India

Archana Yadav M
Dept. of Electronics and Communication Engg., K S Institute of Technology, Bangalore, India

Meghana H P
Dept. of Electronics and Communication Engg., K S Institute of Technology, Bangalore, India

Pooja S P
Dept. of Electronics and Communication Engg., K S Institute of Technology, Bangalore, India

Dr. Devika B
Associate Professor, Dept. of Electronics and Communication Engg., K S Institute of Technology, Bangalore, India

Abstract - It is common knowledge that trees like teak, sandal, and others are smuggled around the world. Because there is greater demand for these trees, their cost is higher. It's possible that these trees are being smuggled, which is against the law, because of the enormous profit that could be made from selling their wood. To limit the smuggling of these trees, some steps must be taken. The main objectives of this system are to reduce deforestation and smuggling in order to protect priceless trees and preserve a healthy eco-system.

Team -7

Health Monitoring System

CHAITRA P
Dept. of Electronics & Communication Engineering.
K S Institute of Technology
Bangalore, INDIA.
chaitraputtaswamy18@gmail.com

LIKITHA H
Dept. of Electronics & Communication Engineering.
K S Institute of Technology
Bangalore, INDIA.
likithah01@gmail.com

Dr.Devika B
Associate Professor
Dept. of Electronics & Communication Engineering.
K S Institute of Technology
Bangalore, INDIA.
devikab@ksit.edu.in

KRUPA A
Dept. of Electronics & Communication Engineering
K S Institute of Technology
Bangalore, INDIA.
ashwathkrupa@gmail.com.

MONIKA V ARYA
Dept. of Electronics & Communication Engineering.
K S Institute of Technology
Bangalore, INDIA.
monikavarya65@gmail.com

ABSTRACT- Healthcare is given the extreme importance now-a-days by each country with the advent of the novel corona virus. So in this aspect, an IoT based health monitoring system is the best solution for such an epidemic. Internet of Things (IoT) is the new revolution of internet which is the growing research area especially in the health care. With the increase in use of wearable sensors and the smart phones, these remote health care monitoring has evolved in such a pace. IoT monitoring of health helps in preventing the spread of disease as well as to get a proper diagnosis of the state of health, even if the doctor is at far distance. In this paper, a portable physiological checking framework is displayed, which can constantly screen the patient's ECG, heartbeat, temperature, oxygen levels. We proposed a nonstop checking and control instrument to screen the patient condition and store the patient information's in server utilizing Wi-Fi Module based remote correspondence. A remote health monitoring system using IoT is proposed where the authorized person can access these data stored using any IoT platform i.e. Thing-speak mobile application and based on these values received they are monitored and analysed by the doctors from a distance.

Team -8

Automatic Food and Medicine Dispenser System

Vandana G
Dept. of ECE,
KS Institute of Technology,
Bangalore, India

Ramya sree R
Dept. of ECE,
KS Institute of Technology,
Bangalore, India

Santhosh Kumar B R
Assosiate Professor,
Dept. of ECE,
KS Institute of Technology,
Bangalore, India

Abstract - It is critical to administer timely medication to the elderly. The automatic medicine dispenser is made for people who take drugs without the supervision of a doctor. It frees the user from the risky chore of giving the wrong medicine at the wrong time. Routine medical checks and other healthcare services are now being moved from hospitals to patient homes, which is a promising trend in healthcare. Patients can obtain health care more easily as a result of this, particularly in the event of an emergency. It can be quite difficult to remember what pills to take when and how much the dosage. This system is designed to receive the right amount of food and medication at the right time, which is particularly important for those who have difficulty remembering when to take their medication or feeding schedules.

The system is designed to address common problems associated with medication and feeding schedules, such as forgetfulness, difficulty in measuring the right amount of medication, and lack of consistency in feeding times.

Team -9

Real Time Human Safety Device

SABARISH.I.J
Dept. of ECE
KSIT
Bengaluru, India

SAMIKSHA.S
Dept. of ECE
KSIT
Bengaluru, India

SATHVIK.U.M
Dept. of ECE
KSIT
Bengaluru, India

SWAGATH AITHAL.P.G
Dept. of ECE
KSIT
Bengaluru, India

DR.CHANDA V REDDY
Dept. of ECE
KSIT
Bengaluru, India

Abstract - In the modern world, both urban and rural areas are thought to have a serious problem with human safety. Due to the increase in crimes against people in recent years, human safety is a crucial problem. Human safety entails preventing violence against women, children, and the elderly. According to estimates made by the WHO, around one in three (30%) women worldwide have experienced physical and/or sexual intimate relationship abuse or non-partner sexual violence at some point in their lives. Up to 1 billion children between the ages of 2 and 17 are thought to have experienced physical, sexual, or emotional abuse or neglect in the previous year. Every year, 1 in 6 adults 60 and older endure maltreatment in their communities worldwide.

So, to control this We suggest a self-defense system for humans as a means of resolving this problem, as well as a system that includes a gadget with key qualities. This gadget has a system that ensures alerts in the event that a person is harassed or believes they are in peril. The gadget consists of a device as well as pepper spray which is used for self-defense. Additionally, we have a watch that has a push button when we hold it for 3 seconds a message is sent to the emergency contact, and the watch also has a camera that records images for surveillance. Additionally, we have an Android software that will utilize the mobile's built-in functions and act as a backup for the device.

Team -10

Biometric Based Authentication for Vehicle Ignition System

Abhilash AS,
Student,
Dept. of Electronics and Communication Engineering,
KS Institute of Technology,
Bengaluru, India.

Hemanth R Patil,
Student,
Dept. of Electronics and Communication Engineering,
KS Institute of Technology,
Bengaluru, India.

Lakshman Kumara B,
Student,
Dept. of Electronics and Communication Engineering,
KS Institute of Technology,
Bengaluru, India.

Mohammad Rakheeb MR,
Student
Dept. of Electronics and Communication Engineering,
KS Institute of Technology,
Bengaluru, India.

Praveen A,
Assistant Professor ,
Dept. of Electronics and Communication Engineering,
KS Institute of Technology,
Bengaluru, India

Abstract - Biometric authentication is an emerging technology that has found its application in various domains. One of the domains that have recently gained attention is vehicle ignition. This technology is used to prevent unauthorized access to the vehicle and ensure that only the authorized driver can start the vehicle. The biometric authentication system typically uses a combination of physiological and behavioral traits to identify the driver, such as facial recognition, fingerprint scanning, iris recognition, voice recognition, and gait analysis. This paper aims to provide an overview of the biometric authentication system for vehicle ignition, including the advantages, disadvantages, and challenges of implementing such a system. The paper also discusses the different biometric modalities that can be used for authentication, the algorithms used for recognition, and the security aspects of the system. The results show that biometric authentication for vehicle ignition has the potential to increase the security of the vehicle and prevent theft. However, there are still some technical and social challenges that need to be addressed before this technology can be widely adopted

Team -11

Aerial Technology for Low Power Transmission Using Array of Antenna

Chennreddy Rajasekhar
Department of ECE
K S Institute of Technology
Bangalore, India

Davino Joseph
Department of ECE
K S Institute of Technology
Bangalore, India

Harshitha B Y
Department of ECE
K S Institute of Technology
Bangalore, India

Bhavana S
Department of ECE
K S Institute of Technology
Bangalore, India

Christo Jain
Department of ECE
K S Institute of Technology
Bangalore, India

Abstract - The proposed study emphases on dipping the complication of power transfer. By this system, we can able to reduce complexity since no wire is required for transmission of electricity in wireless power transfer. By comparing with other systems, this procedure can expand the proficiency, drops the energy crisis and eases the power loss. Wireless power transmission completely eliminates usage of wires so that we can reduce accidents and electric shocks in the house. In this method we are using Dipole antenna instead of wires for transmission of power.

Team -12

Automation of Petrol Bunk with Safety Using RFID

PRASHANTH SK
Dept. of ECE, KSIT
Bengaluru, India

SANTOSH HEGDE
Dept. of ECE, KSIT
Bengaluru, India

SUHAS M GOWDA
Dept. of ECE, KSIT
Bengaluru, India

T N L RUTHVIK
Dept. of ECE, KSIT
Bengaluru, India

Mrs. VISHALINI DIVAKAR
Prof. of Dept. of ECE
KSIT Bengaluru, India

Abstract - In Today's world almost all the sectors and industries have been automated. Petroleum industries are not an exception to that. Petrol pumps have been very much automated, they have microcontrollers to monitor the outlet of petrol and display the appropriate amount to the customer. Even though everything is automated, customers have to collect the money and there is a high possibility of human error while handling hard cash. Our Project is designed in such a way that the person need not worry about carrying the cash with himself/herself. A Smart card, which contains an RFID tag is given to the customers and the petrol pump will have an RFID Reader and payment can be made through the RFID Technology without any hard cash or Human interaction. In this way, human errors in calculation can be saved and efficient transactions can be carried out. These types of cards have been used in lots of applications including attendance management and employee registration systems in schools, workplaces, and large industries. The Smart card contains an Arduino Microcontroller, a voltage regulator. serial cable connections and an LED connection. LED works when information is been passed from the microcontroller when the RFID card is been scanned.

Keywords: Arduino Microcontroller, RFID Card, RFID Reader

Team -13

Smart Restaurant Using E-MENU and Waiter Robot

Shashank Kashyap H R
Dept of Electronics and Communication Engineering
K.S. Institute of Technology
Bengaluru, India
Kashyapshashank678@gmail.com

Shreyams DK
Dept of Electronics and Communication Engineering
K.S. Institute of Technology
Bengaluru, India
shreyamsdk@gmail.com

Shubham Kumar Singh A
Dept of Electronics and Communication Engineering
K.S. Institute of Technology
Bengaluru, India
Shubhamkumar.singhyaak@gmail.com

Sumukha Vasishta M R
Dept of Electronics and Communication Engineering
K.S. Institute of Technology
Bengaluru, India
Sumukhasumu2000@gmail.com

Dr.Dinesh Kumar DS
Associate professor
Dept of Electronics and Communication Engineering
K.S. Institute of Technology
Bengaluru, India
dineshkumards@ksit.edu.in

Abstract - Smart restaurants are innovative dining establishments that use advanced technology to enhance the customer experience. One key feature of a smart restaurant is the use of an electronic menu, which allows customers to browse and order dishes using a tablet or other electronic device. This can be more convenient for customers, as they can easily view the full range of options available and place their order without having to wait for a server. Another aspect of a smart restaurant is the use of waiter robots.

These robots are equipped with sensors and artificial intelligence that allow them to navigate the restaurant, interact with customers, and perform tasks such as delivering food and drinks to tables. Waiter robots can provide a more efficient and hygienic service, as they can be easily disinfected and do not need breaks. An electronic menu (e-Menu) and server robot system can potentially enhance the dining experience and improve the efficiency of a restaurant. The e-Menu provides customers with an interactive and visually appealing platform to browse and order dishes, including detailed information about ingredients and allergies. The server robot assists in taking orders and delivering food, allowing human staff to focus on other tasks such as cooking and customer service. The main aim is to automate and improve the ordering and billing processes in restaurants along with real time customer interaction and feedback.

Team -14

Tamper Proof Ration Disbursement System For Rural Areas

Amulya. R
ECE
K S Institute of Technology
Bengaluru, India
r.amulya.2001@gmail.com

Gayathri. R . Warrier
ECE
K S Institute of Technology
Bengaluru, India
gayathrirwarrier@gmail.com

Jagruti. Pai
ECE
K S Institute of Technology
Bengaluru, India
jagrutipai2001@gmail.com

Manu. N Kandra
ECE
K S Institute of Technology
Bengaluru, India
kandramanu@gmail.com

B Sudarshan
Professor, ECE
K S Institute of Technology
Bengaluru, India
sudarshan.bellary@gmail.com

Abstract— Traditional ration card system has evolved as a system of management of scarcity of food grains through the distribution of food grains at affordable prices. Over the years ration distribution has become an important inseparable unit of the government's policy to ensure that sufficient food grains have been supplied. However, Traditional units have undergone significant turnovers in terms of fraud, theft, and interference from middlemen. To overcome the above scenarios, we have initiated the development of our project that will contribute to digitizing the entire distribution unit such that there will be no room for fraud. The operation facility includes allocation within the state, identification of eligible families, issue of ration cards according to the database, and supervision of the functioning of fair price shops. Presently under the distribution system commodities namely wheat, sugar, oil, and kerosene are being allocated to the states for distribution.

Keywords –Firebase, MIT app Inventor, pumps, E-Ration, PIC microcontroller.

Team -15

Automatic Wall Painting Robot

Anitha.S
Dept of ECE,
KS Institute of technology
Bangalore, India.

Manogna.K.M
Dept of ECE,
KS Institute of technology
Bangalore, India.

Sindhu
Dept of ECE,
KS Institute of technology
Bangalore, India.

Ranjana
Dept of ECE,
KS Institute of technology
Bangalore, India.

Dr.Pooja S
Dept of ECE,
Assistant Professor
KS Institute of technology
Bangalore, India.

Abstract - In today's world decoration is most important in human life. Interior and exterior decoration of painting to the homes, offices, colleges and other buildings are most important part of society. Since, wall painting is a repetitive, exhausting and hazardous process which makes it an ideal case for automation.

The proposed system describes development of Automatic Wall Painting Robot in real time applications which helps to achieve low cost painting efficiently. It would offer the opportunity to reduce or eliminate human exposure in difficult and hazardous environments, avoids Human efforts, Saves human life in risky painting like high rise buildings, which would solve most of the problems connected with safety . It will suits for all types of walls. The system performs the painting process by the use of image captured by the colour sensor.The whole process in painting is controlled by Arduino module. Arduino module will control the DC motors, pully, paint roller and connecting shaft. The pully will helps in extending and retracting raisesthe connecting shaft and lowers it, respectively. The roller handle is mounted to the connection shaft.The robot can adjust itself infront of the wall and paint accordingly. Hence this saves humans life and provide user friendly application

Team -16

Robotic Nurse

Gowri S N
Dept. of ECE
K S Institute of Technology
Bangalore, India

Amruta
Dept. of ECE
K S Institute of Technology
Bangalore, India

Vaishnavi K
Dept. of ECE
K S Institute of Technology
Bangalore, India

Nidhi S
Dept. of ECE
K S Institute of Technology
Bangalore, India

V Sangeetha
Dept. of ECE
Assistant professor
K S Institute of Technology
Bangalore, India

Abstract - The technology advancements has led to rise in robots in many fields such as we used in healthcare applications. The microcontroller used in this is Arduino in which input pins are the APR33A3 module, SPO2 sensor, pulse rate sensor, temperature sensor, emergency switch for emergency condition, the power supply is given for the movement of the robot and dispensing of the medicine. The robot attends every patient in which the instructions is sent from the mobile app through wifi module to Arduino , it stores the health parameters of patient and send it to the doctor through sms. It also helps the patient in taking the medicine in time to time. The model of robotic nurse is to reduce the workload of nurses and doctors and not making them not to get infected , this robotic nurse helps in health care departments like hospitals, emergency wards, isolation wards.

Team -17

Voice Controlled Personal Assistant Robot

Sai priya .T.S
Student
Departmentof Electronics and Communication Engineering,
KS Institute of Technology
KS Institute of Technology
Bengaluru, INDIA

Tejashwini .P.V
Student
Department of Electronics and Communication Engineering,
KS Institute of Technology
KS Institute of Technology
Bengaluru, INDIA

Pokuri Mounika
Student
Department of Electronics and Communication Engineering,
KS Institute of Technology
KS Institute of Technology
Bengaluru, INDIA

Nisarga . K
Department of Electronics and Communication Engineering,
KS Institute of Technology
KS Institute of Technology
Bengaluru, INDIA

V. Sangeetha
Assistant Professor
Department of Electronics and Communication Engineering,
KS Institute of Technology
KS Institute of Technology
Bengaluru, INDIA

Abstract - In this paper, a system is proposed that focuses on the concept of how to control a robot with a human voice. Voice-controlled robots are just a practical example of controlling simple robot movements by giving routinely-used voice commands. The system uses his Android app as his medium for sending human commands to the microcontroller. The controller can connect to the Bluetooth module using the UART protocol. Audio is received by Android app and processed by the speech engine. The speech is converted to text. The microcontroller further processes this text and takes appropriate measures to control the robotic movement.

Team -18

Solar Powered Automatic Street Light System

Aishwarya Basavaraja Kembavi
Dept of ECE
KS Institute of technology
Bangalore, India.

Akshitha
Dept of ECE
KS Institute of technology
Bangalore, India.

Anjali Y J
Dept of ECE
KS Institute of technology
Bangalore, India.

M Lokeshwari
Dept of ECE
KS Institute of technology
Bangalore, India.

Shruthi V Joshi
Dept of ECE
Assistant Professor
KS Institute of technology
Bangalore, India.

Abstract - Street lights play an essential role in ensuring the safety of any neighbourhood. Possessing proper functioning street lights is a sign of a well-maintained and safe neighbourhood. On the other hand, street lights are one of the significant power-consuming systems in our country. More innovations can be adopted into the traditional street lighting system. One of the ways to implement efficient power consumption is by incorporating the Internet of Things (IoT) and automation into street lighting systems. The proposed model is a combination of both efficient power generation and smart power consumption. By detecting the presence of people or vehicles, the street lights are made to glow at maximum brightness to minimize energy consumption. Thus, power consumption can be reduced by turning off the lights automatically, when there's no vehicle crossing by. In short, the street lights are controlled based on the traffic density. This paper also proposes the usage of renewable energy sources instead of conventional energy sources. Being environment friendly and a great relief to the problems overcome by excess power consumption, solar street lights are a major benefit for the society.

Team -19

Kissan Kiosk For Rural Areas

CHIRANTHANA YOGANANDA K
Dept. of Electronics & Communication Engg K S institute of Technology Bangalore, INDIA

SAI SIDDARTH
Dept. of Electronics & Communication Engg K S institute of Technology Bangalore, INDIA

HARSHA R
Dept. of Electronics & Communication Engg K S institute of Technology Bangalore, INDIA

MOHITH KUMAR G
Dept. of Electronics & Communication Engg K S institute of Technology Bangalore, INDIA

MR. CHRISTO JEYAN
Prof Dept. of Electronics & Communication Engg K S institute of Technology Bangalore, INDIA

Abstract - The Kissan-Kiosk is a computing unit that provides access to bill status, bill payments, agriculture updates, soil testing, and crop advisory for farmers. These kiosks were originally similar in appearance to telephone booths, but they have since been improved and expanded to better serve their customers. They are typically placed in high-traffic areas that are easily accessible to farmers, such as shops and hotel lobbies. With the integration of new technologies, Kissan-Kiosks are now capable of performing various functions, such as facilitating bill payments. For instance, these kiosks can enable users to pay electricity bills, water bills, phone bills, and more. Moreover, the application of Kissan-Kiosks can be extended to various platforms, including tourist places for guiding tourists, railway stations for displaying train information and ticket vending, hospitals for dispensing medicines, and educational institutions for disseminating campus information.

Team -20

Virtual Pen

AKSHAY KUMAR D
Dept. of Electronics & Communication Engg K S institute of Technology Bangalore, INDIA

KASHYAP P
Dept. of Electronics & Communication Engg K S institute of Technology Bangalore, INDIA

KRUTHIK S
Dept. of Electronics & Communication Engg K S institute of Technology Bangalore, INDIA

SNEHA N
Dept. of Electronics & Communication Engg K S institute of Technology Bangalore, INDIA

Dr. REKHA N
Prof Dept. of Electronics & Communication Engg K S institute of Technology Bangalore, INDIA

Abstract - The basic idea of virtual pen is to develop a interface or the connection between the user and computer screen human interaction with the computer is not just bounded to keyboard , there are many other means like gesture,speech, expressions etc. Virtual pen is a system that serves on arduino and machine learning process. This virtual pen is the model where ,user can enter text on the screen by the holding the device in the hand which is a constituent of arduino and accelerometer, Thus making a motion or moving it in specific direction in air is read and displayed on the screen with

Team -21

PLASTIC BOTTLE AND METAL CAN COLLECTION AND REWARDING MACHINE

VIGNESH MUTHAIAH R
Dept. of ECE, KSIT
Bengaluru, India

VINUTH S REDDY
Dept. of ECE, KSIT
Bengaluru, India

YASHASWINI N
Dept. of ECE, KSIT
Bengaluru, India

MADALA VIVEK KUMAR
Dept. of ECE, KSIT
Bengaluru, India

MR. PRAVEEN A
Asst.Prof. of Dept. of ECE
KSIT Bengaluru, India

Abstract **-** In Today's world Plastics are used in a variety of disposable items, high-end technological components, etc. because of their practicality and production flexibility. Plastic waste management techniques are in demand due to the serious environmental issue that the global proportion of plastic waste has created. In order to successfully recycle plastic, it is necessary to improve resource recovery through effective sorting and collection systems. In order to achieve an ideal design and more efficiency, this study presented a three-step optimization process for a reverse vending machine (RVM), a compact automatic recyclable garbage sorter/collector system. Reducing pollution from plastics will require action and international cooperation to reduce plastic production, including through innovation, better product design, and the development of environmentally friendly alternatives, as well as efforts to improve waste management and increase recycling. To overcome such an issue, in this project, an automatic collecting bin with a reward feature is proposed as a plastic bottle and metal can collection and reward machine.

Keywords: Plastic, Plastic waste management, Metal can

Team -22

E-Passport Authentication using AI and IoT

Shamitha bijoor
Electronics and Communication Engineering,
KS Institute of Technology,
Bangalore, Karnataka.

Sinchana MN
Electronics and Communication Engineering,
KS Institute of Technology,
Bangalore, Karnataka.

Sushmitha S
Electronics and Communication Engineering,
KS Institute of Technology,
Bangalore, Karnataka.

Theerthana SR
Electronics and Communication Engineering,
KS Institute of Technology,
Bangalore, Karnataka.

Mr. Saleem S Tevarammani
(Assistant Professor)
Electronics and Communication Engineering,
KS Institute of Technology,
Bangalore, Karnataka.

Abstract- The present passport authentication in airports is the potential for human error and identity fraud. The current system relies heavily on manual verification of passport information by immigration officers, which can be time-consuming and prone to errors. Moreover, physical passport documents can be easily counterfeited or tampered with, leading to security breaches and identity fraud. An e-passport, also known as an electronic passport, is a travel document that contains a small electronic chip embedded in the cover, which stores and transmits the passport holder's personal information. The system will use combination of facial recognition and RFID technology. The RFID technology will be used to store and transmit passport information securely. The system includes a database to store the information about the passport holder. The weight of the luggage is checked, if it is more than the limit a buzzer is beeped else the weight of the luggage is displayed. The RFID card of the user is scanned, if it is valid then the face of the user is detected and recognized using algorithm. If both processes are valid then the details of the user which is stored in the databased will be displayed in the website using IoT. If the user card and face is not matched or if the face detected is unknown then the unauthorized person face image is captured and the photo is mailed to the concern mail ID. E-passport authentication is an essential part of the modern travel experience. With the rise of globalization and increased international mobility, it is crucial to have efficient and secure ways to verify the identities of travelers. The use of artificial intelligence (AI) and internet of things (IoT) technologies has opened up new possibilities for enhancing e-passport authentication.

Team -23

Power Generation on Highway by Using Vertical Windmill and Solar System

D Nayan
Department of ECE
K S Institute of Technology
Bangalore, India

Pradeep Gaded
Department of ECE
K S Institute of Technology
Bangalore, India

Pakash Chegore
Department of ECE
K S Institute of Technology
Bangalore, India

Rohan K R
Department of ECE
K S Institute of Technology
Bangalore, India

Ramya K R
Department of ECE
K S Institute of Technology
Bangalore, India

Abstract- In today's modern life, the demand on electricity is greater than the production of it. One of the biggest issues that has been realized is that natural resources are going to be finished one day and a replacement is to be found. In order to overcome such problems, the use of renewable energy sources is very important. Renewable energy sources such as wind and solar has gained command over the last few decades. The output of these sources depends on the weather conditions Hence if, there is a combination of two sources then the desirable electrical power can be produced.

The proposed hybrid power generation system uses wind and solar resources. The proposed system focuses on use of air on highway divider with the help vertical axis wind turbine. When the vehicle passed on the highway it produces a considerable amount of air due to its speed. This air tangentially strikes on the blade of the vertical axis wind turbine and it makes a rotation of the turbine in only one direction. The solar system is used to generate electrical energy. The electrical output of vertical axis turbine and the solar system is stored in a battery. This stored energy can be used for automatic street lighting, toll gates, etc.

Team -24

Tracking of Mobile Phones for Piracy Detection

Chandana L
Dept. of Electronics & Communication Engg.
K. S. Institute of Technology
Bangalore, INDIA

Danesh Raju V
Dept. of Electronics & Communication Engg.
K. S. Institute of Technology
Bangalore, INDIA

Dheemanth K N
Dept. of Electronics & Communication Engg.
K. S. Institute of Technology
Bangalore, INDIA

Priyanka K
Dept. of Electronics & Communication Engg.
K. S. Institute of Technology
Bangalore, INDIA

Surekha Borra
Professor, Dept. of Electronics & Communication Engg.
K. S. Institute of Technology
Bangalore, INDIA

Abstract **-** For many years, the entertainment business has struggled with the unlicensed copying and distribution of films. We suggest an innovative system that uses IP cameras, Python, and a regular computer to identify cases of piracy in real-time and notify the appropriate individuals in order to lessen this problem. Utilising a collection of photographs of the thing we want to detect as well as a specially created object identification model, our solution uses the YOLOv5 repository. The specially created model can offer bounding box data to show the precise placement of the object within the frame and is trained to identify particular things linked to piracy, including recording devices. The system also features a mail service that notifies the theatre owner or other appropriate parties of a piracy incident and provides them a photograph of the scene. This enables them to take immediate action. The system is made to work in real-time, so it can watch numerous live feeds from different cameras at once and immediately identify any instances of piracy. By doing this, it makes it possible to identify piracy instances quickly and effectively, reducing any potential costs to the entertainment sector. Compared to conventional anti-piracy strategies, the suggested solution provides a number of benefits. First of all, because it makes use of widely accessible hardware and software tools, it is a cost-effective option. Second, it has a high degree of accuracy since the specially created model may be taught to identify certain items linked to piracy, decreasing the possibility of false positives. Last but not least, the system is very scalable and can be installed across numerous theatres, offering a complete anti-piracy solution. We ran tests on multiple datasets to assess the performance of the suggested approach, and we analysed the findings using metrics like accuracy, recall, and F1 score. Our tests showed that the specifically created model obtained high levels of accuracy and could consistently identify real-time cases of piracy. In summary, our technology offers a very strong remedy for the enduring issue of piracy in the entertainment sector. The system can detect instances of piracy with high accuracy, enabling immediate action, by utilising commonly accessible hardware and software tools and a custom-built object identification model. The technology has the potential to drastically minimise losses to the entertainment industry since it is very scalable and can be used across several theatres.

Team -25

Anti-Counterfeit System for Theatres

Ashritha.R
ECE
K S Institute of Technology
Bengaluru, India
ashrithar2001@gmail.com

Dhanya Sukanth B.K
ECE
K S Institute of Technology
Bengaluru, India
dhanyasukanth007@gmail.com

Disha Shivani
ECE
K S Institute of Technology
Bengaluru, India
disha.shivani2001@gmail.com

Sahana S
ECE
K S Institute of Technology
Bengaluru, India
sahanagowda391@gmail.com

Dr. Surekha Borra
Professor, ECE
K S Institute of Technology
Bengaluru, India
borrasurekha@gmail.com

Abstract— Movie Piracy is increasing these days, and it has a profound impact on the economic growth of film industries all over the world. Hence curbing piracy has become a critical step in avoiding massive losses to the film industry. Through the years, piracy has developed into a threat to the film businesses. It has an economic impact on those who put in a lot of effort to produce movies. It is burdensome to prevent piracy from the viewer's end. An IR-LED based anti-piracy screen is set up in the suggested system in order to prevent illegal movie recording. Encrypting the movie file and allowing the decryption based on authorized user ID verification and OTP verification. This is done to secure the movie file and check that the authorized person is using the system. The databases of each and every theatre owner saved by producer. Upon receiving the one-time password (OTP) from the owner, the system is also set up to only enable authorized personnel to use it. We employ an anti-counterfeit screen made of IR LEDs which are invisible to human eyes that displays the location of piracy when the spectator tries to record the movie content. The method created is safe and deters illegal video recording by artificially reducing the quality of the recorded video. The developed sample screen and a security technique aid in a greater decrease in piracy.

Team -26

Fire Fighting Robot

Preetham G H
Department of ECE
K S Institute of Technology
Bangalore, India

Nithin D
Department of ECE
K S Institute of Technology
Bangalore, India

Pavan Kumar G R
Department of ECE
K S Institute of Technology
Bangalore, India

Praveen Kumar N
Department of ECE
K S Institute of Technology
Bangalore, India

Ramya K R
Department of ECE
K S Institute of Technology
Bangalore, India

Abstract - Expanding human populace and innovative improvement has prompt increment in flame mishaps and dangers. Unavoidable conditions and physical constraints of person make fire extinguishing a testing and demanding assignment. Fire extinguishing is an exceptionally unsafe undertaking and it might likewise include death toll. Robotics is the rising answer to ensure the safety of the surroundings and human lives. Fire extinguishing robot is an equipment model which can be utilized for extinguishing the fire amid flame mischances. It can decrease the blunders and constraints confronted by the people during the extinguishing process.

The proposed robot can seek the zone, find the fire, and extinguish it before it turns out to be out of control. It can explore the building while effectively checking for fire. It can be operated remotely by any individual from anyplace on the planet using mobile phone or a laptop. The proposed system has discovered its application in flame dousing operations amid flame mishaps where the likelihood of the servicemen to enter the fire inclined region is less.

Team -27

Hybrid Power Grid based on IOT

Srinivasan. M
Dept. of Electronics and Communication Engineering
K.S. Institute of Technology
Bangalore, India
E-Mail: srinivijay143@gmail.com

Gayathri. P. K
Dept. of Electronics and Communication Engineering
K.S .Institute of Technology
Bangalore, India
E-Mail: gayathripk213@gmail.com

Monisha. B. K
Dept. of Electronics and Communication Engineering
K.S.Institute of Technology
Bangalore, India
E-Mail: monishabk2001@gmail.com

N. Anila
Dept. of Electronics and Communication Engineering
K.S.Institute of Technology
Bangalore, India
E-Mail: anilaneera1503@gmail.com

Rekha N
Associate Professor
Dept. of Electronics and Communication Engineering K.S.Institute of Technology Bangalore, India
E-Mail: rekhan@ksit.edu.in

Abstract - With the growing energy demand, there is a requirement for an efficient and effective power grid management system. The use of Electric vehicles has also increased the requirement for a hybrid micro grid infrastructure. The conventional grid structure doesn't have the ability for data collection and data interpretation. Therefore, in this project we aim to develop a hybrid micro grid infrastructure that can cater the modern day needs by providing a solution to trade energy between neighbors, advanced electricity distribution system and hybrid grid for renewable sources. An Energy monitoring system for the end consumer that can track and display the real-time energy consumption data is developed. A peer-to-peer energy trading platform within a neighborhood or community, where users can trade energy with each other during power cuts is developed. Various sensors and actuators are being integrated using IOT technology to work as a single system. A smart meter with features such as real time billing and energy monitoring, and a high consumption warning system is provided. A web dashboard for the substation and an application for residential users to view the energy consumption data are created. An efficient and effective solution for energy monitoring and trading that helps to conserve energy and reduce costs is provided.

Team -28

Non-Invasive Thyroid Detection

Swathi U
Dept. of Electronics and Communication Engineering
K S Institute of technology,
Bangalore, India

Vandana S
Dept. of Electronics and Communication Engineering
K S Institute of technology,
Bangalore, India

Bhargavi Ananth
Dept. of Electronics and Communication Engineering
Asst.Professor, K S Institute of technology,
Bangalore, India

Abstract - The thyroid gland's ability to perform its functions is impacted by thyroid illness. Thyroid disease often comes in one of two forms: i) Hypothyroidism, which is characterized by (low function) and is brought on by insufficient thyroid hormones. ii) Overproduction of thyroid hormones, which results in hyperthyroidism (high function). Hypothyroidism can cause constipation, dry skin, slow heartbeat, low energy, weight gain, inability to withstand the cold, and weariness. The signs of hyperthyroidism include irritability, weight loss, a rapid heartbeat, heat sensitivity, diarrhoea, and thyroid enlargement. A portion of the neck may bulge, a condition known as a goiter, in both hypothyroidism and hyperthyroidism. The objective of this work is to create a low-cost smart sensing device that can measure the relative skin temperature, heart rate, and pulse of a human using a non-invasive technique for thyroid detection. It makes use of two separate sensors, one of which measures the patient's heartbeat, pulse rate and the other of which measures the relative difference in skin temperature. The variance detected by the sensors will be processed by the microcontroller. In this work, a heartbeat and pulse rate monitor built on an Arduino ide is used to count heartbeats per minute. Here, a Max30100 sensor is being operated, and when a finger is placed on it, it detects the heartbeat and pulse. This thyroid-detection method uses no pain or force.

Team - 29

Gesture Based Patient Need Alerting Smart Glove

CHAITRA .C
Electronics and Telecommunication
K S Institute of Technology
Bengaluru , INDIA

ROHIT KUMAR
Electronics and Telecommunication
K S Institute of Technology
Bengaluru , INDIA

SHREYAS .C R
Electronics and Telecommunication
K S Institute of Technology
Bengaluru , INDIA

SHWETHA .K
Electronics and Telecommunication
K S Institute of Technology
Bengaluru , INDIA

Mr SATISH KUMAR .B
Assistant professor
Electronics and Telecommunication
K S Institute of Technology
Bengaluru , INDIA

Abstract - Even after the advent of voice assistants, virtual assistants and other new technologies, many still struggle to use them effectively and practically. Our project is mainly applicable to old people, physically challenged, and bedridden people.

Our project application areas are hospitals and old age homes. During emergency situations where the user is not able to access his/her mobile phone, our prototype can handle such situations effectively by detecting the user's hand gestures and sending alerts to caretakers and hospitals. Our model also has a medical alert system. According to the prior initialization of the time for the medicines to be taken, this prototype alerts the user at that exact time. The alarm message appears on the OLED and by an audible signal. This glove is equipped with an integrated temperature sensor, Flex sensors and pulse sensors that give continuous readings of the user's health parameters and are displayed on the OLED placed in the glove. The main feature of the glove is to communicate the needs of the user, which can be accomplished by a flex sensor.

Team - 30

AI Based Safeguards for Water Storage Bodies In Agricultural Land

Ankitha N
Dept. of ETE KSIT
Bengaluru,India

Litchitha M Gowda
Dept. of ETE KSIT
Bengaluru,India

Mruthyunjaya G
Dept. of ETE KSIT
Bengaluru,India

Vaishnavi S
Dept. of ETE KSIT
Bengaluru,India

Dr. Dinesh Kumar
Associate prof.,
Dept. of ETE KSIT
Bengaluru,India

Abstract - In present time, children fall in the Borewell due to the carelessness nature of the people in society. The currently available systems to save the child are less effective and costly too. Thus, society is in need of a new technique which is more efficient and effective. In most cases reported so far, a parallel hole is dug, and then a horizontal path is made to reach the child. It is not only a time taking process, but also risky in various ways. The borewell rescue system is capable of moving inside the same borewell where the child has been trapped and performs various actions to save the child. CCTV cameras are used to continuously monitor the child's condition. This system has a high-power LED which acts as a light source since light intensity inside the hole will be less. The advancement in the field of automation along with mechanical design has a great impact on society. This project includes a series of process development from hand drawn sketches to computer generated design. The modern equipment is implemented for various parts of the system, since the system performs a life rescue activity. The lightweight servomotors are implemented for the system's operations. Borewell rescue System is a human controlled computerized system embedded with additional safety devices.

Team - 31

INTELLIGENT GLOBAL HEALTH CARE MEDIBOX

Mahadev A C
Dept. Of Electronics and Telecommunication
KSIT
Bengaluru,India

Nelbin N
Dept. Of Electronics and Telecommunication
KSIT
Bengaluru,India

Niranjan S Rao
Dept. Of Electronics and Telecommunication
KSIT
Bengaluru,India

Rishi Kumar S
Dept. Of Electronics and Telecommunication
KSIT
Bengaluru,India

Dr. Chanda V Reddy
Prof. And HOD,Dept. Of Electronics and Telecommunication
KSIT
Bengaluru,India

Abstract - *Abstract* - Almost all our families have elderly parents and other members who suffer from some kind of ailments which can be cured or sustained by taking medications that are prescribed by a doctor.These medications must be taken at the right time for the body to react to the medication accordingly. Sometimes, elderly parents may forget or even find it difficult to take the right medication that is prescribed to be taken at a particular time.

In such circumstances, caretakers or children guide/remind them to take the right medicine at the right time. But in some cases where a caretaker is unavailable or the children are at their workplace and or carrying out their own activities, it may not be possible for the elderly parents or sometimes even sick members to take their medication appropriately.

This project aim is to prevent all of these issues and to sustain a person's well-being and excellent health by reminding them to take medication at a certain time as prescribed by their doctor. The major goal of the proposed system is to ensure that, patients take their medications at an appropriate time.

This system ensures that it fulfills the role of a caretaker by reminding the individual to take their medication on time. It sends message to caretaker when the medicine is not taken.