



Criteria 3: Research, Innovations and Extension


Key Indicator – 3.2 Research Publication & Award

3.2.1 Research Publications in the Journals notified on UGC website during AY: 2021-22

Sr. No.	Name of Dept.	Type (National / International)	Name of the teacher	Title of the paper	Title of the Journal /research Publication
1	Electronic & Telecommunication Engineering	International	Dr. S. B. Patil	Analysis of Supervised Machine Learning Techniques for Predicting Vehicle Clutch Status	International Conference on Communications and Cyber Physical Engineering
2	Electronic & Telecommunication Engineering	International	Dr. S. B. Patil	Preprocessing & Skull Stripping of Brain Tumor Extraction from Magnetic resonance Imaging Images Using Image Processing	Recent Trends in Intensive Computing IOS Press EBooks, Scopus
3	Electronic & Telecommunication Engineering	International	Dr. S. B. Patil	Maize Leaf Healthy & Unhealthy Classification Using Image Processing Technique & Machine Learning Classifiers	International Conference on Communications and Cyber Physical Engineering
4	Electronic & Telecommunication Engineering	International	Dr. S. B. Patil	A Literature Survey on Fault Investigation Methods of Voltage Source Inverter	International Journal of Creative Research Thoughts (IJCRT)
5	Electronic & Telecommunication Engineering	International	Dr. S. B. Patil	Comparative Study of Open Switch Fault diagnosis in Three Phase Voltage Source Inverter	Nero Quantology, Scopus
6	Electronic & Telecommunication Engineering	International	Dr. S. B. Patil	A Hybrid Approach for the Automated Classification & Grading of a Brain Tumor	Neuro Quantology, Scopus
7	Electronic & Telecommunication Engineering	International	Dr. S. B. Patil	Fault Diagnosis of Voltage Source Inverter Using Machine Learning Techniques	International Conference on Communications and Cyber(Spinger)
8	Electronic & Telecommunication Engineering	International	Dr. S. I. Nipanikar, Prof. R. S. Nipanikar	Image Recognition Using Machine Learning & AI	Sambodhi (UGC Care Journal)
9	Electronic & Telecommunication Engineering	International	Dr. S. I. Nipanikar	Advanced Face Detection Using Deep Learning & AI Based Algorithm	Spinger
10	Computer Engineering	International	Prof. B. D. Thorat	Skin disease detection using image processing	International Journal of image processing & pattern recognition
11	Computer Engineering	International	Prof. B. D. Thorat	Precision agriculture for Indian context using learning technique	International engineering research Journal Volume-03 Issue-04
12	Computer Engineering	International	Prof. B. D. Thorat	Smart local shopping system	E-commerce for future& trend volume-09 Issue-02

13	Computer Engineering	International	Prof. B. D. Thorat	Agricultural supply chain using BCT	Recent innovations in wireless network security volume- 04, Issue-01
14	Computer Engineering	International	Prof. K.S. Khamkar	Online Assessment & Proctoring system for candidate recruitment at workplace	Journal of open source developments volume-09 Issue-01
15	Computer Engineering	International	Prof. K. S. Khamkar	Forecasting stock market trends using ML	Journal of operating system intelligent & trend Volume-05 Issue-02
16	Computer Engineering	International	Prof. K. S. Khamkar	A smart approach for car parking using android	Journal of Advance research in mobile computing volume-04 Issue-01
17	Computer Engineering	International	Prof.S.B.Shirke	Classification of diabetic retinopathy using fractal analysis & random forest	Journal of advancement in image processing & pattern recognition Volume-05 Issue-02
18	Computer Engineering	International	Prof.S.B.Shirke	Automatic image tagging using adversarial learning	International engineering research Journal Volume-03 Issue-04
19	Computer Engineering	International	Prof.S.B.Shirke	Shaming tweet detection using ml	International journal of mobile computing volume-08 Issue-01
20	Computer Engineering	International	Prof. S. B. Shirke	Object and person recognition system for blind	Journal of open source developments volume-09 Issue-01
21	Civil Engineering	International	Prof. G. S. Yadav,	Four Step Travel Demand Modeling for Urban Transportation Planning	International Journal of Multidisciplinary Research in Science Engineering & Technology




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Analysis of Supervised Machine Learning Techniques for Predicting Vehicle Clutch Status



Sachin Vanjire and Sanjay Patil

Abstract Today, the automotive world uses various electronic components to inspect vehicle health. Data generated from the vehicle component can be utilized for different applications, such as diagnostics, maintenance, and prognostics (predictive diagnosis). There are satisfactory actions taken from the automotive world for vehicle On Board and off-board diagnostics to perform vehicle diagnostics and maintenance time. Due to human limitations for faster analysis and maintenance predictions, automizing electronics and data science can provide many possible solutions, such as various predictive diagnostics based on historical data. Many researchers are currently working with the different domains on machine learning, data science gives better results in medicine predictions. This can also apply to the automotive world and its applications. This paper contributes to the method based on regression models to predict clutch status based on different parameters acquired from the vehicle CAN bus system and electronic sensors. Various supervised machine learning methods like support vector machine, logistic regression, decision tree, and polynomial regression are used. The results obtained for these models are compared using the accuracy level to predict the vehicle clutch status.

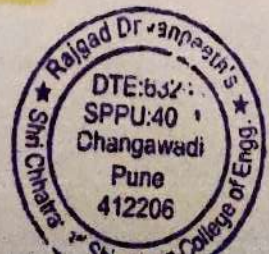
Keywords Vehicle clutch status · Vehicle maintenance · Supervised machine learning · Support vector machine · Logistic regression · Decision tree · Polynomial regression

1 Introduction

The automotive world is upgrading day by day with various forms of electronics. With different aspects, vehicle components are maturing sharply and perform intelligently based on the smart electronics system. Vehicle safety should be a significant

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Preprocessing and Skull Stripping of Brain Tumor Extraction from Magnetic Resonance Imaging Images Using Image Processing

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Abstract. Many neuroimaging processing functions believe the preprocessing and skull strip (SS) to be an important step in brain tumor diagnosis. For complex physical reasons intensity changes in brain structure and magnetic resonance imaging of the brain, a proper preprocessing and SS is an important part. The method of removing the skull is relayed to the taking away of the skull area in the brain for medical investigation. It is more correct and necessary techniques for distinguishing between brain regions and cranial regions and this is believed a demanding task. This paper gives detailed review on the preprocessing and traditional transition to machine learning and deep learning-based automatic SS techniques of magnetic resonance imaging.

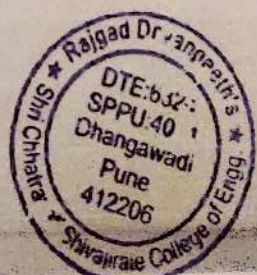
Keywords: Diagnosis, brain tumor, magnetic resonance image, machine learning, deep learning.

1. Introduction

In some parts of the human body, there is an unlimited growth of tumor cancer cells. There are different types of tumors that have specific specificities and different treatments. *Brain Tumors (BTs)* are classified as primary BT as well as metastatic BTs. The BT tends to stay in the brain even in the early stages, and then cancer tends to move to other parts of the body as well as spread to the brain. Actually, the majority utilized rating method has been declared by the WHO. It categorizes BTs into grade I to IV using the microscope. Premature detection of BT can be life-threatening, so diagnostic procedures have changed as needed. Medically, treatment for BT consists of surgical treatment, radiation treatment, or chemotherapy [1].

With the advancement of medical imaging, the efficiency of images plays an important role in the assessment of patients with BTs, besides; there is a significant power of patient anxiety. In modern times, increasingly new imaging methods such as Magnetic Resonance Imaging show the whole characteristics of BT and clinical doctors are developing to examine the BT method as desired. Treatment for BT involves surgery, radiation treatment, or chemotherapy. Medical practitioners play an important role in BT assessment, including treatment.

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Maize Leaf Healthy and Unhealthy Classification Using Image Processing Technique and Machine Learning Classifiers



Vishnu C. Khade, Sanjay B. Patil, and Sachin B. Jadhav

Abstract Automatic detection of the healthy and unhealthy maize plant leaf is a prevalent machine vision learning task and has significant applications in the Food Industry. In this paper, effective machine learning technique for maize leaf healthy and unhealthy classifications based on leaf images that have been presented. This study estimates color feature extraction using RGB mean and standard deviation and the classification, using PNN and KNN methods. A new Five-stage image processing method is presented (including image pre-processing, image segmentation, feature extraction, classification, and performance analysis). The Experimental results show that a small set of RGB color features reach an accuracy of 92.5% and 90% using PNN and KNN classifier respectively, while doing classification the KNN classifier requires more computational time as compared to PNN Classifier.

Keywords Classification · Feature extraction · Machine learning · PNN · KNN

1 Introduction

In the domain of agricultural data, the automatic detection and analysis of maize leaf diseases is extremely desired [1]. It is observed that diseases and nutrition deficiency are major causes of production and economic losses in agriculture. Unfortunately, diseases have caused a great deal of loss in yield, and disease is considered as one of the main culprits, reducing yield by between 60 and 100% [2]. Currently, the use of pesticides and deployment of blast-resistant cultivars are the main methods of combating the disease. So, it is essential and important to identify, classify and control the various disease and nutrient deficiency in successful farming system. In

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A. Kumar and S. Mozar (eds.), ICCCE 2021, Lecture Notes in Electrical Engineering 828, https://doi.org/10.1007/978-981-16-7985-8_75





A LITERATURE SURVEY ON FAULT INVESTIGATION METHODS OF VOLTAGE SOURCE INVERTERS

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Abstract: Industrial power electronics applications, Voltage source Inverter (VSI) has significant role including variable speed ac drives. But performance of the VSI degrades because of faults occur in it. One promising fault in inverter is open circuit transistor fault. Knowledge of fault mode is mostly important to improve performance of VSI. This paper discussed a literature survey on current methods for fault diagnosis and protection of switching transistors with unique focus on those used in three-phase power inverters. Finally, the capable methods are suggested for future work

Index Terms - Voltage source inverter, open circuit fault

I. INTRODUCTION

Currently Industrial Power electronics technology has been broadly used in the areas of smart grids, new power generation, rail traffic, of which Voltage Source Inverters (VSIs) play a most important role. Voltage source inverter has well-known characteristics as high performance, high accuracy, density, robustness and high reliability. VSI has been typically utilized in electric vehicles, aerospace, medical and military applications [1]–[6]. The failure of VSIs may result into shut down of industrial processes. Such shut down results into loss of efficiency, leads to security and green problems which disturbs the organization status. Thus, today's researchers have interesting research area on condition monitoring and fault diagnosis of three phases VSI

It has been observed that different types of faults can occurs in VSI, 38% faults in VSI are caused due to failure of power devices, electrolytic capacitors, and other electronic components [7]. The core components involved in power conversion are power switches such as Insulated Gate Bipolar Transistor (IGBT) or Metal Oxide Semiconductor Field Effect Transistor (MOSFET). Three phases VSI have six powers switches. The breakdown of these power switches can be mostly classified [8] as:

- a. Short circuit fault (SCF),
- b. Misfiring fault (MF) and
- c. Open Circuit Fault (OCF).

The prime cause for the introduction of SCFs is caused by incorrect voltage levels at the gate terminal. One more reason for SCF could be an fundamental failure caused by overvoltage or avalanche stress. In the SCF, the VSI cannot be operated for a longer time and a repair is essential. The SCFs take place rapidly and IGBT can sustain against this fault for 10 μ sec [9]. Hence, it is hard to identify SCFs using algorithmic techniques as protection time is very small. There are hardware based protection circuits which are embedded in the integrated circuit and believed that switching devices are short circuit protected. MFs are caused due to missing transistor gate pulses which result in poor performance of devices. The electrical system can work with OCFs but system performance is drastically reduced. The OCFs can be diagnosed under partial fault working conditions of VSI without the stoppage of the system to avoid system failure. The most important purpose of this paper is to carry out a widespread survey of existing methods of fault diagnosis of open circuit fault of three phase voltage source inverter.

I. THREE PHASE INVERTER

Construction of three phases VSI using IGBTs are shown in Fig1. Three phase inverter is formed by connecting three single-phase inverters. To obtain three phase balanced voltages the gating signal has to be displaced by 120° with respect to each other. By forming arrangement of six transistors and six diodes a 3-phase output can be achieved. Two type of control signal can be applied to transistors; they are such as 180° or 120° conduction. Open circuit fault in T1 to T6 occur due to switches S1 to S6 respectively as shown in Figure. 1.



Comparative Study of Open Switch Fault diagnosis in Three Phase Voltage Source Inverter

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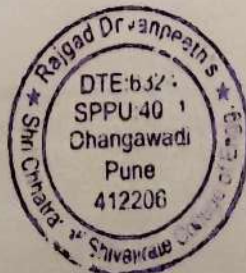
4865

Abstract

The fault diagnosis followed by corrective measures involves the human interlinking at every step and it turned out to be a most excellent problem for *Artificial Intelligence*. In the multiple cases the probability of fault occurrence articulated is vague and not completely defined. The maintenance engineer during condition based monitoring has to apply intelligence to get realistic decisions depending on *vast available data*. The fault diagnosis problems are *knowledge based* on one side and *rule based* on the other side. This gives challenging opportunity to pertain theory and idea of Artificial Intelligence in the process of fault diagnosis. This paper presents the recent techniques of fault diagnosis systems based on *Fuzzy Logic and Artificial Neural Networks*. The wavelet transform is very good tool for analysis of non-stationary signals in fault detection process as compared to Fourier Transform, Short Time Fourier Transform or other techniques of signal processing. Selection of the mother wavelet and the selection decomposition level of signal are more crucial problems in wavelet analysis. Hence in this paper the selection of mother wavelet and level of decomposition for analysis of nonstationary signal is discussed with the help of time domain waveforms. Fault diagnosis of Voltage Source Inverter, a complex electrical system is considered as case study. To study the combined approach of Wavelet Transform-Fuzzy logic and Wavelet Transform-Artificial Neural Networks with their advantages and disadvantages in fault diagnosis is main objective of this paper.

Keywords: Fault diagnosis, voltage source inverter, signal processing techniques, wavelet transform, artificial intelligence, fuzzy logic, artificial neural networks.

DOI Number: 10.14704/nq.2022.20.5.NQ22763 NeuroQuantology 2022; 20(5):4865-4884





A Hybrid Approach for the Automated Classification and Grading of a Brain Tumor

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Abstract:

This work highlights approach of image segmentation for automatic brain tumor diagnosis. Image segmentation can be reflected as of the utmost importance as well as a serious method for helping the demarcation, classification, and conception of regions of interest in any medical image. Notwithstanding the depth investigation, segmentation due to various image consist is an exciting problem, disorganized objects, barrier, image noise, etc. In this paper, an effective segmentation technique on MRI using K-Means Integrated with Fuzzy C-Means is proposed. In the pre-processing step, the illumination and reflectance components are extracted from the MRI with the help of the homomorphic filtering process. The combination of Mathematical Morphological Operations and an image filtration method is used to enhance the result of the edge detection and to provide better tissues separation. The two methods of clustering are combined for segmentation like K-means clustering and Fuzzy C Clustering are used. The performance of the proposed method has been assessed by comparing the results with the real truth of every processed MR image. The experimental results like accuracy, precision, and recall illuminates the efficiency of suggested method.

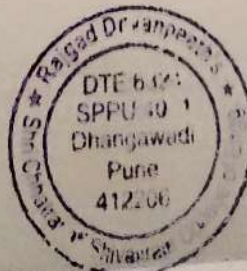
4849

Keywords: Brain tumor, Integrated clustering, K-Means clustering, Fuzzy C-Means clustering
DOI Number: 10.14704/nq.2022.20.5.NQ22762 **NeuroQuantology 2022; 20(5):4849-4864**

1. Introduction

The Brain Tumor (BrTr) is identified by several methods such as Computerized Tomography (CT) scan, electroencephalogram (EEG), but Magnetic Resource Image (MRI) is the most successful and commonly applied technique [1]. MRI uses commanding with useful magnetic fields as well as radio waves for internal imaging of body organs. MRI presents more detailed information about the organs and makes it more capable than CT or EEG scanning [2].

The preprocessing process with the up-to-date methods of MRI is reviewed. The MRI preprocessing actions are initiated as it is straightforwardly related to the superiority of the segmentation outcomes [3]. Different Skull Stripping (SS) algorithms are proposed namely manual, semi-automatic, and automated algorithms. Automatic SS greatly improves the accuracy with the effectiveness of neuroimaging algorithms. The results of novel Deep Learning (DL) based skull stripping algorithms are more accurate and precise than usual presented methods [4].



Fault Diagnosis of Voltage Source Inverter Using Machine Learning Techniques



Vaishali Sonawane, Sanjay B. Patil, and R. B. Dhumale

Abstract This paper proposed the technique for fault diagnosis of open circuit faults in three phase voltage source Inverter (VSI). Fault diagnosis is determining which fault occurred. Fault diagnosis (FD) methods of the power converter are implemented using Park's Vector Transform, Discrete Wavelet Transform, Artificial Neural Network, Fuzzy Logic, etc. These methods are implemented needs to train machine learning based algorithm which needs to features extraction as well as features selection. This work proposes an open switch fault diagnostic method in a three-phase voltage source inverter to minimize volume of selected features to diagnose faults.

Keywords Fault diagnosis · Voltage source inverter · Open circuit fault · Artificial neural network

1 Introduction

Consistency has always been a significant feature in the evaluation of engineering manufactured goods as well as apparatus. High-quality manufactured goods design is certainly important for manufactured goods through high consistency. On the other hand, no issue how superior the manufactured goods drawing is, manufactured goods worsen over time as they are working under definite stress or load in the genuine surroundings, frequently concerning uncertainty. Maintenance has, consequently, been initiated as a proficient method to guarantee an acceptable level of dependability throughout the functional life of a physical benefit. New well-organized maintenance

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A. Kumar and S. Mozar (eds.), ICCCE 2021, Lecture Notes in Electrical Engineering 828, https://doi.org/10.1007/978-981-16-7985-8_25

Spain Chapter Notes 2021



IMAGE RECOGNITION USING MACHINE LEARNING AND AI

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ABSTRACT

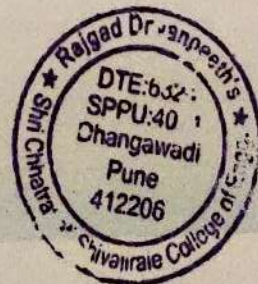
With the improvement of AI for a really long time, there are as yet numerous issues inexplicable, for example, picture acknowledgment and area location, picture grouping, picture age, discourse acknowledgment, normal language handling, etc. In the field of profound learning research, the examination on picture grouping has forever been the most fundamental, conventional and critical exploration bearing. Simultaneously, PC clever picture acknowledgment innovation is likewise helpful for step by step better answer the improvement of global pointers, and advance the turn of events and progress of different fields. Thusly, picture handling innovation in view of AI has been generally utilized in highlight picture, grouping, division and acknowledgment, and is a problem area in different fields. Nonetheless, because of the intricacy of video pictures and the appropriation of articles in various application foundations, the characterization precision becomes significant and troublesome. In the paper transportation industry, picture acknowledgment innovation is applied to tag acknowledgment to separate tag from complex foundation, portion tag characters and perceive characters, and build an AI non tag programmed age calculation, which might work on the effectiveness of non-tag acknowledgment. To work with PC handling, diminish the assets involved by the PC, and speed up the activity, the variety picture is first grayscale before computerized picture handling. For the most part, the dim level of the grayscale picture is a dim level, and the splendor can be separated into 0 to 255 levels, 0 is the haziest all dark, and 255 is the all-white. As of now, the most developed innovation application is the RGB variety mode. The computerized picture addressed by the RGB mode has three picture parts, and the RGB upsides of three pixels of every pixel individually mirror the splendor upsides of the three tones at the pixel. The genuine variety addressed by the pixel is the aftereffect of the variety superposition of three unique brilliance's. Since there are 256 sorts of values for each tone, there are in excess of 16 million ($256*256*256$) variety varieties per pixel. Nonetheless, after change to a grayscale picture, there are just 256 varieties of every pixel so how much calculation of the PC can be incredibly diminished.

KEYWORDS: Image, Recognition, Machine, Learning, AI.

INTRODUCTION

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ACCEPTANCE LETTER

Date: 06 May 2022

Dear Author,

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Dr. Santosh D. Parakh, Associate Professor, Masters in Computer Application (MCA)
Department, Vidya Pratishthan's, Institute of Information Technology (VIIT), Baramati, Dist.
Pune, Maharashtra, India. Email: santoshparakh@gmail.com

Thank you very much for your submission to our journal.

We are pleased to inform you that your paper has been reviewed, and accepted for publication in Aug, 2022 of the journal based on the Recommendation of the Editorial Board without any major corrections in the content submitted by the researcher. This letter is the official confirmation of acceptance of your research paper.

Title: **ID-201-1**: Advanced Face Detection Using Deep Learning and AI- Based algorithm.

Springer Id- <https://www.springer.com/journal/13721/aims-and-scope>

Kindly acknowledge the Paper acceptance.

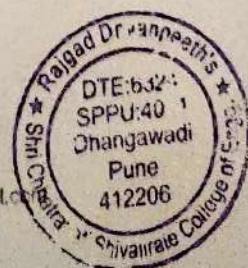


BKS and KPT

Editor-In-Chief, Network Modeling Analysis in Health Informatics and Bioinformatics
Founder and CEO, Research and Innovation, Technical Society of Design USA.

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Certificate of Publication

We acknowledge the manuscript

" Skin Disease Detection Using Image Processing "

Submitted by

B.D. Thorat

Published in International Journal of Image Processing and Pattern Recognition

Volume 08 Issue 01 Feb 2022



Amrut Mehrotra
Director's Signature

Precision Agriculture for Indian Context using Learning Techniques

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Prof. B. D. Thorat



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ABSTRACT

The agricultural industry is very important in the economic growth process. A Proper soil test will guarantee that enough fertilizer is applied to meet the crop's needs while also taking use of the nutrients already available in the soil, Soil analysis is a collection of chemical processes that identify not only the amount of available plant nutrients in the soil, but also the chemical, physical, and biological aspects of the soil that are vital for plant nutrition, or "soil health" Taking soil samples, Laboratory analysis of samples and the interpretation of the results by the issuance of fertilizer recommendation is very lengthy process for farmers. So we've created a soil analysis system Using technology in agriculture results in higher yields and better final product quality. This machine learning algorithm provides a best crop and its required fertilizers as a solution, allowing farmers to make more money by producing the system's recommended crop.

Keywords- CNN (Convolutional neural network), Machine Learning, Prediction

ARTICLE INFO

Article History

Received: 21st May 2022

Received in revised form :

21st May 2022

Accepted: 24th May 2022

Published online :

25th May 2022

I. INTRODUCTION

Agriculture is the primary source of income in India. India is additionally called as agricultural country. In India 50% man force is involved in agriculture activities. The soil is the most important and basic thing in agriculture. However, due to the usual procedure, farmers are increasingly employing it as well. farmers didn't get satisfactory results means the amount of crops isn't increasing to extend the amount of crops need good quality of soil. So soil testing is completed. Soil testing is very important instead of the most task of farming the assembly and quality of crops totally rely on the soil. Soil testing is crucial because it gives information on all nutrients which present within the soil like Ca (Calcium), K (Potassium), and N (Nitrogen). Farmers in India, especially many regions in Maharashtra state faces drought tanks to which their crop and yielding are becoming degraded. In unsuccessful for his or her repayment of the loan amount they try and suicide. It's the most reason for increasing suicide cases. To assist the farmers to choose the crop to be plow for his or her benefits we motivated to make this method. We design the system with the help of cutting edge technologies. We use machine learning to form the

system. There are different soil kinds and every kind has different features for various crops Different strategies and models are now being used in this industry to improve the number of crops. As a result, the major goal of this technique is to create a model that will assist farmers in determining which crop will best absorb a certain type of soil. We are utilizing machine learning approaches in this system to help advise crops based on soil categorization or soil series. The model merely proposes soil type, and based on that, it can suggest appropriate crops Different classifiers are utilized in this, and the crop is suggested by the model.

II. PROBLEM STATEMENT

One of the most challenging tasks for humans is determining the sort of crop that is suitable for the soil. Design and Implement Desktop Based Model for Suggestion of crop and Fertilizers using Python.

III. LITERATURE SURVEY

Agriculture Soil Analysis for Suitable Crop Prediction (Institute of Electrical and Electronics Engineers IEEE May

12



Certificate of Publication



12

We acknowledge the manuscript

E-commerce Website for Small Scale Businesses with Neighborhood Shop and Product

Recommendation System

Submitted by

B.D. Thorat

Published in..... E-Commerce for Future & Trends

ISSN.. 2454-9347 .. Year... 2022 .. Volume... 09 .. Issue..... 02 ..



Archana Mehalka
Director's Signature

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5

CERTIFICATE OF PUBLICATION

HBRP
Publication

We Acknowledge the Manuscript entitled

Agricultural Supply Chain using BCT

Submitted by

B.D. Thorat

has been published in

Recent Innovations in Wireless Network Security

Volume 04 Issue 01 Year 2022



With regards,
Aditya Kumar Anand
Managing Director,
HBRP Publication Pvt.



Certificate of Publication



We acknowledge the manuscript

Online Assessment and Proctoring for Candidate Recruitment at Workplace

Submitted by

K.S. Khamkar

Published in *Journal of Open Source Developments*

ISSN.. 2395-6704 .. *Year*.. 2022 .. *Volume*.. 09 .. *Issue*.. 01 ..



Archana Mehrotra
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HBPR
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We Acknowledge the Manuscript entitled

Forecasting of Stock Market Trends using Machine Learning Techniques

Submitted by


Prof. K.S.Khamkar

has been published in

Advancement of Computer Technology and its Applications

Volume 05 Issue 02 Year 2022




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Publication

We Acknowledge the Manuscript entitled
A Smart Approach for Car Parking Using Android

Submitted by

K.S.Khamkar

has been published in

Journal of Advance Research in Mobile Computing

Volume 04 Issue 01 Year 2022



A handwritten signature in black ink, appearing to read "Aditya Kumar Anand".

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Publication

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We Acknowledge the Manuscript entitled

Detect-DR: Classification of Diabetic Retinopathy using Fractal Analysis and Random Forest

Submitted by

S. B. Shirke

has been published in

Advancement in Image Processing and Pattern Recognition

Volume 05 Issue 02 Year 2022



Aditya Kumar Anand
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Aditya Kumar Anand
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Published in *International Journal of Mobile Computing Devices*

Volume *08* *Issue* *01* *Feb.* *2022*



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Object and Person Recognition System for Blind

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Pratiksha S. Khopade^{1*}, Pratiksha S. Raut², Shrutika S. Bhaskare³, Rohini V. Nannaware³,
S.B. Shirke⁵

Abstract

Natural and man-made disasters present a wide range of challenges, which are amplified for people with disabilities. In most cases, assistive technology devices and services assist the disabled in performing daily tasks; yet, these are commonly restricted during and after disasters. One potential approach for people with vision impairment is a cost-effective wearable 'Object detection.' The Object detection provides environmental narratives while also establishing communication between the visually impaired user and a huge online knowledge base system capable of vocalizing narratives. This research is carried out as a proof-of-concept using Python OpenCV and a webcam. The study's goal is to create assistive technologies that will help visually impaired people navigate their way out of potentially hazardous situations. Object detection is a branch of computer vision that finds instances of semantic objects in images and videos (by creating bounding boxes around them in our case). The annotated text can then be converted into voice responses, which provide the basic positions of the objects in the person's camera's view. We will use our webcam to feed images to this trained model at 30 frames per second, and we can set it to only process every other frame to speed things up.

Keywords: Python OpenCV, Web cam, YOLOv3 algorithm, Object detection, Blind people

INTRODUCTION

Natural and man-made disasters are becoming more common on our planet every day (Bar-El et al., 2013) [1], and no culture can claim to be immune to them. Most countries have begun to focus on disaster management plans by emphasising disaster risk reduction and improving the readiness of various organisations; in New Zealand, the Civil Defence Emergency Management Act 2002 highlights the importance and emphasis on preparedness requirements and plans (Ministry of Civil Defence and Emergency Management, 2002 [2]; New Zealand Legislation, 2017) [3]. These programmes, on the other hand, are deemed to be more effective if all citizens' interests and wishes are considered and met. In other words, the strategy necessitates widespread engagement and collaboration (Duncan, Parkinson, & Keech, 2018) [4]. The majority of countries have begun to focus

on disaster management plans, emphasising disaster risk reduction and improving various organisations' preparedness; in New Zealand, the importance and preparedness of various organisations has been emphasised. Some marginalised groups, such as physically handicapped people, have additional resources. Low-vision persons cannot experience the world in the same way that those with normal vision can. The inability to move between locations as easily as persons with normal eyesight is a severe problem for this group. These individuals have access to a number of assistive technological devices and supportive services in non-disaster settings, yet, in disaster scenarios, these gadgets

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Received Date: May 20, 2022
Accepted Date: May 25, 2022
Published Date: May 31, 2022

Citation: Pratiksha S. Khopade, Pratiksha S. Raut, Shrutika S. Bhaskare, Rohini V. Nannaware, S.B. Shirke. Object and Person Recognition System for Blind. Recent Trends in Programming Languages. 2022, 9(1): 24-28p



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