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3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during Calendar year 2023

List of Books/Chapters/Papers Published in National/ International Conference

Sr. No.	Name of the Teacher	Title of the Paper/Book/ Chapters Published	Title of the Conference/Publisher	Department
1	Prof. P G Sonar	Construction Techniques	Nirali Prakashan	Civil Engineering
2	Prof. P G Sonar	Engineering Economics	Nirali Prakashan	Civil Engineering
3	Prof. P G Sonar	Construction Economics and Finance	Nirali Prakashan	Civil Engineering
4	Prof. P G Sonar	Advanced Transportation Engineering	Nirali Prakashan	Civil Engineering
5	Prof. S S Manal	Engineering Mechanics	GCS Publishers	Civil Engineering
6	Prof.A B. Adhe	Mathematics and Computing	Springer Nature, Singapore.	First year Engineering
7	Dr. Y.H. Bhosale	ECG-CCNet: Cardiovascular (Cardiac) and COVID-19 Disease Classification Using Deep Convolutional Neural Network Learning Pipeline Approaches From Electrocardiography (ECG)-A Study	IEEE	Computer Science & engineering
8	Dr. Y.H. Bhosale	Graph and Capsule Convolutional Neural Network Based	IEEE	Computer Science & engineering

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		Classification of Lung Cancer, Pneumonia, COVID-19 using Lung CT and Ultrasound Radiography Imaging		
9	Dr. Y.H. Bhosale	Bio-medical imaging (X-ray, CT, ultrasound, ECG), genome sequences applications of deep neural network and machine learning in diagnosis, detection, classification, and segmentation of COVID-19: a Meta-analysis & systematic review	Springer	Computer Science & engineering
10	Dr.Syed Sumera Ali	Multi-Plant and Multi-Crop Leaf Disease Detection and Classification using Deep Neural Networks, Machine Learning, Image Processing with Precision Agriculture- A Review (Technical Paper)	IEEE	Electronics & Telecommunication Engineering
11	Dr. P. R. Wankhede	Fast Polar Decoder Implementation using Special Nodes	IEEE	Electronics & Computer Engineering
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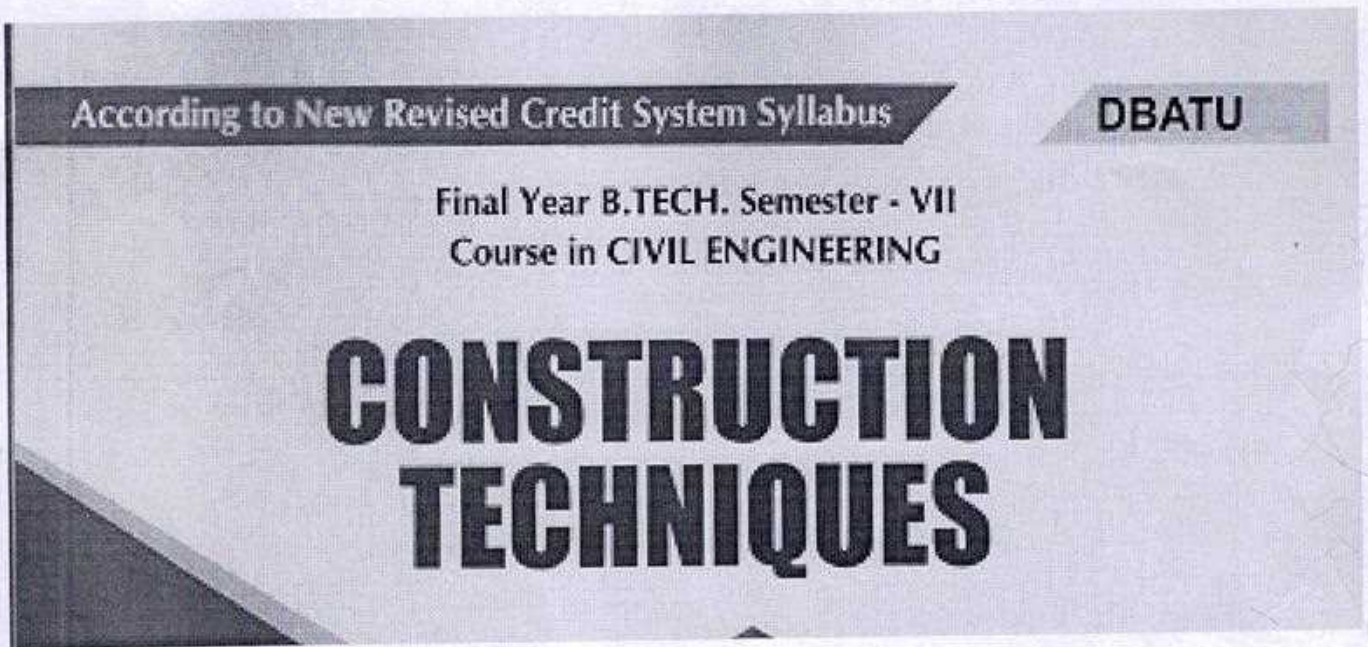
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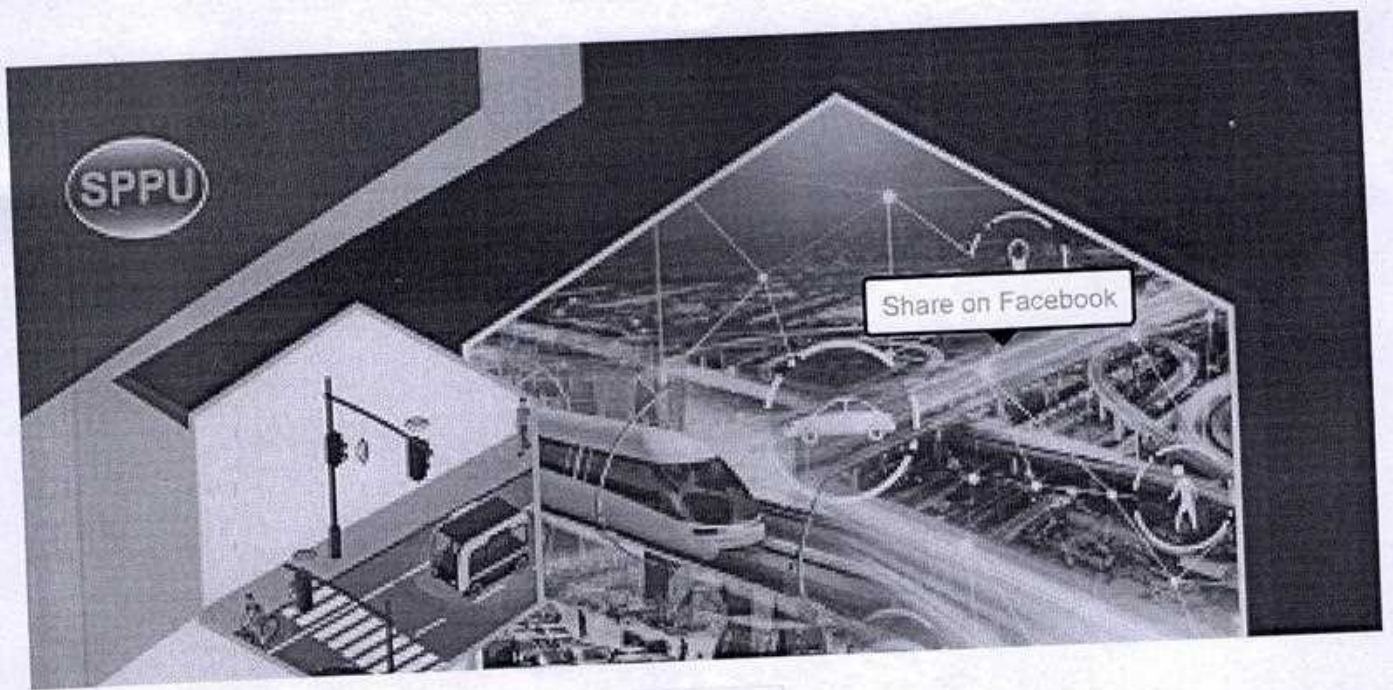
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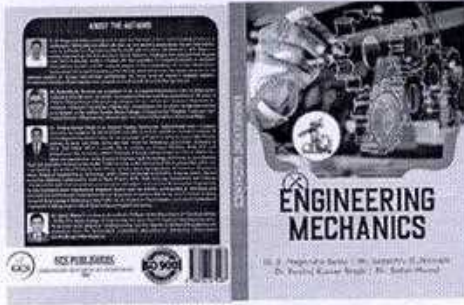30% OFF
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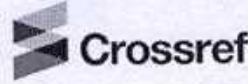
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Thermal Stress Analysis of Inhomogeneous Infinite Solid to 2D Elasticity of Thermoelastic Problems

Abhijeet Adhe and Kirtiwant Ghadle

Abstract This paper is developed to study an analytical solution of thermal stresses to the plane elasticity of thermoelastic problems for inhomogeneous materials with internal heat generation. Here, the original problems are reduced to set the governing equations by use of the method of direct integration. Further using the iteration techniques, the governing equations are reduced to integral equations. The numerical calculations have been performed with the aid of the iterative method, which gives the rapid convergence. The distribution of Young's modulus and shear modulus, and the dimensionless stresses, are shown graphically. An explicit solution is derived which will be more useful for analysis of stress field in an isotropic inhomogeneous solid.

Keywords 2D elasticity problems · Thermoelastic problems · Inhomogeneous solid · Direct integration method · Iterative technique · Analytical solution · Exact solution

1 Introduction

Thermoelasticity comprises the theory of heat conduction and the theory of stress and strain due to heat flow, when coupling of temperature and strain field takes place. Also, it contains the study of temperature distribution, stress, and strain developed in a material. A study of thermal stresses is essential in many applications. Thermal stresses in a material are one of the prime factors, which affect the life of a material. The determination of thermal stresses caused by an involvement in a medium is classical problem. The interest of researchers to study elasticity and thermoelastic

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ECG-CCNet: Cardiovascular(Cardiac) and COVID-19 Disease Classification Using Deep Convolutional Neural Network Learning Pipeline Approaches From Electrocardiography(ECG)- A Study

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Abstract- Experimental studies demonstrate that COVID-19 illness affects the cardiovascular as well as the pulmonary / lung tract. The limits of existing COVID-19 diagnostic procedures have been revealed. In contrast, to present diagnoses, such as low-sensitivity conventional RT-PCR testing and costly healthcare scanning equipment, implementing additional approaches for COVID-19 illness assessment would be advantageous for COVID-19 epidemic management. Furthermore, problems generated by COVID-19 on the cardiovascular tract must be detected rapidly and precisely using ECG. Considering the numerous advantages of electrocardiogram (ECG) functionalities, the proposed study offers a novel pipeline termed ECG-CCNet for examining the feasibility of employing ECG pulses to diagnose COVID-19. This study is a two-phase transfer learning (TL) approach is suggested for the prognosis of COVID-19 disorder, which includes feature mining utilizing DCNNs models and ensemble pipelining using ECG tracing imageries generated from ECG signals of COVID-19 diseased sufferers relying on the anomalies induced by COVID-19 pathogen on cardiovascular structures. A complete classification performance of 93.5% accuracy, 87% recall, 87.03% F1-score, 95.66% specificity, 87.16% precision, and 95.33% AUC attained by abnormal heartbeats, COVID-19, myocardial, and normal/healthy classification. This experiment is considered a high possibility for speeding up the diagnostic and treatments of COVID-19 individuals, reducing practitioners' efforts, and improving epidemic containment by utilizing ECG data.

Keywords- Electrocardiography (ECG) trace image, Deep learning, cardiovascular diseases diagnosis, Convolutional neural networks (CNN), COVID-19 detection & Classification, Biomedical image signal processing.

I. INTRODUCTION

Coronaviruses are a vast viral subfamily that can produce a variety of illnesses in both mammals and mankind. COVID-19 originally surfaced at the start of December 2019 in Wuhan region, China; it has since expanded at an extraordinary rate around the continent [1]. Fever, coughing, and breathlessness are the most prevalent indications. Tuberculosis, chronic lung failure, kidney failure, pneumonia, and mortality may occur in extreme situations. As of 20 June 2022, the 533 million cases worldwide, with 6.3 million deaths due to COVID-19 [2]. Despite the fact that without viable treatment for COVID-19, which the WHO proclaimed an epidemic disease on 11 March 2020 [3], there have been encouraging advancements in antigen research. According to published resources, vaccine efficacy is relatively good, with 1186 million dosages of COVID-19 vaccine provided to the whole community in this article's drafting [3].

RT-PCR screening is currently the WHO official standardized approach for diagnosing COVID-19 [4]. Despite the fact that those testing are the benchmark due to their adequate sensitivity percentages, they have significant limitations. These require a lengthy timeframe to provide results, excellent laboratory conditions, and skilled experts to execute the examinations [5]. It may generate a poor outcome even if the individuals have identified COVID-19 [6]. Various alternative tests and procedures that produce quicker and more reliable findings are still being investigated. Biomedical screening using X-ray and CT scan modes is one of these ways employed for the rapid recognition of COVID-19. Lung X-rays and CT pictures conceal important knowledge that could aid in diagnosing lung illnesses. Many studies have established the existence of differences in chest radiography images recorded prior to the onset of COVID-19 signs. Furthermore, multiple investigations have shown that X-ray and CT scans are more reliable than PCR testing in diagnosing COVID-19 [7], [8], and [20]. Nonetheless, due to the closeness of COVID-19 characteristics with other kinds of pulmonary diseases, these approaches necessitate the involvement of a professional radiologist to diagnose in-hospital patients[9].

Although the COVID-19 primarily affects the circulatory tract, it impacts other essential human organs, including the cardiovascular system [9]. Computer vision algorithms based on deep learning(DL) are very successful and beneficial, particularly for diagnostics and monitoring. Cardiovascular changes [10,11] have promoted using ECG as a screening tool for COVID-19 assessment. Considering the numerous advantages of ECG use, such as mobility, accessibility, the convenience of use, affordable, harmlessness, and real-time inspection, the automated identification of COVID-19 using ECG may be of substantially worth in addition to PCR testing and thoracic X-ray or CT imaging. The cardio-vascular tract is an essential area in which the infection interferes with regular circulation. ECG physiologic impulses, on either hand, are an excellent predictor of pathological disorders in the heart and lungs. The usual approach to analyzing ECG imaging with DL approaches is retrieving handcrafted characteristics and constructing DL & ML classifiers. As an alternative to the present diagnosis techniques, a novel, safe, affordable, precise, rapid ensemble pipeline dubbed ECG-CCNet is proposed to aid in the automated analysis of cardiovascular and COVID-19.

The major contributions of the projected work are:

• The new method is based on 2-D ECG tracing imageries to detect cardiovascular and COVID-19, which is a unique technique for experimental analysis.

• ECG-CCNet extracts 2-levels of deep features from four DCNNs of distinct structures. The potential of using ECG

Graph and Capsule Convolutional Neural Network Based Classification of Lung Cancer, Pneumonia, COVID-19 using Lung CT and Ultrasound Radiography Imaging

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Abstract- Pulmonary / Lung nodules are a sign of lung cancer. Pneumonia, Lung nodules show up on imaging scans like X-rays, CT or ultrasound scans. The healthcare team may refer to the growth as a spot on the lung, coin lesion, or shadow. Coronavirus (COVID-19) has been identified as a worldwide epidemic, affecting individuals all over the nation. It is vital to identify COVID-19-affected persons to limit the virus's spread. According to the latest study, radiographic approaches can be used to diagnose contamination utilizing deep learning (DL) methods. Considering that DL is a valuable approach and methodology for image analysis, various studies on COVID-19 case detection utilizing radiographs to train DL networks have been conducted. Although just a handful of studies presume to have excellent prediction results, their proposed systems may suffer from a restricted amount of data. Employing graph and capsule, Convolutional Neural Network (CNN) can overcome the shortcomings by predicting multiple disorders using a single network implemented in a hospital. We present a novel comparative method that has paved the way for an open-source COVID-19 case classification approach based on graph and capsule images with CT and ultrasound. Experimental results show that the Capsule network attained the best 98.93% AUC, 99.2% accuracy, 98.4% F1-score, 98.40% sensitivity, 98.40% specificity, 98.41% precision using CT labels. Whereas the ultrasound test set the graph network performed well with 96.93% AUC, 97.26% accuracy, 95.92% F1-score, 95.90% sensitivity, 97.94% specificity, 96.08% precision.

Keywords- Graph Neural Network, Capsule Convolution Neural Network (CapsNet), Radiography (CT, Ultrasound) Imaging, Lung Cancer, Pneumonia, COVID-19, Disease Detection & Classification.

I. INTRODUCTION

As of September 14, 2022, there had been 607,083,820 recorded incidents of COVID-19, with 6,496,721 fatalities, reported to the WHO. There has been a sum of 12,613,484,608 vaccination rounds delivered [1]. Infectious individuals might exhibit abnormalities such as fever and coughs within a couple of days and may progress to significant disease or perhaps death[16]. Correct detection turned out to be the best efficient strategy to get the essential medication and prevent the infection from propagating. The viral nucleic acid test and CT scanning are the 2 foremost broadly utilized medical diagnostic procedures. The viral nucleic acid test, on the other hand, necessitates specialized equipment and requires a lengthy period to provide a diagnosis [15]. Furthermore, the significant false-negative rate aids in the transmission of the virus COVID-19. Chest CT scans have been demonstrated to be very sensitive when contrasted to the viral nucleic acid test [14]. Furthermore, because of clinicians' perspectives and artifacts such as stress,

manual evaluation of CT and Ultrasound scanning pictures is time-consuming and inconsistent. As a result, creating a computerized diagnostics solution with significant precision is difficult.

Radiological assessments are commonly performed for various respiratory-related diseases, thus they are widely accessible. Pulmonary problems are an indication of any indicative or undetected COVID-19 person. As a result, whenever radiographic assessments are done on an individual, the radiographer may search for anomalies in CT or Ultrasonography pictures, as well as identify the existence of the SARSCoV-2 infection. Due to the benefits, radiographic methods will be used increasingly than RT-PCR screening as the COVID-19 epidemic advances. The most difficult problem in identifying COVID-19 using radiographs is the scarcity of competent doctors capable of recognizing several abnormalities in a sufferer's patient picture. Because the indications of Pneumonia and COVID-19 are identical, radiologists must accurately evaluate the radiological pictures because the optical signs might be quite minor. This problem can be solved by adopting computer-aided diagnostics technologies, which can assist a physician in detecting visual signs very effectively and precisely. The burden on a single physician or clinician grows, leading to individual mistakes, which is not the case with machine-aided detection customized to reliably identify COVID-19.

We have seen substantial advancements in deep learning in past decades, which was highlighted by the Convolutional neural network (CNN). Computer Vision relates to the use of a certain set of methodologies for interpreting optical input and how a machine can learn and comprehend through that activity. CNN, a type of deep learning method, has been demonstrated to be extremely beneficial in visual identification and detection, video analytics, object identification, as well as various image activities and bioimaging. As a result, we see it as a potential to improve disorder assessment by utilizing graph and capsule networks. As a consequence, in our study, we provide Graph and Capsule Networks rather than a normal Convolutional Neural Network with a minimal selection of COVID-19 samples accessible with the important accomplishments:

- A graph and capsule architecture is presented, with components such as extracting the features and graph-based feature reconstructions and classifiers.
- Despite 10 times fewer parameters, our network delivers SOTA performance. As a result, it reduces

Bio-medical imaging (X-ray, CT, ultrasound, ECG), genome sequences applications of deep neural network and machine learning in diagnosis, detection, classification, and segmentation of COVID-19: a Meta-analysis & systematic review

Yogesh H. Bhosale[1] ⓘ · K. Sridhar Patnaik[1]

Abstract

This review investigates how Deep Machine Learning (DML) has dealt with the Covid-19 epidemic and provides recommendations for future Covid-19 research. Despite the fact that vaccines for this epidemic have been developed, DL methods have proven to be a valuable asset in radiologists' arsenals for the automated assessment of Covid-19. This detailed review debates the techniques and applications developed for Covid-19 findings using DL systems. It also provides insights into notable datasets used to train neural networks, data partitioning, and various performance measurement metrics. The PRISMA taxonomy has been formed based on pretrained(45 systems) and hybrid/custom(17 systems) models with radiography modalities. A total of 62 systems with respect to X-ray(32), CT(19), ultrasound(7), ECG(2), and genome sequence(2) based modalities as taxonomy are selected from the studied articles. We originate by valuing the present phase of DL and conclude with significant limitations. The restrictions contain incomprehensibility, simplification measures, learning from incomplete labeled data, and data secrecy. Moreover, DML can be utilized to detect and classify Covid-19 from other COPD illnesses. The proposed literature review has found many DL-based systems to fight against Covid19. We expect this article will assist in speeding up the procedure of DL for Covid-19 researchers, including medical, radiology technicians, and data engineers.

✉ Yogesh H. Bhosale
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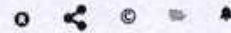
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operation faster. The polar decoder is designed using special nodes–Rate-zero, Rate-one, Single Parity Check, and
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Work

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Abstract:
Because of the Technical Advancements of many Android applications, image fraud is becoming a vital study problem
for many academics. It is a typical threat employed in everyday life to further unlawful goals. Image fraud has been
classified into distinct forms based on their forging pattern, with copymove forgery being the most common danger. The
identification and localization of precise copy-move image forgeries are two needs of digital forensic technologies.
Several computer vision approaches have been developed to identify copy-move forgeries. However, detecting copy-
move forgeries with improved accuracy and fewer computing resources remains a research challenge. By deploying
the more functional approaches of the computer vision coupled with objective of resolving the above challenge new
technique is proposed for the CMFD. Initially on the digital image preprocessing is implemented by lightweight and
effective guided filters. The filtered image is further divided into non- overlapping blocks. The moment invariant features
are extracted from each block. Those extracted feature values are subjected for lexical sorting.. The candidate blocks
are selected using the predefined threshold value. and then forged blocks are identified using the Euclidian Distance .
After detection of all the forged blocks, we re- arrange the blocks to rebuild the forged detected image as the outcome.
The efficiency of the proposed algorithm is analyzed on different datasets and various block size parameters.

Sentiment Analysis Using Computer-Assisted Text Analysis Tools

Saroj S. Date[✉], Kiran V. Sonkamble, and Sachin N. Deshmukh

Department of Computer Science and Information Technology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, MS, India

Abstract. Recently the use of computerized text analysis tools to assess an individual's linguistic, emotional and psychological characteristics has exploded in the field of empirical psychology. As a result, information about what people convey through their words can be swiftly and reliably extracted and analyzed. The key purpose of this research work is to analyze text data to assess linguistic and emotional characteristics with the help of computer-assisted text analysis tools. The analysis employed widely available text and sentiment analysis tools, Empath and LIWC. As text data, children's storybook reviews were analyzed in this work. These reviews are written by the children for the children. Empath and LIWC tools helped to measure the reviewer's sentiment, analytical ability and cognition level. Finally, by calculating the Pearson correlation coefficient for the selected variables, it is inferred that Empath shares a high correlation with LIWC.

Keywords: sentiment analysis · computer-assisted text analysis (CATA) tools · computer-aided text analysis software · text data analysis · LIWC · Empath · content analysis

1 Introduction

An emerging area of research in computational social science and human-computer interaction makes use of technologies to interpret the emotions and sentiments expressed in natural language. For example: since more than a couple of decades, scholarly writing analysis has been the subject of active cognitive research. It uses techniques like time-consuming traditional methods to automated text analysis tools. To extract high-quality information from text, such as cognition level, communication, authenticity, tone, analytical ability etc. the automated techniques combine linguistic, statistical and machine learning methods. For automated text analysis, researchers collect the data from common sources like social media, product reviews, news articles, blogs, etc.

As social media users have access to ever larger and more diverse data from the Internet, it becomes significant to scale our ability to conduct such analyses with breadth and accuracy. In this paper, reviews written for children's storybooks are collected to perform sentiment analysis tasks. These reviews are obtained from a website and written by children of different age groups. The collected reviews are processed and analyzed with the help of computer-assisted text analysis (CATA) tools: LIWC and Empath.

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Abstract

Dual adaptive model for change detection in multispectral images

Chafle Pratiksha Vasantrao [a*], Neha Gupta [b], Naga Surekha Jonnala [c], Anoop Kumar Mishra [d]

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Abstract— The change detection (CD), resembles as basic issues in Earth tracking attains the major research concern over the past few decades. There is a considerable enhancement in the CD resource data in view of the rapid evolution in the satellite sensors in the current years, which provides very-high-resolution multispectral image with copious change evidences. However, localizing the precise varying area is considered as the real challenge. Hence, this research attempts to develop the Dual adaptive model to precisely locate the real changed areas. The pixel evaluation is done by the fusion network that hybrid the pre-trained model like segnet, U-net, ResNet and Fc-densenet. The pre-trained model is hybridized by the fusion parameter that is productively trained by using the adaptive optimization. The experimental result exhibits that the Dual adaptive model exceeds the competent model considering accuracy, precision, recall and F1-measure.

Keywords—*Change detection, Dual adaptive model, Multispectral image, Optimization, Segmentation.*

I. INTRODUCTION

The change detection (CD) is the characterized as the practice of recognizing the variation occurs within the two images collected from the similar ecological area at distinct time variation [1]. Generally, CD obtains a considerable function in forest tracking [2], urban development [3], energetic determination of land utilization [4] and disaster administration [5]. Due to the progress in the remote sensing (RS) tools and techniques the RS image with high resolution (HRSIs) is intensively utilized in CD. The detailed depiction of ground objects data is provided by HRSIs. However, there experience difficulties in processing of the ground object information due to the interference provided by background information and noise, restriction in the imaging condition [6]. The existing HRSIs CD methods are categorized into two main classes, such as object-oriented CD (OBCD) and pixel-based CD based on the granularity unit of CD. The OBCD is widely accepted in CD than the pixel based technique due to the significant advantage over pixel-based methods. Further, it ensures more potential for the extrication of individuality features, which effectively highlights the changed domains [7].

The conventional OBCD algorithm fails to consider the connections within the object neighbourhood. The image segmentation is the most crucial steps involved in the process of OBCD. However, the conventional method exhibits some limitations that results in "under segmented" and "over segmented image" [7]. Currently deep learning model exhibits

high performance in segmenting the images, semantic segmentation, object recognition and other specific tasks [5], [8]. Convolution neural network (CNN) is most generally utilized algorithm in the computer domain. Some of the conventional CNN models include AlexNet [9], VGGNet [10] consists of fully connected layer. However, these models experience the issues like low computational efficiency.

The review of the conventional RS image change detection model with advantage and disadvantage is illustrated in this paragraph. The superpixel improved CD network termed as ESCNet that which consists of DCNN for segmentation is presented in [1]. ESCNet structure tends to promote the mutual incorporation of the DLCD and OBCD. The model requires more complex fusion strategies for probable interaction and bitemporal features to integrate with super pixel convolution. A new CD technique termed as difference-enhancement dense-attention CNN (DDCNN) was presented in [5] for the detection of land cover change. Amalgamation of the DE and dense attention unit can prominently extricate the spatial perspective of the bitemporal images. The position errors and the spectral error minimize the performance. The model that makes use of multistate convolution kernels to extricate the comprehensive features of the RSI was presented in [6]. It is observed that by combining dice coefficient loss and weighted binary cross-entropy (WBCE) loss, the network's training competence on unequal illustration is enhanced. The worst effect is observed in the model when it only considers binary cross-entropy loss. An apparent RSI CD method merging object and pixel levels is suggested to restrain the issue like pepper and salt incident and false exposure in the land cover CD [7]. The evaluation shows that the model provides high accuracy. However, this model only provides the details of the changing area and denies providing the information about the changed object. The semi-supervised label propagation technique was utilized in [11] to determine the CD in the RS image. The SSLP is not exaggerated by the noise in the disparity image and this model provides high performance with smaller quantity of data. However, this model is not suitable for defective dataset with various spatial resolution, acquisition angle and cloud cover.

This work aims to identify the changes in the satellite images. The obtained satellite images are required to be pre-processed due to the presence of the noises from haze, clouds, and so on. Once the pre-processing is performed, the pixel variation evaluation is performed using the dual adaptive deepnet that will be designed based on the adaptive optimization hybridized with the pre-trained models like ResU-Net, Unet, Segnet and Fully connected desnet. When a test

BCD-Unet: A Novel Water Areas Segmentation Structure for Remote Sensing Image

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Abstract- Surface water resource identification is one of the main techniques used in remote sensing image analysis. This is necessary to stop calamities like floods and droughts. Feature selection based on prior information and complex spectrum analysis are required by machine learning algorithms for extracting waterbodies. The use of deep learning-based algorithms, which have just lately been considered, has eliminated the need for manually extracting features, but they require a large amount of training data and processing power to achieve outstanding performance. Because of this, each deep learning architecture that has been demonstrated may recognize some of the patterns that are present in the given situations. To develop a reliable model for identifying surface water, this research trains and optimises deep learning architecture that have been presented in different disciplines using surface water data. This is accomplished by the model's output more accurately by extracting the finalized segmented mask of water bodies. Our suggested approach was tested using a Kaggle dataset. This dataset included Sentinel-2 satellite images of numerous water bodies. The suggested method outperforms current best practises in semantic segmentation performance.

Keywords- Remote sensing analysis, BCD- Unet, Water body Segmentation, Deep Learning.

I. INTRODUCTION

Water is one of the most crucial natural resources for maintaining human survival, which is also essential for hydrological cycles, industrial and agricultural output for modelling and control of natural disasters. Increasing human activity, rapid societal development, and population growth are currently affecting water resources. Finding and successfully managing these resources is one of the best methods to halt this natural disaster. Climate change is another element that increases the study's importance, which has a negative impact on the water cycle [1]. Identification and management of accessible water resources are crucial for the prevention and management of emergencies like droughts and floods [2]. Investigating the water body has gained popularity as a scientific issue in recent years. Field measurements take a lot of time and effort to complete, especially if frequent access is required right away and the location is large or difficult to access. On the other hand, remote sensing methods offer satellite images that make Large-scale spatial and temporal waterbody data can be easily retrieved. In comparison to other types of land cover, water is easier to detect through satellite images due to the availability of remote sensing data and the water's spectral characteristics [3]. The sentinel-2 satellite series is frequently used for water detection in order to achieve this goal [4, 5]. A key method in the processing of remote sensing images is semantic segmentation. Many techniques have been employed in this subject utilising the benefits of deep convolutional neural networks (DCNNs). DCNNs are inefficient as feature extractors and basic classifiers because the spectrum of ground objects in remote sensing is more complex. Discriminate between several types of ground objects Additionally, DCNNs blur the edges of objects as they learn to extract contextual cues from vast receptive fields. After training it on a single labelled dataset that serves as the source domain, this method tests the DSSN on the second dataset that serves as the target domain [6]. The following are our main contributions to this work:

- Using data from surface water images captured by the Sentinel-2 satellite, deep learning architecture is trained and optimized to create a trustworthy model for identifying surface water.
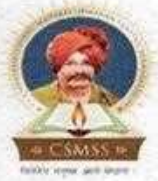
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3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during Calendar year 2022

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Sr. No.	Name of the Teacher	Title of the Paper/Book/ Chapters Published	Title of the Conference/Publisher	Department
1	Prof. P G Sonar	Airport and Bridge Engineering	Nirali Prakashan	Civil Engineering
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5	Dr. Shrinivas Zanwar	IEEE Digital Library	IEEE	Artificial Intelligence & Data Science
6	Dr. Zakee Ahmed	IEEE Digital Library	IEEE	Artificial Intelligence & Data Science
7	Dr. Y.H. Bhosale	COVID-19 and Associated Lung Disease Classification Using Deep	Springer	Computer Science & engineering

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8	Dr. Y.H. Bhosale	IoT Deployable Lightweight Deep Learning Application For COVID-19 Detection With Lung Diseases Using RaspberryPi	IEEE	Computer Science & engineering

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e and resources.

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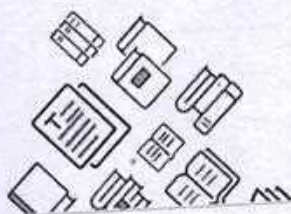
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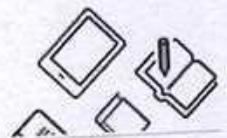
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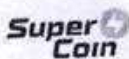
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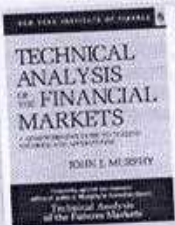
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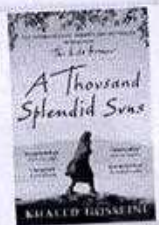
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Monkeypox is a zoonotic illness transmitted by an orthopox virus that causes smallpox-like symptoms in individuals. Therapies utilized in the smallpox control and elimination also offered immunity to monkeypox. New vaccinations have indeed been discovered, and 1-of-them is licensed for the preventive of monkeypox. Monkeypox was induced by monkeypox virus, which is a species of a Orthopoxvirus subfamily in the Poxviridae group. Monkeypox is often a self-limiting condition, with signs that generally last 2 to 4 weeks. Extreme symptoms are possible. Recently, the fatality rate has hovered at 3-6%. Monkeypox is spread to individuals by directly interacting to an infectious creature or human, or via exposure to virus-contaminated substances. The monkeypox infection spreads by intimate exposure to lesions, bodily liquids, inhalation, or infected items including clothing. Monkeypox seems to be a virus zoonotic illness which typically originates in tropical rainforests regions of middle and western Africa, but is sometimes transported to different parts of the world. An antibody-drug intended to cure smallpox has been approved for use in the treatment of monkeypox. Monkeypox is lesser infectious than smallpox (an orthopoxvirus linked to monkeypox) and generates fewer serious sicknesses. Monkeypox is characterized medically by temperature, rashes, and enlarged lymph nodes, and it can result in a variety of health consequences. In this study, we propose machine learning-based predictions using linear regression, decision tree, random forest, elasticNet, and ARIMA. The ARIMA attained 0.9267 R^2 for monkeypox predictions. We hope that based on generated will be helpful for further additional research on society.

Deep Convolutional Neural Network Based Covid-19 Classification From Radiology X-Ray Images For IoT Enabled Devices

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Abstract- The Coronavirus Disease 2019 (COVID19) epidemic, which erupted at the end of 2019, continued rapidly throughout the nations from Wuhan, China. This highly contagious infectious disease is rapidly spreading among the public. Early research on COVID-19-affected patients has revealed distinctive anomalies in chest radiography images. As a result, it is now necessary to identify various risk factors that can move an infected person from a mild to a serious stage of sickness. In Deep Learning (DL), strategies as a subset of Artificial Intelligence (AI) are used to deal with many real-life glitches. This paper introduces a Deep Convolutional Neural Network (DCNN) to perform multiclass classification for COVID-19, Pneumonia, and Normal Patients from radiological imaging of the chest. Also, the work is implemented with an IoT framework, used for communicating user and DCNN model. This Deep Convolutional Neural Network (DCNN) classification mechanism achieved a perfect test accuracy of 94.95% for COVID-19. The used datasets are acquired from Kaggle and GitHub.

Keywords- Deep Learning, Classification, Deep Convolutional Neural Network, Radiology Images, X-ray, Diagnosis.

I. INTRODUCTION

Nowadays, the notion of the Internet of Things (IoT) is very much popular in artificial intelligence applications. So, here we have used IoT-based automation in the deep learning model. COVID-19 continues to be a major threat to human health worldwide, with millions estimated to be affected within a few months after the outbreak and thousands of deaths [1]. Humans are infected with the acute respiratory disease coronavirus-2, which causes COVID-19 (S.A.R.S.-Co.V-2). Effective and accurate examination of infection is one of the crucial steps in struggling infection, allowing infected people to start instant action to cure, also isolating and separating those infected to prevent the virus from spreading. The most public diagnostic techniques used to test for infected people with COVID-19 infection are Antigen Test or Reverse Transcription Polymerase Chain Reaction (RT-PCR) test [2] that can detect S.A.R.S-Co.V-2 RNA from respiratory samples obtained by several combinations such as nasopharyngeal or oropharyngeal rods. Although RT-PCR testing is now the yardstick for COVID-19 infection because of its sensitivity, it is laborious and demanding. The limited

availability of RT-PCR kits and the need to access a research-level research center becomes a daunting challenge.
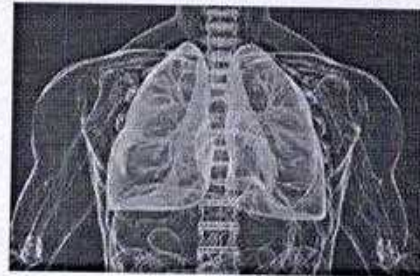

Fig. 1. Chest Radiography Image

Another strategy for RT-PCR testing may be radiography testing for COVID-19 testing. In the radiographic examination, experienced radiologists perform and analyze chest radiography imaging. Radiologists then try to remove the visual cues to diagnose SARS-CoV-2 virus contamination, as shown in Fig. 1. Most of the visual cues from radiology images of the COVID-19 chest showed similar features such as circular morphology, ground-glass opacities, lung distribution, and lung integration [3]. Although radiological chest pictures may assist in the initial diagnosis of doubted cases, the features of diverse major pneumonia are similar. Consequently, it is difficult for diagnosticians to detect COVID-19 from other types of pneumonia. This leads to the search for a computer-assisted test program (CAD) to assist the radiologist in translating radiological chest images of COVID-19 classification accurately and rapidly.

The major contributions are as follows:

- A custom DCNN classification model is recommended that will be employed to distinguish COVID-19 individuals using X-ray images.

- To improve classifier efficiency, different preprocessing and training methods were used.

- The samples in public repositories are small and skewed. We used multi-control data augmentation to address this while considering the samples for all classes.

COVID-19 and Associated Lung Disease Classification Using Deep Learning

Yogesh H. Bhosale, Priya Singh, and K. Sridhar Patnaik

Abstract Coronavirus 2019, well familiar as COVID-19, is a virus that causes significant pneumonia and has varying degrees of severity based on the patient's capability. The coronavirus infection was initially discovered in the Chinese town of Wuhan in Dec. 2019 and quickly spread around the world as a worldwide pandemic. Early detection of positive cases and prompt treatment of infected individuals is required to prevent viral transmission. The necessity of testing kits for COVID-19 has grown, and most of the growing nations are encountering a scarcity of testing kits as new cases emerge daily. In this case, the current study is with the help of radiology imaging techniques, including X-ray, to help in detecting COVID-19. In several disease diagnoses and decision-making circumstances, the information provided in a chest X-ray sample is sufficient to assist medical experts. With the help of a Deep Convolutional Neural Network (CNN), the research proposes an intelligent method to classify various nine diseases, including coronavirus disease 2019, with the help of X-ray instances applying pre-trained DenseNet169 architecture. The fundamental goal of this paper is to classify lung diseases with COVID-19. The used datasets are collected from online repositories, i.e., Kaggle and NIH contained X-ray images of all nine classes. This dataset consists of 1200 images for each class. Various rotations and scaling operations have been applied to the dataset, and the data in the dataset are divided into the test, train, and validation sets. In comparison to other studies in the literature, our models performed well. The highest accuracy attained by DenseNet169 is for COVID-19 with an accuracy of 99.4%, F1-score of 97.5%, precision of 97%, recall of 98%, and specificity of 99.6%. The highest True Positive rate we got in this is 99% for COVID-19, followed by 97% for Cardiomegaly. The minimal rate we got is 88% in Atelectasis. DesnseNet169 proved to be more robust

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Proper assessment of COVID-19 patients has become critical to mitigating and halting the disease's rapid expansion
during the present COVID-19 epidemic across the nations. Due to the presence of chronic lung/pulmonary diseases,
the intensity and demise rates of COVID-19 patients were increased. This study will analyze radiography utilizing chest
X-ray images (CXI), one of the most successful testing methods for COVID-19 case identification. Given that deep
learning (DL) is a useful method and technique for image processing, there have been several research on COVID-19
case identification using CXI to train DL models. While few of the study claims outstanding predictive outcomes, their
suggested models may struggle with overfitting, excessive variance, and generalization mistakes due to noise, a limited
number of datasets and could not be deployed to IoT devices due to heavy network size. Considering deep
Convolutional Neural Network (CNN) can conquer the weaknesses by getting predictions with several diseases using a
single model deployed on a real-time IoT device. We propose a lightweight Deep Learning model (LDC-Net) that has
spearheaded an open-sourced COVID-19 case identification technique using CNN-generated CXI by utilizing a
suggested strategy aware of distinct features learning of different classes. Experimental results on Raspberry Pi show
that LDC-Net provides encouraging outputs for detecting COVID-19 cases with an overall 96.86% precision, 96.78%

3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during Calendar year 2021

List of Books/Chapters/Papers Published in National/ International Conference

Sr. No.	Name of the Teacher	Title of the Paper/Book/ Chapters Published	Title of the Conference/Publi sher	Department
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4	Dr.Syed Sumera Ali	Electrical Machines & Instrumentation	TechNeo Publications LLP	Electronics & Telecommunication Engineering
5	Dr.Vilas S. Gaikwad	Computer Programming in C	TechNeo Publications LLP	Computer Science & engineering
6	S.R.Karpe Dr.U.B.Shinde,A.N. Mudiraj,	Principle Design of Transformer and Electrical Machine	Lambert	Electrical Engineering
7	Dr. P D.Dabhade	Reservoir Operation Considering Environmental Flow: A Case Study	ICRCEST2021)	Civil Engineering
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11	Dr. Ulhas B. Shinde	A Comprehensive Review on Deep Learning Based Lung Nodule Detection in Computed Tomography Images	Springer	Electronics & Telecommunication Engineering
12	Prof. Divya P.Gadhe	Jowar (Sorghum) Crop Health Assessment Using Hyperspectral Data	IEEE	Artificial Intelligence & Data Science
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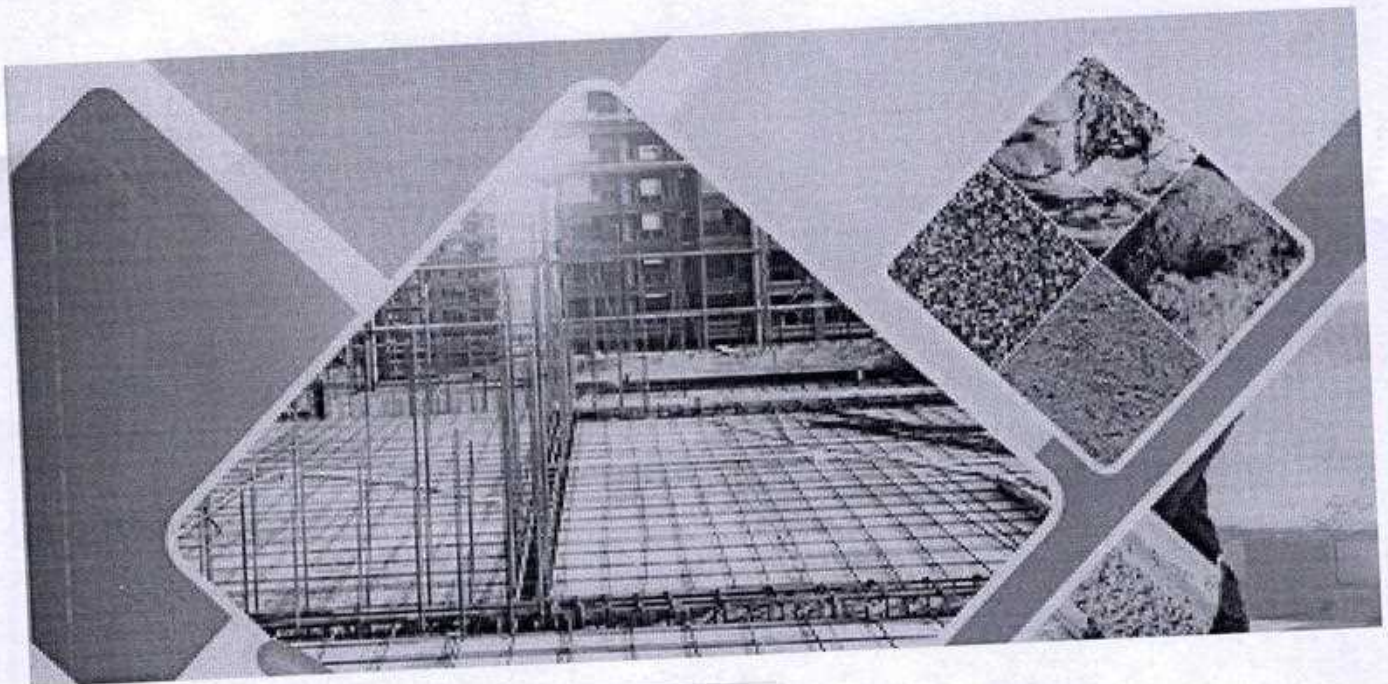Kanchanwadi, Aurangabad.

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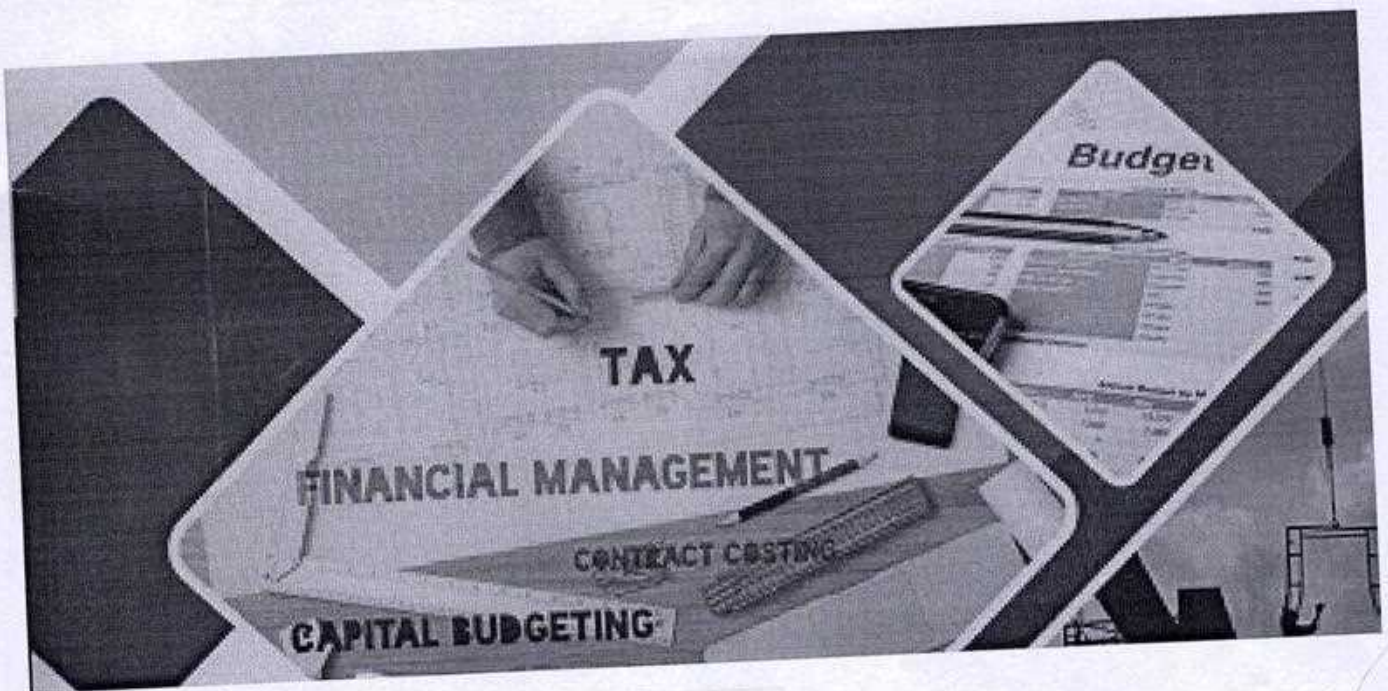
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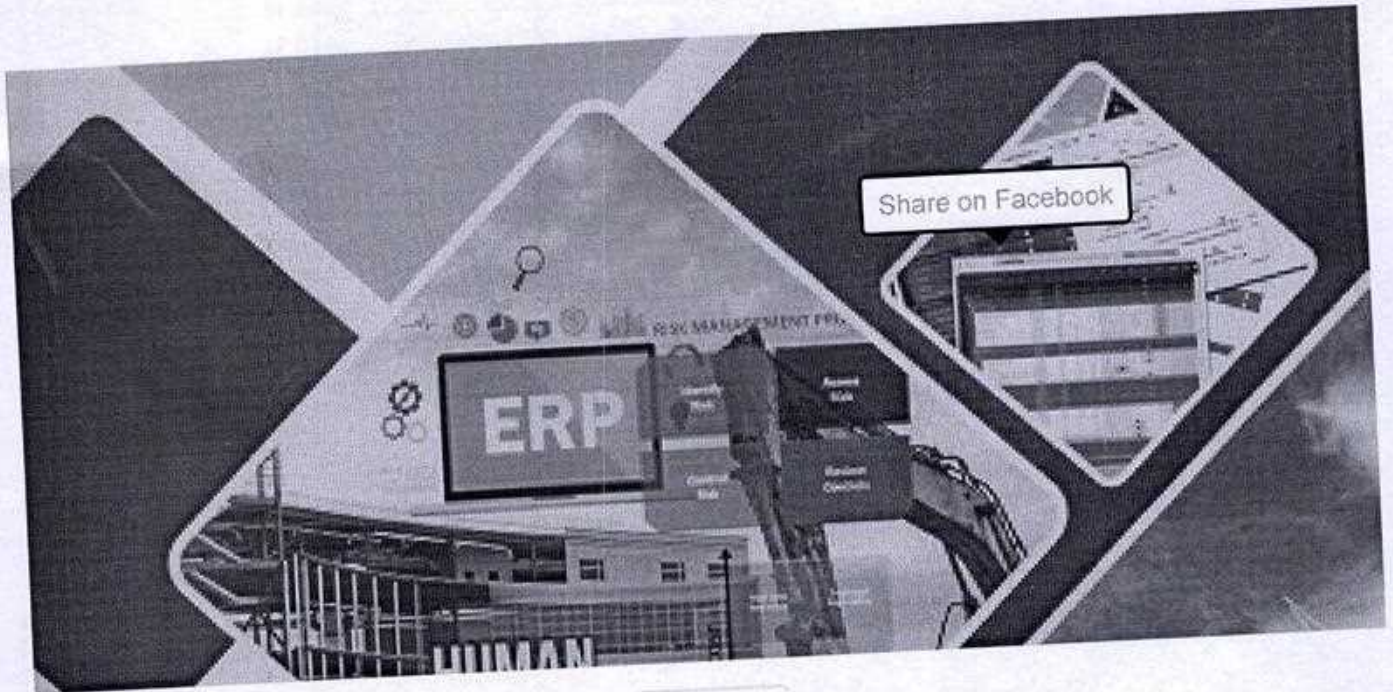
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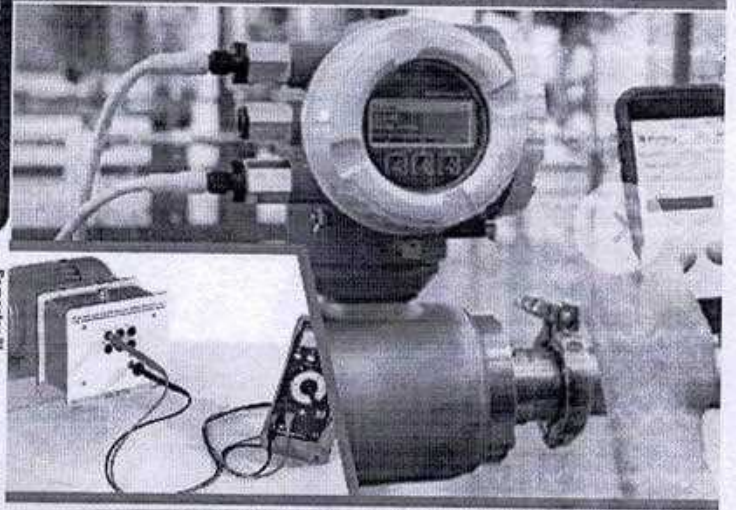
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Reservoir Operation Considering Environmental Flow: A Case Study

[1] Pushpak D. Dabhade, [2] D. G. Regulwar

[1] Research Scholar, Department of Civil Engineering, Government College of Engineering, Aurangabad, India
[2] Professor, Department of Civil Engineering, Government College of Engineering, Aurangabad, India
E-mail: [1] pushpak3dabhade@gmail.com, [2] regulwar@gmail.com

Abstract-The high demand for water from all sectors presents a challenge for policy makers to improve water allocation policies for storage reservoirs. In addition, there are many other organisms and species present in river waters that also require water for their survival. Due to the lack of awareness many times the minimum required quantity and quality of water for river ecosystem is not made available at downstream of reservoirs. So, a sustainable approach is required in reservoir operations to maintain the river ecosystem with environmental flow while meeting the other demands. This paper presents a multi objective reservoir operation model to maximize the sum of releases for irrigation considering environmental flow releases at the downstream. The environmental flow requirements are considered as per the recommendations of the Central Water Commission (CWC) studies from a report submitted by a working group to advise Water Quality Assessment Authority on the minimum flows in the rivers. CWC report recommends two different minimum environmental flow criteria for the Himalayan Rivers and other rivers from India [1]. The optimal reservoir operation policy is presented considering constraints including Irrigation release, Turbine release, Reservoir storage and hydrologic continuity. A monthly reservoir operation model is developed using Python programming for multi objectives. Model applied for Majalgaon reservoir constructed across Sindhaphana river in Maharashtra State, India. Majalgaon dam is component of Jayakwadi Stage-II project.

Keywords: *Optimization, Multi Objective Analysis, Reservoir Operation*

1. INTRODUCTION

Rising demand for water from all sectors presents a challenge for policy makers to improve water allocation policies for storage reservoirs. Thus, reservoir optimization methods are becoming more popular and suitable which provides best feasible solution for water distribution among all stakeholders, considering all constraints. In this study Linear programming optimization method is adopted for optimization of single reservoir. Objective of the study is to maximize the irrigation release for command area from available storage while considering all other releases.

Labadie [1] have presented a review on optimal operation model for multi reservoir systems by all different methods of optimization for water resources operations and management. Wurbs [2] have discussed different reservoir-system simulation and optimization models to give guideline about different methods and its usefulness in various types of decision-support situations. Kim *et al.* [3] have developed a monthly operating rule for single-reservoir operation for Soyanggang dam basin in Korea Peninsula, with objectives of minimization of shortage and maximization of sum of Hydropower production. the simulation results are obtained by

using the developed piecewise-linear operating rule. Chen *et al* [4] have suggested an interactive dynamic programming model for optimize reservoir operation to support the policy makers for balancing humans and environmental water requirement. Mousavi *et al.* [5] have presented reservoir operation model using a dynamic programming fuzzy rule–based approach. This model was applied to the reservoirs system in Iran. Developed model gives better values of the simulated objective function with the higher reliability of meeting the demand Nagesh Kumar *et al.* [6] have developed a reservoir operation model for flood control purpose with the help of folded dynamic programming. Regulwar and Anand Raj [7] have proposed a multi reservoir operation model using genetic algorithm under fuzzy environment considering multi objectives. Regulwar and Kamodkar [8] derived a fuzzy constrained reservoir operation model for multipurpose reservoir. Model is useful in dealing with imprecise constraints.

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This paper discusses the Techniques for the Ro-bust Copy Move Forgery detection for the different datasets MICCF8multi,MICCF600,MICCF220,CoMoFoD DB. Thepro-posedmethodology computes two thresholds dynamically, for each input image one to detect the candidate block & another to detect the forged block. The performance of the proposed algorithm is evaluated along with the different state-of-art techniques. The results have shown that the proposed SWT-SVD algorithm out-performs 2D-DWT,BDF,YU-SUN,DRHFMS in terms of accuracy & computational time.

Published in: 2021 Sixth International Conference on Image Information Processing (ICIIP)

Date of Conference: 26-28 November 2021

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Deep Learning Based Lung Nodules Detection from Computer Tomography Images

Mahender G. Nakrani ✉, Ganesh S. Sable & Ulhas B. Shinde

Conference paper | First Online: 19 February 2021

Abstract

Lung cancer is among the dominant cause of deaths due to cancer. Lung cancer survival largely depends on the stage at which it is diagnosed with early stage diagnosis significantly improves the survival rate of patients. Radiologist diagnoses the Computerized Tomography images by detecting lung nodules from

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Lung Nodule Detection from Computed Tomography Images Using Stacked Deep Convolutional Neural Network

Mahender Gopal Nakrani, Ganesh S. Sable & Ulhas B. Shinde

Conference paper | First Online: 01 June 2021

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Abstract

The advances in deep convolutional neural networks (DCNNs) have made remarkable progress in image classification and object detection methods. DCNN also has been successfully implemented to medical images problem in the past few years. One of the major issues in medical imaging is the detection of

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A Comprehensive Review on Deep Learning Based Lung Nodule Detection in Computed Tomography Images

Mahender G. Nakrani ✉, Ganesh S. Sable & Ulhas B. Shinde

Abstract

Lung Nodules detection plays an important role to detect early stage lung cancer. Early stage lung cancer detection can considerably increases the surviving rate of patients. Radiologist diagnosis the Computerized Tomography (CT) images by detecting lung nodules. This task of locating lung nodules from

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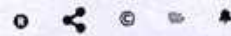
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Abstract:
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farming is essential for good quality of production and proper management of farming. By using hyperspectral remote
sensing data, it allows to properly predict, analyze and identify the object on the surface of the earth and monitoring the
health status of crop. Field experiment conducted during the kharif season in 2018 in farmland of Jalna region,
Maharashtra, India. This study focuses on the spectral reflectance of Jowar (Sorghum)crop. In this we used the variety
Maldandi Jowar leaf samples. We had taken total 80 to 90 % of leaves were healthy and 10 to 20 % of leaves were
unhealthy (Disease /Dry). The leaves were defected due to the rust disease and due to water content. So to capture
the spectral reflectance of healthy and disease leaves of Jowar crop those samples was taken into laboratory for the
reflectance measurement under the observation and control condition. The ASD FieldSpec4 data wavelength range
from 350nm–2500nm and Pika-L wavelength range from 400nm–1000nm, hyperspectral remote sensing data is being
used while measuring the spectral reflectance of both healthy and unhealthy leaves samples. Biochemical property is
performed by extracting chlorophyll content and moisture content of Jowar (Sorghum) crop. Different vegetation indices
in also used like NDVI, PSSR, CRI, ARI, WI so on. For Accuracy assessment Naive Bayes, Random Forest, SVM
algorithm is applied whereas SVM gives a good result which is 98.37 percent as comparing to other algorithm like
Random Forest which is 97.7 percent and Naive Bayes 64.13 percent.

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Bhavana Nerkar ✉ & Sanjay Talbar

Conference paper | First Online: 19 February 2021

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Abstract

Plant leaf disease detection & classification is a complex image processing task, wherein proper algorithms are needed for segmentation, pre-processing, feature extraction and classification. Generally linear classification algorithms like support vector machines. (SVMs), k-nearest neighbour (kNN), Naïve Bayes (NB), Random Forest (RF), etc. do not provide high precision for

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List of Books/Chapters/Papers Published in National/ International Conference

Sr. No.	Name of the Teacher	Title of the Paper/Book/ Chapters Published	Title of the Conference /Publisher	Department
1	Dr. Shrinivas Zanwar	Handwritten English character recognition using swarm intelligence and neural network	Springer Singapore	Artificial Intelligence & Data Science
2	Dr. S.R.Karpe	Performance Improvement of Induction Motor using Direct Torque Cotrol: Performance Improvement of I M Paperback	Lambert	Electrical Engineering

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Intelligent Systems, Technologies and Applications pp 93–102

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Handwritten English Character Recognition Using Swarm Intelligence and Neural Network

Shrinivas R. Zanwar ✉, Ulhas B. Shinde, Abhilasha S. Narote & Sandipann P. Narote

Conference paper | First Online: 06 May 2020

Abstract

Handwritten character recognition is one of the emerging areas in pattern recognition and deep learning application. The character recognition reads transcript in natural images which is a vital step with diversity of computer vision jobs and has significant achievement in several profitable applications. This

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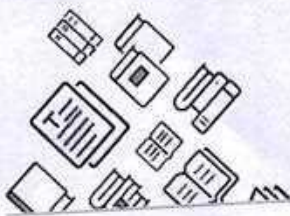**ISBN-13** : 978-6202527019

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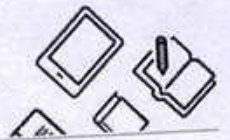
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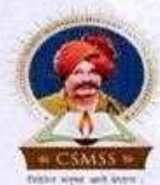Website: www.csmssengg.org

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3	Dr.Shrinivas Zanwar	An effectual optical character recognition using efficient learning system	International Conference on Sustainable Computing in Science, Technology & Management (SUSCOM-2019)	Artificial Intelligence & Data Science
4	Dr.D.L. Bhuyar	A Smart Solar Photovoltaic Remote Monitoring and Controlling	IEEE	Electronics & Telecommunication Engineering
5	Dr.D.L. Bhuyar	Face Recognition Using OpenCv Based On IoT for Smart Door	SUSCOM-2019	Electronics & Telecommunication Engineering
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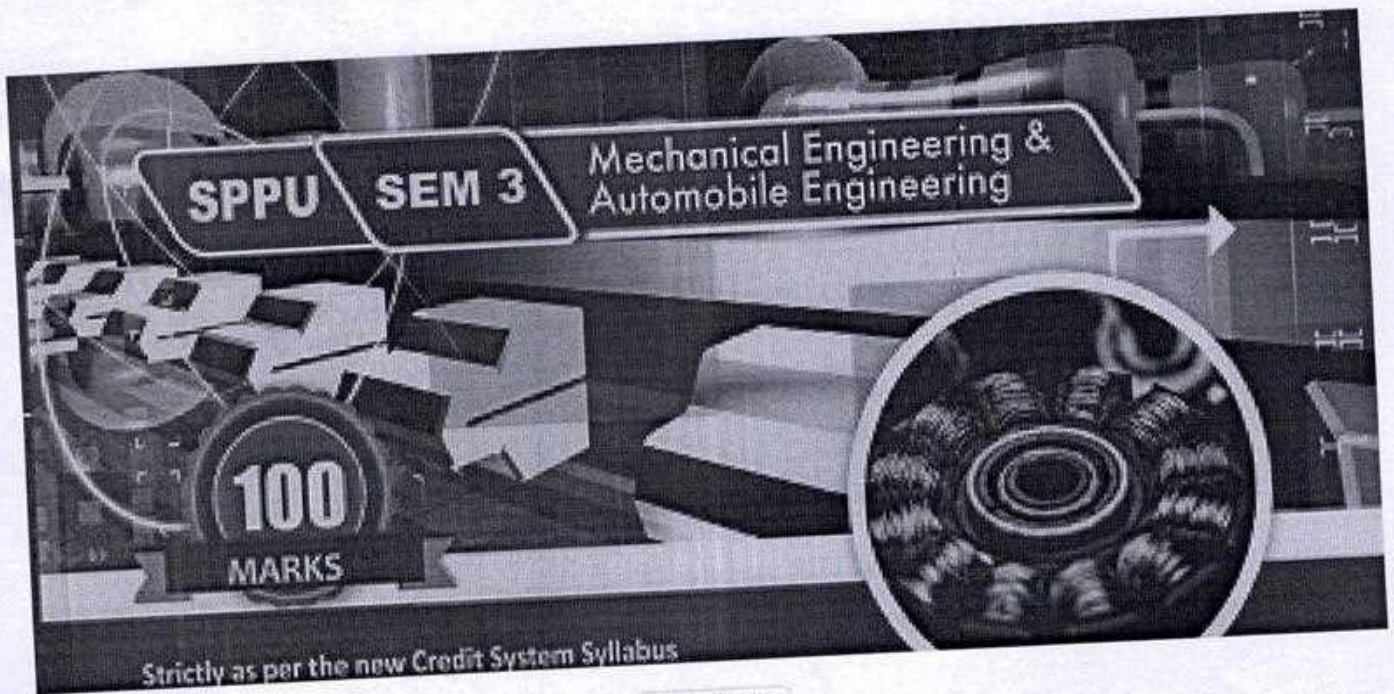
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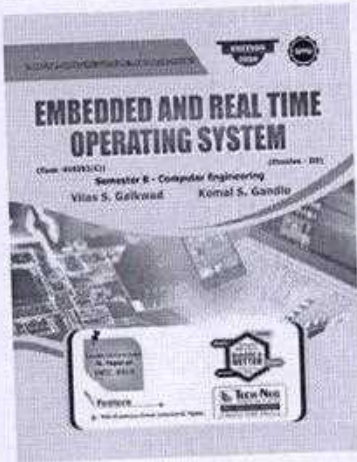Electronics   TVs & Appliances   Men   Women   Baby & Kids   Home & Furniture   Sports, Books & More   Flights   Offer Zone

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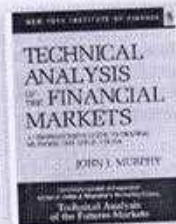
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An Effectual Optical Character Recognition Using Efficient Learning System

Shrinivas R. Zanwar[a], *Sandipann P. Narote[b]*, *Abhilasha S. Narote[c]*, *Ulhas B. Shinde[a]*

[a]CSMSS, Chh. Shahu College of Engineering, Kanchanwadi, Aurangabad, 431001, India.
[b]Government Women Residence Polytechnic, Tasgaon, Sangli, 416312, India.
[c]S. K. N. College of Engineering, Pune, 411041, India.

ARTICLE INFO

ABSTRACT

There is an emerging attention for the various automatic classification frameworks to distinguish characters in software structure when information is looked over piece of paper records as it is noticed that the amount of daily identifications and records which are in published manner recognized with various businesses. This is popularly known as the document image exploration. To utilize Optical Character Recognition efficiently for character categorization so as to achieve image analysis, the data is utilizing in Grid assemblies. For high processing of documents, the heavy industries require a product as the framework which is known as character recognition classification. Also, there is need to create character recognition programming agenda to achieve document analysis in the form of image processing which deals with the organization of the material to the electronic reading arrangement. So this paper deals with the efficient learning approach which deals with the automatic classification from using processing of the images and machine learning for the optical character recognition process. In this research we have worked on the feature extraction using Independent component analysis with the swarm intelligence approach with Firefly algorithm, because it helps us to reduce more error probabilities and reduces the false positive and negative rates and increase the high learning rate. The learning is achieved using neural network. It is noticed that the proposed approach is able to perform high in terms of high specificity, sensitivity and recognition rate through which it is noticed that the proposed approach is able to achieve high true positive and true negative rates.

I. Introduction

Recognition of the patterns is the job of a physical event to several unique specified categories [H. Althobaiti , C. Lu]. It is an energetic and challenging research which deals with very large technical and practical attention. As it is noted in [D. Ahlawat], it deals with the applications like extraction of features, radar signal arrangement and examination, speech authentications and considerations, fingerprint authentications, character recognition which in terms of digits and the letters and handwriting analysis [H.S. King, HKI Systems and Service LLC]. Character recognition is the most fascinating research area of the processing of the images and pattern acknowledgment. Character is generally known for the recognition as optical character because it deals with the optical processes to obtain the characters. These types of classifications have huge solicitations which deal with the conversion of handwritten information into structural process, automatic classifications of the number plates etc. [R.S. VanBlon, J.N. Novak, S. R.Perrin, J. Zhang]. Classification of the character is the simple building element in the language of the computers that is recycled using different language structures [A.M. Burry, V. Kozitsky, P. Paul]. Recognition of the characters is a procedure which deals with symbolic processes with objects drained on the various image. OCR adds vastly to the attainment of automation procedure and recovers the interface among man and machine in frequent applications [M. Christy, A. Gupta, E. Grumbach, L. Mandell, R. Furuta, R. G. Osuna]. ANN which is popularly known as the approach for OCR i.e. character recognitions in optical manner is now achieving significance because of ANN's highly parallel planning and fault tolerance. One of the important technique also came into existence is the SMT i.e. Surface Mount Technology which also deals with the recognition of the characters using BPNN which is popularly known as the back propagation neural network.

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Nowadays peoples facing the problem of limitation of non-renewable energy sources, so to solve this problem the best
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power. Maintenance like photovoltaic array cleaning is also controlled by using IoT. Raspberry Pi module is used as
processor and inbuilt WiFi module is used to communicate data with the cloud. In this proposed system for improving
the efficiency, one Arduino Uno microcontroller based assembly is added which is used to follow the sun's position
throughout the day for collecting maximum possible solar energy. Collectively this proposed system improves
efficiency, performance, maintenance, fault detection and real time monitoring as well as controlling of solar
photovoltaic power generation.

Face Recognition Using OpenCv Based On IoT for Smart Door

A. D. Deshmukh, M. G. Nakrani, D. L. Bhuyar, U. B. Shinde

Department of Electronics & Telecommunication Engg, Csmss Chh. Shahu collge of Engg, Aurangabad, India

ARTICLE INFO

ABSTRACT

Automated embedded systems have made a lot of progress in today's world. The significance of such system in applications like surveillance, private security has been proven to be very effective. This paper discusses a face recognition system which is designed and implemented for doors resulting in smart doors based on IoT. The paper intends to provide the information to the user using open source technology which comprises of OpenCV2, LBPH algorithm, SMTP, raspberry pi3,pi camera. The implementation area is categorized more on local level like home, offices and campus. The system provides real time face detection and recognition once the bell is triggered. The captured image is analyzed with the available database and if it is a match, the access is granted and door will open. On the contrary if the face did not match the captured image is then sent to the user mail using SMTP. The system will then wait for the response from user within stipulated time with appropriate message. The message is retrieved on raspberry pi using IMAP. Based on the retrieved message context either access will be granted or denied. The system is acting as a base station. The wireless communication is achieved using SMTP and IMAP. The aim of the system is to develop a real time face recognition model having low cost solutions in security.

1. Introduction

As discussed above first task is face detection involves detecting a face from the image. A classifier is a program used for the process which identifies whether the image is positive (i.e face image) or negative (non-face image) (Wazwaz, Herbawi, Teeti & Hmeed 2018). In this paper we are adopting haar classifier which process image in gray scale. The haar classifier is pre-trained in the OpenCv bundle. The haar classifier file location should be in the directory where the main program file is stored. As this will be use later on for creating database directory containing sub directories that belongs to the face database. In this paper we are creating database sub-directories each will consist of 45 images of each person. The haar classifier extracts face image by making use of edge feature, line feature and centre-surround features. The haar is adopted for the system because of its high detection accuracy and low false positive rate. The last task is to identify the face, for this we are using recognizer named Local Binary Pattern Histograms (LBPH). The idea to use the LBPH is to avoid light effect if any and it find the local structure of image by comparing each pixel to the neighbouring pixel. One such conversion is shown in Fig.1 from (Sánchez López, Laura 2010). Once the image is fed to the system, the recognizer will generate histogram of that image which will be matched to the existing histogram. The person with the outmost matching result will be labelled in the output window.
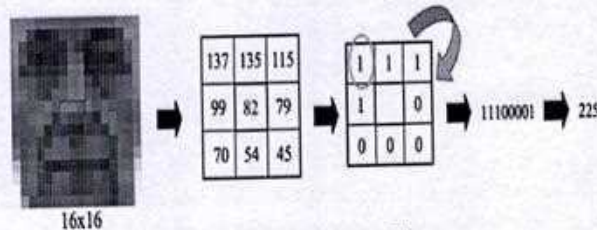

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Fig. 1 LBP Conversion to Binary

In case of image is recognized the electromagnetic lock will get open through the action initiated by raspberry pi. If the image is not recognized then the captured image will be sent through raspberry pi using Gmail IMAP to the owner giving message in the subject as Intruder Alert. The response of the owner in the subject itself will be retrieved by raspberry pi within specified time. The message sent by the owner will decide to grant access or not. In this paper we are using open source hardware platform raspberry pi. The python programming language is used for raspberry pi. In this paper a low cost security system is designed which will provide real time recognition as well as authentication from the user. This paper is organized as follows: section 2 pro-

CTSE – A Case Study to Encourage Start-ups and Skill Development among Engineering Students

CTSE – A Case Study to Encourage Start-ups and Skill Development among Engineering Students

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Abstract:

CSMSS Chh. Shahu College of Engineering was established in the year 2013 under the umbrella of Chh. Shahu Maharaj Shikshan Sanstha. During the first 2 years, it was analysed that more than 80% students are coming from rural background and they lack in soft and technical skills. The principal and management of institute decided to work on skills and entrepreneurship development for students. In July 2015, "Center for Technical Skills and Entrepreneurship (CTSE)" was established with the aim to design and develop industry-ready training programmes and promote entrepreneurship among students by taking up industrial/social problems as student projects, which can be commercialized. Faculty members of CTSE started exploring industries and various organizations for association. Two faculty members were sent to EDI Ahmedabad for faculty development programme on "Entrepreneurship Development". A strong connect is established with various academic institutions and industries. Till date 20 industry-ready training programmes are designed and developed, few of them are included as an open elective subject in the university curriculum. Four student start-ups are incubated and more than 10 projects have been implemented by students that has potential to be patented and commercialized. These projects grabbed various prizes at competitions, such as Bajaj Auto Bhartiya Yuva Shakti Trust (BABYST) Business Idea Competition, eYantra Ideas Competition, Mistubishi Electric Cup, Startup India Maharashtra Yatra, Avishkar Competition, etc. The rest of the case study summarizes success stories of start-ups incubated at CTSE and activities that helped to inculcate the entrepreneurial attitude among students.

Detection of Lung Nodules in Computed Tomography Image using Deep Machine Learning: A Review

Mahender G Nakrani[a] , Ganesh S Sable[b], Ulhas B Shinde[a,b]*

[a]Assistant Professor, E&TC Engineering, CSMSS's Chh. Shahu College of Engineering, Aurangabad, 431002, India
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Abstract

Lung Nodules detection is very critical in detection of early stage lung cancer. A radiologist tries to diagnoses the clinical chest computed tomography (CT) scans by detecting lung nodules in them. This task is rigorous and becomes even more difficult due to the complex structure and anatomy of lung parenchyma region. To assist radiologists in correct diagnosis of CT scan images, many Computer-aided detection (CAD) algorithms were developed and proposed. After the success of deep convolutional neural network (D-CNN) for classification of images, D-CNN has found its way into lung nodules detection systems. D-CNN has demonstrated better results and performances than traditional machine learning based lung nodules detection algorithms. In this paper, we will discuss about different D-CNN proposed for lung nodules detection and compare the results and performances of these detection algorithms. We will also discuss about the D-CNN which can be used to further improve the results of lung nodules detection.

Keywords- Lung Nodules, Convolutional Neural Network, Nodules detection, Classification, False positive reduction.

1. Introduction

Cancer is one of the leading causes of disease deaths globally. It has become a major threat to our society. It is the one of the major cause of disease deaths in India. In 2018 alone around 1157294 new cases of cancer have been registered in India out of which 784821 has resulted in death as reported by National Institute of Cancer Prevention and Research. Out of all different types of cancers, Lung cancer is among top five types of cancer in India. The survival rate of early detected cancer patients is much higher as it allows diagnose lung cancer when it is operative with curative intent. It will also facilitate in distinguishing whether a solitary pulmonary nodule is benign or malignant. Radiologist receives the CT scans of the patients and diagnoses it by finding the malignant nodules. This task is affected by many factors such as professional experience of

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4	Dr. P. R. Wankhede	Retinal Blood Vessel Segmentation in Fundus Images using Improved Graph Cut Method	IEEE	Electronics & Computer Engineering
5	Dr.S.R. Karpe	Fault Current & Fault voltage Analysis of Power Distribution Network	IEEE	Electrical Engineering

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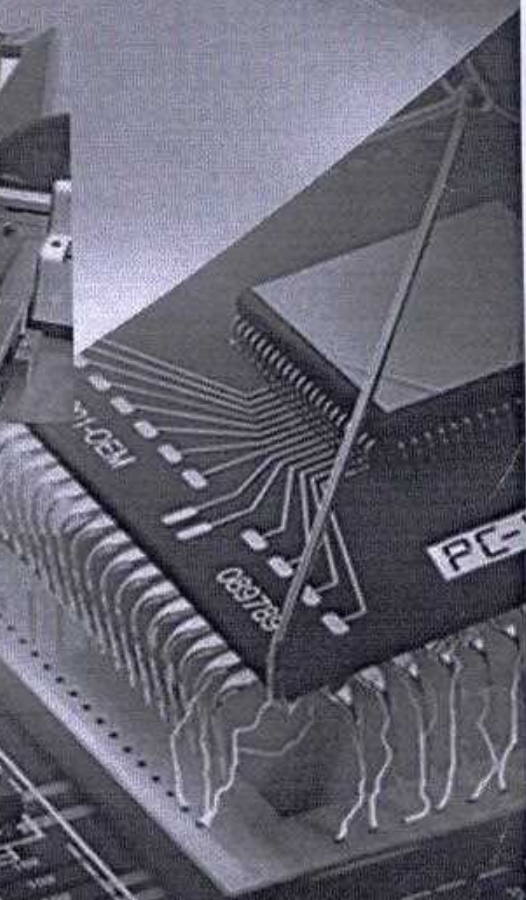
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An Innovative Method of Servomotor Design for the Ease of Visual Understanding

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Abstract

In academia to explain exact working and construction of servomotor to a new learner is quite challenging. This paper proposes innovative ways to explain construction and working of a dc servo motor, where individual component can be visually see and physically touched. This way any new learner can learn not only construction and working of a servo motor but also he may be able to design his own. In addition to design the cost of components are also very cheap, so this may be used as project based learning task in control system, embedded system and mechatronics system training.

Keywords: LabVIEW; dc servomotor; Arduino; Mechatronics; Control system; Project based learning

Introduction

The best way to understand a feedback control system /embedded system/mechatronics system is to understand servomechanism. Servo mechanism is a perfect combination of sensor, controller and actuator. In this paper we have investigated behaviour of a dc servo motor by implementing it with two different approaches. At first approach a low cost design is prototyped with Arduino as embedded controller, potentiometer as angular position sensor and a 70 rpm BO dc motor as actuator is used. The second method is PC based setup where with LabVIEW control of angular position is implemented [1].

A servomotor is a controlled motor that allows precise control of angular or linear position, velocity and acceleration irrespective of load and other external factors. In this paper, emphasis is given to angular position control using servomechanism with ease of visual understanding. Figure 1 shows the block diagram of servomotor for position control. There are many examples with which servomechanism for position control can be understood. Like in a boat, the rudder controls its direction, rudder angular position decides in which direction the boat will move, thus, the control of rudder is best suited need of servo control, if electronic control of the boat is to be designed. Similarly in an aircraft, the flaps of wings required similar precision of control. In space observatory system the telescope needs a specific angular position to observe planets and moving telescope without servomechanism will be near to impossible [2].

A generalized model of a dc servomotor will consists of a dc Motor with gear assembly, an angular position sensor associated with motor shaft, component to provide input, a controller, and the motor driver circuitry.
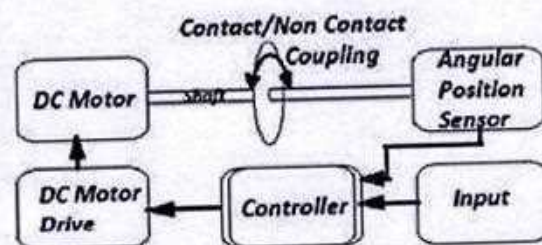

Figure 1: Block diagram of a typical dc servo motor

Opting Suitable Data Acquisition System for Environmental Temperature Analysis : NI-MyDAQ vs Arduino Uno

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Abstract

Acquiring data from sensors into a storing device is a crucial task these days in industry, academia, and research fields. Computer plays an important role to monitor the behaviour and response of physical parameters under observation. In this paper two data acquisition systems are explored from study to implementation level. A professional system implementation with NI-MyDAQ is implemented to acquire data from LM35; in parallel to it, similar implementation with low cost approach is presented here which is with Arduino Uno and LM35. This paper may help those who are finding right DAQ system for their specific application.

Keywords : Arduino Uno, NI MyDAQ, LabVIEW, LM35

Introduction

Data Acquisition (DAQ) System may be a stand-alone system which may be referred sometimes a data logger, or it may be a PC based Data Acquisition System. For academic and research, PC based system is most preferred [1, 2].

Figure 1 shows a generalized block schematic of typical DAQ system [3]. Sensor transforms physical information to electrical data called as sensed signal, which represents proportional values of measured parameter in electrical form. The signal from sensor which may be weak, noisy and in inappropriate form is conditioned by signal conditioning unit and brought into the voltage (generally), then converted into digital form by high resolution ADC. The digital data is to be further processed and transformed into the format which a computer can understand; data is sent to computer over wired/wireless channel. Computer helps us to analyze this data in the form of graphs/charts also stores the data for further actions, for which appropriate software is required.

Thus the DAQ implementation is not only just interfacing with few hardware but it is an integrated system of software and hardware. Over all, from sensor to acquired data the flow of signal will be signal, signal-conditioning, DAQ hardware, driver and application software.

In this paper, signal is the output of temperature sensor LM 35. Signal conditioning is done at DAQ hardware only [3]. The driver is USB, and the application software is national instrument's LabVIEW. DAQ hardware is either Arduino Uno board or NI MyDAQ.
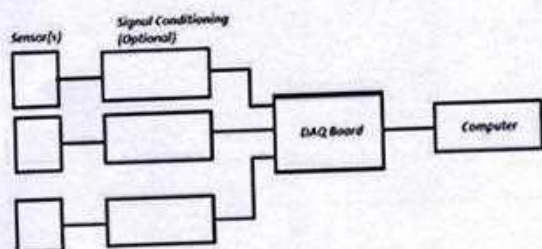

Figure 1: Generalized block diagram for a PC based data acquisition system

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Exploring Mechatronics System and Technical Investigation of Hydraulic and Pneumatic System Maneuver for Archetypal Engineering Applications

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ABSTRACT

Industry uses three methods for transmitting power mechanical transmission through gear, shaft, chain, and belts, while electrical transmission through wires, transformers and fluid power through liquid or gas in a confined space. Mechatronics is the synergetic integration of electronics engineering, mechanical engineering, computer engineering and electrical control engineering for design and development of electromechanical products. A rapid growth in Mechatronics observed in recent times is due to need of automation, Internet of Things (IoT), smart and intelligent devices. The hydraulic and pneumatic system are at the prime importance of mechatronics system. Hydraulic systems are complex fluid-operated systems that transfers energy to perform intended mechanical, measurement, control and operational work. These systems can serve many applications because of its small size-to-power ratios, ability to generate large torque for linear, rotational, oscillatory and reciprocative motion. The compact electro-hydraulic system further act as the limb to the physical system trading with the mechanical process and feasible deliverables. Hydrodynamic systems work with high flow rate and less pressure of fluid, whereas hydrostatic work with low flow rate and high pressure. Such systems work as a force multiplier that takes a smaller input force and transforms it into a bigger output force. Because of better power to weight ratio, these systems can deliver a noteworthy power to a load with a comparatively smaller mass. These characteristics allow them for aircraft applications where weight is most important. Life of equipment and components gets better because of self-lubrication phenomenon. These systems are rugged so as to operate in extreme temperature, environments and critical situation like reversal of motion. Pneumatics is derived from the greek term 'pneuma', which means breath or air. These system characterizes the behavior and application of compressed air. Pneumatic industrial systems work in a very analogous way to that of hydraulic industrial systems. The foremost dissimilarity is the high pressure air that is used instead of a fluid as it is more compressible and is much easier to store using reservoirs. Pneumatic systems are open systems, and exhausts the compressed air or any gas to atmosphere after its utilization, without causing any pollution. Hydraulic systems are closed systems and it re-circulates the oil or water after use. In manufacturing, pneumatics can turn out to be an effective alternative to electricity and may be a most prevalent and economical choice for implementing mechanical motion. This paper attempts to explore Mechatronics, present in general, the techniques used in Mechatronics engineering and in specific, to investigate hydraulic and pneumatic system maneuver for archetypal engineering applications.

KEYWORDS Mechatronics, Pneumatic systems, Hydraulic sytems, Design process, Force multiplier, Compression, Reservoirs

INTRODUCTION

Exploring Mechatronics System
The key elements of Mechatronics [1,3] systems can be classified as Information systems, Mechanical systems (connected with sensors and actuators components), Electrical systems (interfaced with ADC and DAC components), and Computer systems (includes controllers and display sections).

Figure 1 shows the key elements of Mechatronics System, which are:
(a) Sensors [4] consisting Thermocouple, Strain gauge, Potentiometer, Switches, MEMS, Motion sensors etc.
(b) Actuators [5,6] like Stepper motor, DC motor, Solenoids, Servomotor, Voice coils., Hydraulic actuators or Pneumatic actuators etc.
(c) Electrical systems mainly consist of signal conditioning processes. Signal conditioning components used can be ADC, DAC, Amplifier, Filter, Rectifiers, Attenuators, Multiplexer and Demultiplexer, V to F and F to V converter, Isolation components, etc.
(d) Digital controllers [7] like PLC (programmable logic controller), SBC, Logic circuits, Microcontroller, Communication controller, Arithmetic and Logic controller, Timing and Sequence controller etc.
(e) Graphical displays used for visual feedback can be LCD, LED, CRT, TFT, Matrix displays.
(f) Information systems [8] include the following important processes:

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