

Conference Proceedings

NCCDS - 2020

Volume - 8, Issue - 13

IJERT

National Conference on Communication And Data Science



Organized by

**GSSS Institute of Engineering
& Technology for Women
Mysuru, Karnataka
Department of ECE**

Published By

**International Journal of
Engineering Research
and Technology
(www.ijert.org)**

**Principal
A. J. Institute of Engineering & Technology
Mangaluru - 575 086**

INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH & TECHNOLOGY (IJERT)



≡ MENU



Search & Download more than 27000 research papers



NCCDS – 2020 (VOLUME 8 – ISSUE 13)

NATIONAL CONFERENCE ON COMMUNICATION AND DATA SCIENCE



[Download Cover \(PDF\)](#)

<input type="text" value="Search"/>			
Article ID	Paper Title	Authors	Download
IJERTCONV8IS13001	Prevention of Railway Accidents by Automatic Gate Control and Fire Detection using IoT	Akshata, Chaithra C, Anusha Narayan, Niveditha P, Rashmi H C	Download PDF
IJERTCONV8IS13002	Developing Digital Audio Effects in Real Time for Acoustic Guitar using Simulink Model	Kavyashree B, Lavanya C S, Madhura S Bhat, Nagashree, Anitha K	Download PDF
IJERTCONV8IS13003	Blind Hurdle Stick: Android Integrated Voice based Intimation Via GPS with Panic Alert System	Meghana G, Harshitha S, Harshitha Rajshekar, Keerthana S V, Archana B	Download PDF
IJERTCONV8IS13004	Plant Disease Detection using Image Processing	Ashwini C, Anusha B, Divyashree B R, Impana V, Nisarga S P	Download PDF

Article ID	Paper Title	Authors	Download
IJERTCONV8IS13005	Sierpinski Square Carpet Fractal Microstrip Antenna for WLAN Application	Bharamappa Kattimani, Dr. Rajendra R Patil	Download PDF
IJERTCONV8IS13006	Smart Mobile Application for Vehicle Parking	Inchara R, Chaithra B C, Chaithanya H H, Shyamala. C	Download PDF
IJERTCONV8IS13007	Movie Piracy Reduction using Automated Infrared Transmitter Screen System and Steganography Technique	Chandana P S, Akshatha H M, Rekha D M, Raghavendra Y M, Pallavi S	Download PDF
IJERTCONV8IS13008	Autonomous Flood Alerting System	Anusha N, D Meghana, Apoorva K, Nisarga H P, Dr. Rajendra R Patil, Priyanka P	Download PDF
IJERTCONV8IS13009	Facial Emotion Recognition for Smart Applications	Fathimath Hafisa Hariz, K Nithin Upadhyaya, Sumayya, T F Mohammad Danish, Bharatesh B, Shashank M Gowda	Download PDF
IJERTCONV8IS13010	Design of Hydroponics System for Remote Automation	B S Shubhashree, Divya D, Harsha Mohan Hiremath, Jyothi T U, Yashonidhi Yajaman	Download PDF
IJERTCONV8IS13011	Mathwork Utilization for Effective Detection of Diabetic Retinopathy	Akshatha L , Kavitha , Manasa J , Monisha Uday	Download PDF
IJERTCONV8IS13012	Development of Security Device with Automation for Home Appliances	Moulya H C, Hemalatha.H.C, Pooja G T, Soundarya A J, Ravikiran H K	Download PDF
IJERTCONV8IS13013	Automated Vehicle : The Prospective of Road Safety	Namratha M M, Navya M N, Niharika R, Namitha N V, Sunitha R	Download PDF
IJERTCONV8IS13014	Communication and Coordination of Heterogeneous Robots	Thilagavathy R, Bindu R, H K Jahnviyengar, Navyashree N, Pallavi B A	Download PDF

Principal
A.J. Institute of Engineering & Technology
Mangaluru - 575 006

Article ID	Paper Title	Authors	Download
IJERTCONV8IS13015	Creation of Speech Processing Model for Civil Engineering Profile	P Saikerthi, Poorani A, Dr. S Padmashree	Download PDF
IJERTCONV8IS13016	Low Power 6T SRAM Design using 45nm Technology	Pratiksha Kulkarni, Punithra H M, Nalina H D, Preethana M, Kajal Kumari	Download PDF
IJERTCONV8IS13017	Smart Mushroom Cultivation using IoT	Sampada Singh, Simran, Sneha Anand, Sushma S J	Download PDF
IJERTCONV8IS13018	IoT based Advanced Accident Monitoring System using ThingSpeak Web Server	Shruthi V Pai, Nagalakshmi N, Santhrupthi K, Raksha R	Download PDF
IJERTCONV8IS13019	Gas Leakage Detector Insect Robot using Raspberry Pi3	Sachitra M Naik, Roja M, Sona S, Sunitakumari C Koujalagi, Thilagavathy R	Download PDF
IJERTCONV8IS13020	Wheelchair Controlled by Head Movement	Varshini S, Veena V G Math, Vijayalakshmi M C, Vindhya S R, Spoorthi Y	Download PDF
IJERTCONV8IS13021	Adaptive Headlight System for Automobiles	Aishwarya J, Amrutha R, Dhanalakshmi M S, N Rakshitha, Yashonidhi Yajman	Download PDF
IJERTCONV8IS13022	Smart Mirror using Raspberry Pi	Bhuvanewari T, Aishwarya C, Aishwarya H A, B Abhinaya, Nalina H D	Download PDF
IJERTCONV8IS13023	Detection and Measurement of Brain Tumor using LabVIEW	Ranjitha. M, Ranjitha. R. K, Tulasilakshmi. B, Yashaswini. M	Download PDF
IJERTCONV8IS13024	Smart Gloves for Surgical Strike	Meghana H S, Mohamed Zeeshan Ali, Rasheeda Banu B S, Pradeep M K, Yogeesh G H	Download PDF
IJERTCONV8IS13025	New Generation Voting System for Conveinent and Compulsory Voting	Mariyam Fathima, Pooja K H, Sachin H C, Yogeesh G H	Download PDF

Article ID	Paper Title	Authors	Download
IJERTCONV8IS13026	Surveillance Rover: The Future of Defense	Praphulla M P, Sushma M, Gayathri M A, Padma R	Download PDF
IJERTCONV8IS13027	An AI Approach Towards Civil Engineering Design Annotations and Object Detection	Harshitha N, Pragathi S, Dr. S Padmashree	Download PDF
IJERTCONV8IS13028	Flame Detection using Image Processing Techniques	Ravi L. S, Harsha H L, Sushma C, Swaroop M, Thimme Kavya	Download PDF
IJERTCONV8IS13029	Text Recognition from Images: A Study	Sahana K Adyanthaya	Download PDF
IJERTCONV8IS13030	Speaker Dependent Emotion Recognition System	Priyadarshini N S, Priyanka B M, Priyanka R, Pushpa K, Dr. Jayanth J	Download PDF
IJERTCONV8IS13031	Analysis of Foreign Direct Investment in India using Machine Learning Techniques	Divya M, Divya S, Inchara T H, Jayashree R, Rajashekar M B	Download PDF
IJERTCONV8IS13032	Fractional Power Allocation Scheme for NOMA	Vanita B. Kaba, Dr. Rajendra R. Patil	Download PDF
IJERTCONV8IS13033	IoT based Green House Automation System with Power Conservation using Biofuel Cell	Shahana Saba, Smita Ramakrishna Shetty, Umme Kulsum, Vinutha M	Download PDF
IJERTCONV8IS13034	Smart Component Organizer using Google Assistant	Swathi P, Sanjana G S, Swathi R, Dr. Rajendra R. Patil, Priyanka P	Download PDF
IJERTCONV8IS13035	Cardless Multi-Banking ATM System Services using Biometrics and Face Recognition	Ashwini C, Shashank P, Shreya Mahesh Nayak, Siri Yadav S, Sumukh M	Download PDF
IJERTCONV8IS13036	Plant Disease Detection using Image Processing	Darshini D N, Nandini K, Pooja B R, Shilpa K H, Ravi L S	Download PDF

Principal

A.J. Institute of Engineering & Technology
Mangaluru - 575 096

Article ID	Paper Title	Authors	Download
IJERTCONV8IS13037	Nirvatha Vadathi- An App to Assist Deaf and Dumb	Pallavi A, Amrita I, Pranitha B. L, Darshini S, R. Paramesh	Download PDF
IJERTCONV8IS13038	IOT based Smart School Bus Monitoring and Notification System	A Sai Aishwarya, Keerthana M S, Samyama S, Sukrutha S, Raghavendra M	Download PDF
IJERTCONV8IS13039	Smart Farming	Yashas H M, K Sharmila, Shashanka Krishna S, Sachin N R, Dr. Manjula A V	Download PDF
IJERTCONV8IS13040	Smart Aqua Nurturing System for Fish	Niharika N K, Lavita Carolyn, Gana S, Pooja N, Bharathi R	Download PDF
IJERTCONV8IS13041	Smart Group Attendance Monitoring System using Face Recognition	Kumuda S, Meghashree M N, Harish S V	Download PDF
IJERTCONV8IS13042	Low Power CMOS OTA Design for Biomedical Applications	M V Sai Meena, Somashekhar Malipatil, D Santhosh Kumar	Download PDF
IJERTCONV8IS13043	Campus Navigator with Speech Assistance	Chinmayi. M, Ifra Simran K.S, Nischitha H S, Dr. D V Rajeshwari Devi	Download PDF
IJERTCONV8IS13044	Energy Management in Smart Mushroom Factory	Spoorthi N S, Sandhyashree B M, Sangeetha K S, Yashaswini, Sushma S J	Download PDF
IJERTCONV8IS13045	Atmospheric Water Generator using Peltier Device	Ramya M, Roja K R, Roopa M, Supritha A, Padma R	Download PDF
IJERTCONV8IS13046	Relevance of Cyber Security on Data Theft of Clients	Deepa Kini P, Gurudath Shenoy	Download PDF
IJERTCONV8IS13047	Big Data in Weather Forecasting	Vaishnavi P N, Rizwan M A, Dechakka M P	Download PDF
IJERTCONV8IS13048	Paddy Crop Disease Detection using Machine Learning	Prajwalgowda B.S, Nisarga M A, Rachana M, Shashank S, Sahana Raj B.S	Download PDF

Article ID	Paper Title	Authors	Download
IJERTCONV8IS13049	<u>Data Extraction with Signal Comparison for Forest Logging Prevention</u>	Rohith Pandith M V, Shashank Hegde, Prabhulingesh K, Srishanth S Amin	<u>Download PDF</u>
IJERTCONV8IS13050	<u>Multi View Action Detection and Recognition of Human Activities</u>	Harshitha D, Keerthirani H V, Pallavi S, Sindhu Shree K M, Spoorthi Y	<u>Download PDF</u>
IJERTCONV8IS13051	<u>Voice Recognition Notice Board</u>	Asha H M, Shilpashree K N, Sinchana K R, V Lavanya, Salila Hegde	<u>Download PDF</u>
IJERTCONV8IS13052	<u>Advanced Digital Locking System using 8051 Microcontroller</u>	Rahul S, Ravi H Ningalur, Samay C M, Sutej Gururaj Rao Deshpande, Dr. Manjula A V	<u>Download PDF</u>
IJERTCONV8IS13053	<u>Smart Monitoring and Simulation of E-Vehicle using Simulink</u>	Madamchetty Lohith Datta, Shwetha D S, Sowmya, Yashwanth Kumar S, Raghavendra M	<u>Download PDF</u>
IJERTCONV8IS13054	<u>Smart LPG Gas Level Detection and Safety System using IoT</u>	Rohith Naidu V, Prathapa, Rakshith S Gowda, Ashwini D S	<u>Download PDF</u>
IJERTCONV8IS13055	<u>Secured IoT Technology in Wide Area Public Networks</u>	M. R. Sheeba, M. R. Arun, F. Shabina Fred Rishma	<u>Download PDF</u>
IJERTCONV8IS13056	<u>Brainwave Controlled Automated Wheelchair</u>	Madhura B.N, N Chandana, Navyashree M, Nisha U.N, Dr. Punith Kumar M B	<u>Download PDF</u>
IJERTCONV8IS13057	<u>An Intelligent Maximum Power Generation by Dual Quad Axis Solar Tracking Systems using Embedded Technology</u>	Bi Bi Khateeja, Sushma H, Sangeetha S, Harish S V	<u>Download PDF</u>
IJERTCONV8IS13058	<u>IOT based Patient Health Monitoring System to Remote Doctors using Embedded Technology</u>	Rashmi I R, Sahana M K, Sangeetha R, Shruthi K S	<u>Download PDF</u>

Article ID	Paper Title	Authors	Download
IJERTCONV8IS13059	A Novel Wideband Two Element MIMO Antenna Design with Band Rejection Capability	Revati C.G, Rajendra R.Patil	Download PDF
IJERTCONV8IS13060	Automated System for Prediction of Disease of the Skin using Image Processing and Machine Learning	Chaitra T C, Nisarga R, Srushti N, Sunku Vineela, Rajath A N	Download PDF
IJERTCONV8IS13061	Novel Star Shaped Microstrip Patch Wideband Antenna for Wireless Applications	Revanasiddappa Kinagi, Vilaskumar Patil	Download PDF

CURRENT ISSUE new

**SUBMIT
PAPER**

**Publish your
Paper**

**Call for Papers
June 2024**

**Last Date
30 Jun '24**

Journal Indexing UPDATED

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INTERNATIONAL CENTRE
ISSN Online: 2278-0181

Principal

**A.J. Institute of Engineering & Technology
Mangaluru - 575 006**



RECENT POSTS

[Handwritten Bengali Character Recognition Using Convolutional Neural Network](#)

[Urban Road Encroachment and Congestion-Causing Factors : A Case Study of Kalaburgi Super Market](#)

[Solving Fredholm Integral Equations by Numerical Methods Adomian Decomposition Method and Variational Iteration Method](#)

[Artificial Intelligence in Autonomous Vehicles](#)

[Computer Vision & IOT Based Smart Conveyor Belt Sorting System](#)

RECENT COMMENTS

Sreejith on [How To Improve Performance of High Traffic Web Applications](#)

Peter on [Cost and Waste Evaluation of Expanded Polystyrene \(EPS\) Model House in Kenya](#)

Ushus Maria Joseph on [Real Time Detection of Phishing Attacks in Edge Devices](#)

motsoko on [Structural Design of Interlocking Concrete Paving Block](#)

Priya on [The Role and Potential of Information Technology in Agricultural Development](#)

Principal
A.J. Institute of Engineering & Technology
Mangaluru - 575 006

Copyright 2024 © IJERT.ORG



Text Recognition from Images: A Study

Sahana K Adyanthaya

Assistant Professor: Department of ECE
A. J. Institute of Engineering and Technology
Mangaluru, India

Abstract - Recognition of text from images is an important process in the present scenario. Nowadays there is a great surge in storing the information found in the paper document in digital format. This helps in preserving the information, easy storage and also permits retrieval of information as and when required. The various stages of text recognition are: preprocessing, segmentation, feature extraction, classification and post processing. The preprocessing step involves a number of operations the most significant being converting color image into a binary image thus separating the text from the background. The segmentation step helps in separation of characters. The feature extraction enables to obtain the most pertinent information from the image to aid in text recognition. The process of classification enables to identify the text according to well defined rules. Then the post processing is done to reduce the errors. Text recognition is of utmost importance in several applications. This paper discusses the text recognition module and also presents the various applications of text recognition from images. Related work is also examined in this paper.

Keywords - Text recognition; preprocessing; classification; post processing

I. INTRODUCTION

Text recognition has gained a lot of prominence in recent years as it has entered into a large arena of applications such as in automatic reading of license plate, signboards. Everything and everyone has gone digital these days. Most of the information transfers these days takes place via images or scanned documents. There is a huge amount of information being stored and also accessed at the same time.

Text recognition is a field which is driven by the need to preserve and have access to the information containing documents in an easier and quicker way. One of the convenient ways to transfer the information from the paper or books is to scan them which convert the information into an image thus preventing reuse of the scanned information in the form of a text. Thus it is necessary to develop tools to convert them into editable form. The purpose of this paper is to study various steps in text recognition process with an objective to convert text images into editable documents. One of the popular techniques used for text recognition is Optical Character Recognition (OCR). It converts scanned images of text into editable format.

Text recognition is a tedious job as it involves recognizing text of different fonts, styles and with different background noise. Also recognizing handwritten text is even more

complicated due to differences in letter size, orientation and spacing between letters which varies from one person to another. Thus there is a need to develop an automated text recognition system which can identify the text component present in an image or scene and convert it into a machine recognizable format.

The process of text recognition starts with capturing the image of the required document, preprocessing it to acquire the desired portion and then segmenting it to extract the text content present in it. This paper discusses different stages in the task of text recognition from images.

II. LITERATURE REVIEW

This section provides a brief overview of the existing work carried out in the field of text recognition. Text recognition has been in existence since a very long time.

In [1], images with colorful background is considered and a preprocessing method is described which improves upon the performance of the Tesseract Optical Character Recognition (OCR) engine. Here first text segmentation is done to separate the text from the colorful background by dividing the original image into k images. Then a classifier recognizes the image containing text. There was an improvement of about 20% compared to the Tesseract OCR performance by employing preprocessing.

Work by S. Akopyan, O.V. Belyaeva, T.P. Plechov and D.Y. Turdakov [2] is based on a text extraction pipeline which is used to extract text from varied quality of images obtained from social media. Their work mainly focuses on dividing the input images into various classes and then preprocessing is done depending on the classes. This is followed by text recognition using OCR engine. The dataset collected from the social media is made use of in this work.

OCR is used to identify the text component present in images. In [3], the authors have proposed an algorithm to extract text from the scanned document. In this work, for segmentation Otsu's algorithm has been used and for skew detection Hough transform has been used. Also OCR technique has been applied to identify characters. They carried out the experiments and validated the proposed algorithm on various images taken from different sources. The average accuracy was found to be 93%.

K. Karthick, K.B. Ravindrakumar, R. Francis and S. Ilankannan [4] have discussed the various steps in text detection in detail highlighting the different techniques used

Principal

for the same. They have also emphasized on handwritten text recognition which is one of the complex field. From their study it has been found that best results can be had with reduced computation time and it is possible to segment multilingual characters and enhance the character recognition rate.

Anupriya Shrivastava, Amudha J., Deepa Gupta and Kshitij Sharma [5] in their work have developed a system based on Convolutional Neural Network and Long Short-Term Memory. The developed model identifies the texts from images which is horizontal, curved or oriented style. The model has four components. The first component performs feature extraction at the low level. The second component uses shared convolution approach to extract high level features. Irrelevant feature are ignored by the third component. The fourth component predicts the character sequences.

Pratik Madhukar Manwatkar and Dr. Kavita R. Singh [6] have reviewed in their paper various methods to extract characters from images. Basic architecture of the system for text recognition from images is also described in their work. They have also discussed the sequence of image processing techniques to extract text from scanned image. Various fields of applications are also described in their paper.

III.TEXT RECOGNITION MODULE

The text recognition module has to perform a number of tasks. The input to the module is the image containing text. The output of the module is the text information in machine readable form. The text recognition module has to perform the following tasks: preprocessing, segmentation, feature extraction and classification. Fig. 1 shows the various tasks involved in text recognition.

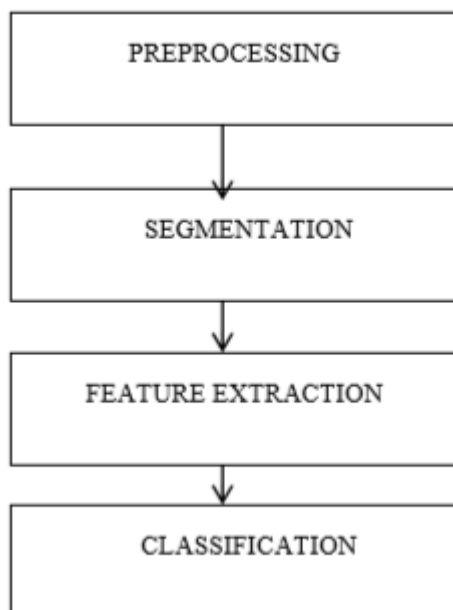


Fig. 1 Various tasks in text recognition

The scanned document is usually in the form of an image. The first step is preprocessing which is to convert the image into a format suitable for further processing. The text image may contain noise or it may be skewed. In this step the image is enhanced by noise removal and then converted to binary. The noise present in the image has a major role to play in successful text recognition. Noise removal increases the probability of accurate text recognition and generates more accurate output. Various filters such as Gaussian filter, mean filter can be used for noise removal. Then normalization is done to ensure uniformity which is followed by binarization to convert the gray image into a binary image.

After the preprocessing is done, the individual characters are separated using segmentation process. Then the vital data is retrieved from the raw data using the feature extraction step. Different techniques like Principle Component Analysis (PCA), Linear Discriminate Analysis (LDA), Independent Component Analysis (ICA), Chain Code (CC), Histogram etc. can be used for segmentation purpose [6].

The next step is classification which involves recognizing each character and allocating it to the right character class thus converting the text into machine readable form. Different classifiers based on Artificial Neural Network (ANN), Support Vector Machine (SVM) could be used for this purpose.

Post processing involves storing the recognized text in a format suitable for further processing.

IV.APPLICATION

In the recent years several applications of text detection have gained prominence. The major one being automated detection of text from the scanned document. Recent technological advances have further given a boost to the text recognition techniques. Text recognition enables automation in various fields. It can be used for automatic license plate reading at toll booths; automated reading of signatures on check leaves; image tagging and analysis of scene data.

Text recognition also enables automated storage and access of huge documents in the health care industry, offices. It enables creation of a database wherein the text can be searched and located easily. The created databases can be accessed and updated effortlessly which saves a lot of paper work. Automated text detection with voice assistance is also a boon for the visually impaired people. It can also be used for recognizing the text component in the videos.

Automated text identification can also be used to make the transport systems intelligent. It can also be used in airports for passport verification and information extraction. Text detection also enables automated data entry for business documents.

Text detection also makes a vast array of books to be available online which allows preservation and sharing of

knowledge. Text recognition also enables automation in industries by supporting automated reading of labels, numbers. With the further advances in the technology text recognition has found a vast array of applications in almost every field.

V. SUMMARY

This paper presents a brief summary of various steps used in text recognition from images. The work carried out in this field has also been discussed briefly. A review of basic model of text recognition system is also given which describes the flow of text recognition from images. Finally the various fields where text recognition could be used are discussed.

REFERENCES

- [1] Matteo Brisinello, Ratko Grbić, Dejan Stefanović and Robert Pečkai-Kovač, "Optical Character Recognition on images with colorful background", 2018, IEEE 8th International Conference on Consumer Electronics - Berlin (ICCE-Berlin).
- [2] M.S. Akopyan, O.V. Belyaeva, T.P. Plechov and D.Y. Turdakov, "Text recognition on images from social media", 2019, Ivannikov Memorial Workshop (IVMEM).
- [3] Neha Agrawal, Arashdeep Kaur, "An Algorithmic Approach for Text Recognition from Printed/Typed Text Images", 2018, 8th International Conference on Cloud Computing, Data Science & Engineering.
- [4] K. Karthick, K.B. Ravindrakumar, R. Francis, S. Ilankannan, "Steps Involved in Text Recognition and Recent Research in OCR; A Study", International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8, Issue-1, May 2019.
- [5] Anupriya Shrivastava, Amudha J., Deepa Gupta, Kshitij Sharma, "Deep Learning Model for Text Recognition in Images", 10th ICCNT 2019 July 6-8, 2019, IIT - Kanpur, Kanpur, India.
- [6] Pratik Madhukar Manwatkar, Dr. Kavita R. Singh, "A Technical Review on Text Recognition from Images", IEEE Sponsored 9th International Conference on Intelligent Systems and Control (ISCO), 2015.



Principal
A.J. Institute of Engineering & Technology
Mangaluru - 575 006