

Evaluative Report of the Department			
Name of the institution : SADAKATHULLAH APPA COLLEGE		Name of the Department : INFORMATION TECHNOLOGY	
District : TIRUNELVELI		State : TAMILNADU	
Total Number of Departments in the institution :		19	
Sl. No.	Name of the Department	INFORMATION TECHNOLOGY	
1	Year of Establishment	2001	
2	Is the Department part of a School/ Faculty of the Institution	Faculty of Science	
3	Names of programmes offered	INFORMATION TECHNOLOGY	
4	Number of teaching posts Sanctioned/ Filled	Sanctioned	Filled
	2016-17	4	4
	2017-18	4	4
	2018-19	4	4
	2019-20	4	4
	2020-21	4	4
	2021-22	4	4
5	Number of Research Projects:	No.	Total Grants Received
	2016-17	NIL	Nil
	2017-18		
	2018-19		
	2019-20		
	2020-21		
	2021-22		
	TOTAL		

6	Inter –institutional collaborative projects and Associated grants received	National collaboration Number	Grant Received	International collaboration Number		Grant Received
	2016-17	Nil	Nil	Nil	Nil	Nil
	2017-18	Nil	Nil	Nil	Nil	Nil
	2018-19	Nil	Nil	Nil	Nil	Nil
	2019-20	Nil	Nil	Nil	Nil	Nil
	2020-21	Nil	Nil	Nil	Nil	Nil
	2021-22	Nil	Nil	Nil	Nil	Nil
	TOTAL					
7	Departmental projects funded by DST-FIST,DBT, ICSSR, etc., : Total grants received	DST-FIST	DBT	ICSSR	_____Mention name, if others	
	2016-17	Nil	Nil	Nil	Nil	Nil
	2017-18	Nil	Nil	Nil	Nil	Nil
	2018-19	Nil	Nil	Nil	Nil	Nil
	2019-20	Nil	Nil	Nil	Nil	Nil
	2020-21	Nil	Nil	Nil	Nil	Nil
	2021-22	Nil	Nil	Nil	Nil	Nil
	TOTAL					
8	Special research laboratories sponsored by/created by industry or corporate bodies:					
	2016-17	Nil				
	2017-18					
	2018-19					
	2019-20					
	2020-21					
	2021-22					
9	Publications:	Number of Papers published	Number of Books with ISBN	Number of Citation Index – range / average	Number of Impact Factor – range / average	Number of h-index
	2016-17	2	Nil		6.57	-
	2017-18	-	Nil		-	-
	2018-19	2	Nil		3.8	-
	2019-20	4	1		3.12	-
	2020-21	3	Nil		2.62	-
	2021-22	1	1		-	-
	TOTAL	12	2		2.01375	1
10	Details of patents and income generated	Patent details			Income Generated	
	2016-17	Nil			Nil	
	2017-18					
	2018-19					
	2019-20					
	2020-21					
	2021-22					

11	Areas of consultancy and income generated	Details			Income Generated	
	2016-17	Nil			Nil	
	2017-18					
	2018-19					
	2019-20					
	2020-21					
	2021-22					
12	Awards/Recognitions received at the National and International level by :	Faculty	Doctoral/Post doctoral fellows		Students	
	2016-17	Nil	Nil	Nil	Nil	
	2017-18	Nil	Nil	Nil	Nil	
	2018-19	Nil	Nil	Nil	Nil	
	2019-20	Nil	Nil	Nil	Nil	
	2020-21	2	Nil	Nil	Nil	
	2021-22	1	Nil	Nil	Nil	
TOTAL		3			Nil	
13	How many students have cleared Civil Servicesand Defense Services examinations, NET, SET (SLET), GATE and other competitive examinations					
		Civil Service	NET	SET (SLET)	GATE/TANCET	Other Competitive
	2016-17	1	Nil	Nil	Nil	Nil
	2017-18	-	Nil	Nil	2	Nil
	2018-19	-	Nil	Nil	Nil	Nil
	2019-20	-	Nil	Nil	1	Nil
	2020-21	-	Nil	Nil	1	Nil
	2021-22	-	Nil	Nil	Nil	Nil
TOTAL		1	NIL	NIL	4	NIL
14	List of doctoral, post-doctoral students and research associates	From the host institution/university		From other institutions/universities		
	2016-17	Nil		Nil		
	2017-18					
	2018-19					
	2019-20					
	2020-21					
	2021-22					
15	Number of Research Scholars/ Post Graduate students getting financial assistance from the University/State/ Central	University	State		Central	
	2016-17	Nil	Nil		Nil	
	2017-18					
	2018-19					
	2019-20					
	2020-21					
	2021-22					



Sadakathullah Appa College

(Autonomous Institution ISO 9001 : 2000 Certified Accredited with B+ Grade by NAAC)

Rc. No. 1SF/2009

15.07.2009

**Proceedings of the Secretary, Sadakathullah Appa College,
Rahmath Nagar, Tirunelveli – 627 011.**

Present : Hajee T.E.S. Fathu Rabbani

STCS11

Appointment Order

Thiru. R. Spurgen Rathesh, M.C.A., is temporarily appointed as
Lecturer in the department of Information Technology (Unaided) from the
F.N. of 15.07.2009.

Secretary

To

Thiru. R. Spurgen Rathesh, M.C.A.
32A, 60 Feet Road,
Rahmath Nagar,
Tirunelveli - 627 011.

to

HOD of Information Technology
Director of self finance courses
K1 Section
Copy submitted to the Secretary



Sadakathullah Appa College

(Autonomous Institution * ISO 9001 : 2000 Certified * Accredited with B+ Grade by NAAC)
Rc.No.1SF/2010 Date:17.08.2010


Proceedings of the Secretary, Sadakathullah Appa College,
Rahmath Nagar, Tirunelveli - 627 011.

Present: Hajee T.E.S. Fathu Rabbani

STCS12

Appointment Order

Thiru. M. Sheik Mansoor, M.C.A., is temporarily appointed as
Lecturer in the Department of Information Technology of in this
College (Unaided) from the F.N. of 17.08.2010.


Secretary 1/3

To

Thiru. M. Sheik Mansoor, M.C.A.,
113-A, Hameempuram,
Santhai Street,
Melapalayam,
Tirunelveli - 627 005.

Copy to

1. K1 section
2. H.O.D. of Information Technology

Copy submitted to the Secretary

2 Spare Copies

Signature: A. Anand, 20



Sadakathullah Appa College

Autonomous Institution Re-accredited with 'A' Grade by NAAC • ISO 9001 : 2008 Certified *)

Proceedings of the Secretary, Sadakathullah Appa College,
Rahmath Nagar, Tirunelveli-627 011.

Present: Alhaj. T.E.S. Fathu Rabbani

570812

Rc. No.10253/SF/2013.

Date: 08.03.2013

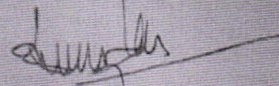
Sub: Self-Financing Courses Sadakathullah Appa College
- Appointment for the post of Assistant Professor in
the Department of I.T. - Orders - Issued.

Ref: Ms. L.S. Subbu Lakshmi's Application dated 12.02.2013

ORDER:

Ms. L.S. Subbu Lakshmi is temporarily appointed as Assistant Professor in the Department of I.T. at a consolidated salary of Rs.7,500/- (Rupees Seven thousand and Five hundred only) with effect from 15.02.2013.

This appointment will be governed by the rules and regulations of the Sadakathullah Appa College. If she wishes to leave the college, she will have to give three months' notice or three months' salary in lieu thereof. Notice, if any, should be given before March 31st of the particular year.


Secretary

To
Ms. L.S. Subbu Lakshmi,
D/o. Thiru. S. Sami Pandian,
234, Puttarathi Amman Kovil Street,
Tirunelveli Town-627 006.

Copy to the H.O.D. of I.T.
Copy to the Director of Self-financing Courses
Copy submitted to the Secretary



Sadakathullah Appa College

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Proceedings of the Secretary, Sadakathullah Appa College,

Rahmath Nagar, Tirunelveli - 627 011

Present: Alhaj.T.E.S.Fathu Rabbani

RC.No.11065/UA/2013

Date: 03.01.2014

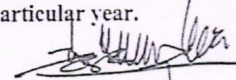
Sub: Unaided Courses Sadakathullah Appa college-
Appointment for the post of Assistant Professor in the
Department of Computer Science - Orders issued

Ref: Interview on 17.12.2013.

ORDER:

Tmy.G.GOMATHI MCA., is temporarily appointed as Assistant Professor in the Department of Computer Science at a consolidated salary of Rs.7500/- (Rupees Seven thousand five hundred only) per month with effect from 18.12.2013.

This appointment will be governed by the rules and regulations of the Sadakathullah Appa College. If she wishes to leave the college, she will have to give three months' notice or three months' salary in lieu thereof. Notice, if any, should be given before March 31st of the particular year.


Secretary

To

Tmy.G.GOMATHI MCA.,
W/o.U.Balamurugan,
21, East Street, V.M.Chatram,
Tirunelveli - 627011.

W4
03.01.2014

Copy to H.O.D of Computer science
Copy to the Director of Unaided Courses
Copy Submitted to the Secretary

AN EFFICIENT APPROACH FOR 2D TO 3D IMAGE CONVERSION USING FUZZY C-MEANS SEGMENTATION

M.SHEIK MANSOOR,
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Principal,
Sadakathullah Appa College,
Tirunelveli.
mmdsadiq@gmail.com.

Abstract— The main objective of this paper is to design an efficient 2D-to-3D conversion method based on the use of edge information. The edge of an image has a high probability as it can be the edge of the depth map. Once the pixels are grouped together, a relative depth value can be assigned to each region. Initially, the input RGB image is converted into HSV color space. And then it is converted into gray image. And then the block-based image is considered to segment it into multiple groups. To segment the image this paper uses the Fuzzy C-Means Segmentation Approach. Then the depth of each segment is assigned with the help of an initial depth hypothesis. Next, the blocky artifacts have to be removed using cross bilateral filtering. Finally, multi-view images are obtained by the method of DIBR. As a result, the input 2D image is converted into visually comfortable 3D image without the presence of artifacts enhancing the quality of the image in the display. To analyse the performance of the proposed method several performance metrics are used. This paper uses PSNR, SSIM, MSE and RMSE to analyse the performance. From the experimental results it is shown that the proposed method performs better than the other existing methods.

Keywords— *2D-to-3D conversion, depth boundaries, depthmap,*

nonlocal neighbors, nonlocal edge information.

Introduction

3DTV is widely anticipated as the next revolution of television technology. ‘3D’ (three dimensional) here means ‘stereoscopic’, which provides viewers with feeling of immersion. The promotion of 3DTV depends

not only on technological advances in 3D displays, but also on availability of large amount of 3D content. However, it’s both costly and time-consuming to make 3D content of high quality directly with stereoscopic cameras, so the shortage of 3D content becomes one of severe bottlenecks for 3D industry. Converting 2D images or videos to 3D is one way to alleviate the problem in the early stage of 3DTV development, because it not only can create 3D content with lower cost and less time, but also makes full use of large amount of existing 2D materials.

Generally, the existing 2D to 3D conversion approaches can be classified as two categories: human assisted conversion and automatic conversion. The human-assisted approach is to convert 2D images or videos to 3D with some corrections made “manually” by an operator [1]. Even though this approach has relatively better performance, it’s still impractical in many scenarios. To convert the vast collection of available 2D material into 3D in an economic manner, an automatic approach is desired [2]. The automatic approach utilizes the depth cues in a single monocular image to generate another or more virtual views without any human assistance.

There is several research works are progressing on 2D to 3D conversion of images which shall be used in the motion pictures [4] and [5]. 3D imaging system has been incorporated in the televisions, cameras etc. In the health system the 3D body scanners help surgeons to determine the accurate status of various diseases. The 3D hardware is expensive compared with 2D hardware system. Therefore, it is necessary to develop a fast and accurate algorithm for converting 2D images to 3D images. In this research article, a new simple algorithm is proposed for

Comparison of Segmentation based on Threshold and K-Means Method

R.Spurgen Ratheash, Dr.M.Mohmed Sathik

Department of Information Technology, Principal
Sadakathullah Appa College, Tirunelveli
Tamil Nadu - India

ABSTRACT

In MRI brain images segmentation, extraction and detection of tumor infected area from the basic brain image properties are the primary, tedious and time taking process. The accuracy of separation the tumor area is based on the experience of clinical experts or radiologists. So, we need computer aided technology to overcome those limitations. In this study, we do automatic methods to reduce the complexity and improve the performance of MRI brain image segmentation. We have investigated many algorithms are available in medical imaging research area such as K-means clustering, Threshold technique, FCM, Watershed and Hierarchical Clustering (WHC) and so on. The proposed method compares Threshold technique and K-means clustering technique. The experimental results of proposed techniques have been evaluated and validated for performance and quality analysis on magnetic resonance brain images, based on segmented area, min and major axis and process time for the segmentation. The experimental results achieved more accuracy, less running time and high resolution.

Keywords:- Threshold technique, k-means clustering

I. INTRODUCTION

The uncontrolled growth of cancerous cells in the brain is called as tumours. The brain cells are identified by Benign or Malignant. Malignant is an active cancerous cells with rapid growth in the brain. The Benign cells are not the dangerous cancerous cells. The Benign cells can be converted into Malignant cells but the Malignant cells never become Benign cells^[1] This study about the segmentation of abnormal brain cells among normal brain properties such as Gray Matter (GM), White Matter (WM), and CerebroSpinalFluid (CSF) in magnetic resonance (MR) images using Threshold technique^[2] and K-means Clustering technique.

The Digital image segmentation is employed automatic detection of brain tumor from MRI brain imaging modalities, Segmentation is necessary and important step in image analysis; it is a process of separating an image into different regions, blocks or clusters sharing common and identical properties, such as contrast, patterns of pixels, and distance around the boundary of the region, and gray level.

II. LITERATURE SURVEY

Automatic identifying and extraction of brain tumor has proposed by the techniques like Threshold, K-Means Clustering, Fuzzy Clustering Means (FCM), Pulse Couple Neural Network(PCNN) algorithm, Expectation Maximization (EM) segmentation algorithm, Watershed and Hierarchical Clustering (WHC) algorithm, support vector machine (SVM), artificial neural network (ANN) algorithm^[3]. The above literature survey has revealed that some of the techniques are invented to obtain segmentation the brain area from the skull area; some of

the techniques are invented to obtain feature extraction and some of the techniques are invented to obtain classification only^[4]. Threshold Technique based on image intensity and K-means clustering algorithm based on the clusters^[5] in MRI brain images, the K-means clustering method gives an effective segmentation of tumor region. This analysis on combined approach could not be conducted in any published literature.

III. THRESHOLD

In Threshold technique is based on histogram to identify the infected areas by deep and sharp valley between two peaks representing objects and background respectively.

The threshold can be chosen at the bottom of this valley. However, for most MR images, it is often difficult to detect the valley bottom precisely when the valley is flat and broad, imbued with noise, or when the two peaks are extremely unequal in height, often producing no traceable valley^[6,7]. The threshold method can choose the value and separate the object from its background.

Let the pixels of a given picture be represented in L gray levels $[1, 2, \dots, L]$. The number of pixels at level i is denoted by n_i and the total number of pixels by $N = n_1 + n_2 + \dots + n_L$. In order to simplify the discussion, the gray-level histogram is normalized and regarded as a probability distribution:

$$P_i = n_i / N, P_i \geq 0, \sum_{i=1}^L P_i = 1 \quad (1)$$

Now suppose that we dichotomize the pixels into two classes C_0 and C_1 (background and objects, or vice



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A New Innovative Approach for Natural Image Denoising Using Genetic Algorithm and Thresholding

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Assistant Professor, Dept. of I.T., Sadakathulla Appa College, Tirunelveli, Tamilnad, India

ABSTRACT: The image de-noising naturally corrupted by noise is a classical problem in the field of signal or image processing. Additive random noise can easily be removed using simple threshold methods. De-noising of natural images corrupted by Speckle noise, salt & pepper noise and Poisson using wavelet techniques are very effective because of its ability to capture the energy of a signal in few energy transform values. Natural Image De-noising plays a cardinal role in the field of image pre-processing. Natural Image is recurrently debauched by noise in its acquisition and transmission. Natural Image De-noising is the process of undesirable noise in order to reinstate the original image. This thesis presents, image de-noising scheme based on Wavelet Transform. First the input natural image is taken and then the noise is applied in the image. Among different types of noises, this thesis focuses only the speckle noise, poisson noise and salt & pepper noise. And then apply Wavelet Transform on to the noisy natural image to produce the decomposed image representation. This thesis uses four different types of Wavelet Families such as COIF4, COIF5, RBio6.8 and Sym8. Finally threshold shrinkage methods are applied to de-noise the noisy coefficients and then apply the inverse transform to get the de-noised image. Among several shrinkage methods this thesis takes only four shrinkage methods such as Visu Shrink, Neigh Shrink, Sure Shrink and Modineighshrink. After the denoising process are completed the performance are analysed by using the performance metric such as Peak Signal to Noise Ratio(PSNR), Root Mean Square Error(RMSE), Mean Structural Similarity Index Measure(MSSIM), Mean Absolute Error(MAE), Normalized Cross Correlation(NCC), Normalized Absolute Error(NAE).

KEYWORDS: Image Denoising, Natural Image, DFT, DWT

I. INTRODUCTION

Image noise means unwanted signal. It is random variation of color information and brightness in images, and is usually an aspect of electronic noise. It is an undesirable by-product of image capture that adds spurious and extraneous information. Speckle is a granular 'noise' that inherently exists in and degrades the quality of the active radar, synthetic aperture radar (SAR), natural ultrasound and optical coherence tomography images. Speckle noise in conventional radar results from random fluctuations in the return signal from an object that is no bigger than a single image-processing element. It increases the mean grey level of a local area. Speckle noise in SAR is generally serious, causing difficulties for image interpretation. Shot noise or Poisson noise is a type of electronic noise which can be modelled by a Poisson process. In electronics shot noise originates from the discrete nature of electric charge. Shot noise also occurs in photon counting in optical devices, where shot noise is associated with the particle nature of light. Salt-and-pepper noise-Fat-tail distributed or "impulsive" noise is sometimes called salt-and pepper noise. Any image having salt-and-pepper noise will have dark pixels in bright regions and bright pixels in dark regions. In salt-and-pepper noise corresponding value for black pixels is 0 and for white pixels the corresponding value is 1.

II. RELATED WORK

Curvelet and Wavelet Image Denoising [1] this paper describes the image denoising of Curvelet and Wavelet Image Denoising by using 4 different additive noises like Gaussian noise, Speckle noise, Poisson noise and Salt & Pepper noise and also by using 4 different threshold estimators like heursure, rigrsure, mini-maxi and squawolog for wavelet

Early Exposure of Lung Cancer by Combining ANN and SVM Algorithms

M. Sheik Mansoor, M. Mohamed Sathik

Abstract: Lung cancer is a lethal type of cancers as its rate of spreading is very high compared to the other cancers. Patient who have been affected from Small Cell Lung Cancer (SCLC) has fast outspread rate. Even at initial stage, around 67-75% of cancer victims with SCLC will have fast outspreads and serious damages to the nearby physical parts. Moreover, World Health Organization (WHO) has predicted the count of lung cancer deaths will reach 9.6 million in 2020. Identifying such a lethal type of cancer early can be lifesaving one. Because, cancer cells in lungs are capable of traveling to other body parts even before the doctor detects them in lungs. In this research work, we have designed a combined approach to prognosticate lung cancer and its type using Artificial Neural Networks (ANN) and Support Vector Machine (SVM). To train both the ML algorithm, an open access patient health dataset published by cancer imaging archives is used. The dataset has the information like pretreatment CT scans, 3D image details of tumor and clinical outcomes. The results produced by ANN and SVM algorithm are compared to predict the type of the lung cancer accurately. The result holds good for a real time implementation.

Keywords: Neural Networks, Lung Cancer Prediction, Cancer diagnosis, Support Vector Machine.

I. INTRODUCTION

Lung cancer is a dangerous kind of cancer which originates from the lungs and outspreads to other nearest physical parts in a short time. Lung cancer is the second most cancer which affects men and fifth most cancer which affects women. As stated by Global Cancer Observatory (GCO), every 5.4 person has lung cancer among one million peoples in India. The alarming issue in the raise of lung cancer is, it has very low survival rate compare to any other cancer diseases. In India, 25% of cancer victims loses their life every year. Due to late stage diagnosis and fast outspread, deaths rate of lung cancer is too high compared to other prostate, colorectal, skin, kidney and breast cancers.

In general, lung cancers can be majorly categorized into Non-Small Cell Lung Cancer (NSCLC) and Small Cell Lung Cancer (SCLC). Here, NSCL cancer is further categorized into three major types, such as adenocarcinoma, squamous and large cell carcinoma. The second type that is SCLC is the dangerous cancer, in which cancer cells spreads to different body parts in short time period through lymphatic nodes. The

recent report from National Institute of Cancer Prevention and Research (NICPR) says, around 85-90% are of NSCL cancer and 10-15% of cancer are of SCLC.

Identifying lung cancer cells and its forceful exertion in primitive stage is the only possible way to meliorate the patient's chance of survival. But, in the primitive stage, performing traditional way of histopathology using microscopes will not produce the clear cut results.

Sometimes, lesions in small size can't be effectively detected by CT scan device. To overcome these issues and to identify the cancer type in early stage, automatic ML techniques are used on the patient data. It helps the physicians to acquire a clear cut knowledge about condition of the patients. Moreover, it also helps physicians in identifying the type and vigorous of the cancer cells.

In this research work, we have designed a combined approach to prognosticate the lung cancer and its type using Artificial Neural Networks (ANN) and Support Vector Machine (SVM).

ANN maintains an interconnected nodes, called as neurons to gather information by identifying relationships and new pattern between the data. It has three layer such as, input neuron layer, hidden neuron layer and output neuron layer. Neurons in each layers will receive the input data, performs operations and forwards the data to the nearby connected neurons. Each neurons and the edge which connects the neurons has a particular weight. The weight will change on the neurons based on the learnings. ANN allows both forward and backward propagation for learning.

The final result of ANN are produced based on the maximum probability of neurons present in output layer. Even there exist several algorithms to predict the early state lung cancer, using ANN will produce an accurate result as it allows both forward and backward propagation of learning.

SVM is a discriminative classifier, which draws a hyper plane to differentiate the classes that are derived as outputs. The hyper planes are the decision boundaries. The maximum accuracy can be attained only if the SVM draws the hyper plane separating all the objects to its classes correctly.

This paper is organized in a manner such that, Section 2, describes the related works that are performed in predict lung cancer. Section 3, explains the proposed combined ANN and SVM lung cancer prediction approach. Section 4, evaluates the performance of the proposed approach and Section 5 concludes and discusses about the future work of the proposed combined approach.

Revised Manuscript Received on November 22, 2019

M Sheik Mansoor, Research Scholar (Reg. No. 17221192161007), Sadakathullah Appa College, Tirunelveli, affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India. Email: sheikmansoormsm@gmail.com

Dr. M Mohamed Sathik, Principal and Research Supervisor, Sadakathullah Appa College, Tirunelveli, affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India. Email: mmdsadiq@gmail.com

Line Segmentation Challenges in Tamil Language Palm Leaf Manuscripts

R. Spurgen Ratheash. M. Mohamed Sathik

Abstract: The process of an Optical Character Recognition (OCR) for ancient hand written documents or palm leaf manuscripts is done by means of four phases. The four phases are 'line segmentation', 'word segmentation', 'character segmentation', and 'character recognition'. The colour image of palm leaf manuscripts are changed into binary images by using various pre-processing methods. The first phase of an OCR might break through the hurdles of touching lines and overlapping lines. The character recognition becomes futile when the line segmentation is erroneous. In Tamil language palm leaf manuscript recognition, there are only a handful of line segmentation methods. Moreover, the available methods are not viable to meet the required standards. This article is proposed to fill the lacuna in terms of the methods necessary for line segmentation in Tamil language document analysis. The method proposed compares its efficiency with the line segmentation algorithms work on binary images such as the Adaptive Partial Projection (APP) and A* Path Planning (A*PP). The tools and criteria of evaluation metrics are measured from ICDAR 2013 Handwriting Segmentation Contest.

Keywords: line segmentation, Tamil palm leaf manuscripts, connected component, historical documents, Tamil character recognition.

I. INTRODUCTION

In digitizing palm leaf manuscripts, there are various challenges in terms of reading and understanding the scripts. Only scholars with knowledge in old scripts could read and understand the palm leaf manuscripts. However, reading this poses great challenge for the general people and researchers concerned.

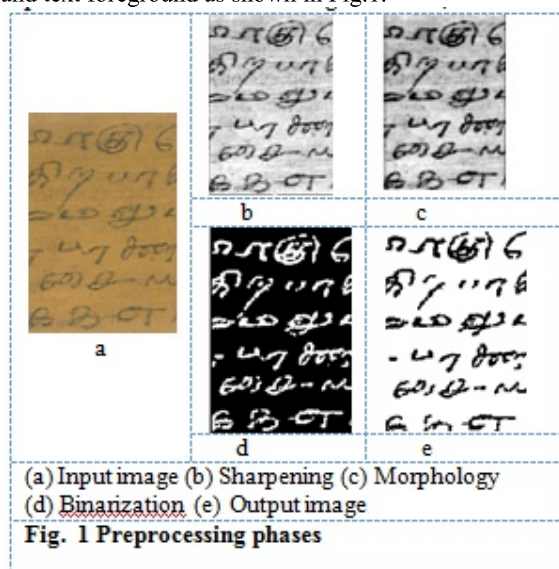
Those eminent scholars who could read the palm leaf manuscripts have incorporated the information in the palm leaf manuscripts in printed form as books. In spite of the effort taken so far in preserving the palm leaf manuscripts and the information in it, there is still a long way to go in accumulating the entire essential information from the ancient archives. In order to grasp all the information from palm leaf manuscripts, it is of vital importance to recognize the information from the manuscripts in question.

Revised Manuscript Received on November 05, 2019.

R. Spurgen Ratheash, Assistant Professor of Information Technology, received his MCA degree in Computer Applications from Bishop Heber College, Bharathidasan University, Trichy, India in 2007.

M. Mohamed Sathik, PG and Research Department of Computer Science, Sadakathullah Appa College, Tirunelveli, Tamilnadu, India. Manonmaniam Sundaranar University, Tamilnadu, India.

Automatic recognition is a process that helps in reading the scripts with suggestions when the scripts are not recognizable. It is important to implement automatic recognition of the palm leaf manuscripts as the structure or form of the modern day letters is different from that of the ancient scripts. Optical Character Recognition is a process that recognizes the character in the ancient scripts automatically with high accuracy. Basically an OCR has five major phases such as 'preprocess', 'line segmentation', 'word segmentation', 'character segmentation' and 'character recognition'. The first and foremost phase Pre-process does the initial work such as noise removal, morphology, binarization to separate the dark background and text foreground as shown in Fig.1.



The second phase, line segmentation segment the text lines if it is touching and overlapping with the subsequent lines. The third phase, separate the words according to the language from the segmented lines. The character segmentation separates the characters from the words and leads to the final phase of character recognition. Amongst the umpteen of methods for line segmentation, this article concentrates on two methods such as Adaptive Partial Projection (APP) and A* Path Planning (A*PP) which are considered the best in Thai and Khmer scripts respectively. The process of those methods is implemented in Tamil palm leaf manuscripts and it compares the result with the proposed segmentation method.

In section II provide the details of widespread line segmentation methods used in various languages by Literature survey. The comparison of Thai and Khmer language manuscripts line segmentation methods with Tamil language manuscripts explains in Section III, and the evaluation results in section IV with the conclusion in section V.

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A Detailed Survey of Text Line Segmentation Methods in Handwritten Historical Documents and Palm Leaf Manuscripts

Article in INTERNATIONAL JOURNAL OF COMPUTER SCIENCES AND ENGINEERING · April 2019

DOI: 10.26438/ijcse/v7si8.99103

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Tamil Character Recognition in Palm Leaf Manuscripts [View project](#)

A Detailed Survey of Text Line Segmentation Methods in Handwritten Historical Documents and Palm Leaf Manuscripts

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Abstract— The revolution of document analysis provides the handwritten palm leaf manuscripts and historical documents, epigraphic into digital. Digital document is available as auto recognition of those historical documents which is the second revolution in document research. Many algorithms are available from the period of the 19th century to the 20th century with the researchers across the world. In order to achieve auto recognition, the line segmentation is a foremost process. Though automatic segmentation of text lines is still a burning research, many technical issues remain unsolved yet. The present survey has been carried out as the survey of newly proposed and modified methods of text line segmentation in palm leaf manuscripts and handwritten historical documents published during the period 2008 – 2018. It could benefit the researchers who do research in handwriting recognition.

Keywords— pre-processing, path finding approach, performance measure

I. INTRODUCTION

The digital world provides the potential way to convert handwritten documents into electronically usable data. This study is known as Document Image Analysis (DIA). The olden day documents such as palm leaf manuscripts and handwritten historical documents make DIA a Herculean task by means of strains, yellowing, low intensity variations, random noises, fading and degradation. In DIA, the text line segmentation is considered the most significant process step because the text line segmentation efficiency affects the accuracy of the whole recognition system. It contains line segmentation, word segmentation, character segmentation and text recognition modules. The line segmentation task is extracting and separating the text regions into individual lines. Many of the language scripts such as Japanese, Chinese and Latin have attained a consummate position. However, the Asian scripts pose many issues^[1] from fluctuation in the base line, variability in skew between different as well as same line, flexible writing style of different writers, presence of touching components among two adjacent lines. Ceaseless survey is needed to give out many methods reported every decade in text line segmentation. It gives one the motivation to carry out a quality survey after the publishing concerned in 2008. The paper precedes pre-processing in section II, survey of line segmentation methods 2008-2018 given in table format in section III, performance measure in section IV, and conclusion in section V.

II. PREPROCESSING

The line segmentation requires noise free documents. The digitized palm leaf and historical handwritten document are practically impossible to provide noiseless documents. The pre-processing techniques are used to remove the noises and extract the text from their dominating backgrounds. Most of the papers provide the following pre-processing methods:

A. Binarization

Converting RGB or Gray scale valued image into binary image using various threshold techniques^[2]. The thresholding provides Global and Local thresholding. Otsu's thresholding method produces best result for text data in document analysis.

B. Skew Correction

The skewed lines of binary images can changed into proper horizontal lines by skew correction. The skew has categorized three types as follow: Global, Multiple, and Non-Uniform Skew^[3]. In skew correction the vertical projection profile method is used to rotate the image across different angles. The maximum value of standard deviation is calculated for an optimal rotation in the projection profile.

C. Extracting Connected Components

The edge of the text image calculated using edge detection methods and Stroke Width Transform is applied to identify the strokes in each pixel. The small dots, patches, and unwanted noise components of the images are removed from the text image^[4].

III. SURVEY OF LINE SEGMENTATION

A. Adaptive Partial Projection (App)

In 2012, APP is derived from the partial projection method. It divides the image into vertical columns and the projection profile is applied on that column in order to achieve 'smoothing'. It removes peaks and valleys in the histogram of the image. The line extraction process is (i) find the number of lines, divide the image into vertical columns, calculate the horizontal projection profile, smoothen the histogram, find the base lines, (ii) find the valleys of smooth histogram, test all the valleys, check for incorrect top and bottom

Cardiac MRI Segmentation Techniques – An Overview

Gomathi, G.,¹ and Subha, V.,²

Abstract

Segmentation of LV, RV in Cardiac MRI plays a paramount role in medical imaging. Cardiovascular diseases are the main cause of death in present century. The study of cardiac motion is one of the important subjects in biomedicine field. The right ventricle (RV) and left ventricle (LV) are the two lower chambers of the heart that receive blood from the two upper chambers of the heart and pump it into the arteries by contraction or tightening of the chamber walls. Cardiac MRI provide the flexible and accurate information on morphology, tissue viability and blood flow. Manual segmentation is hectic and time-consuming job for radiologist and cardiologist. The paper describes an automated framework for LV, RV segmentation task. Assorted methods are available for segmentation of heart chambers. Cardiac MRI segmentation techniques are classified into three main categories. That are Threshold based, Region Based and Edge Based. Segmentation accuracy encompasses the wealth of computerized analysis. In the splitting of an image into meaningful structures, image segmentation, is often an essential step in image analysis, object representation, visualization, and many other image processing tasks

Keywords: Cardiac MRI, Left and right ventricle segmentation.

Introduction:

Magnetic resonance imaging (MRI), computed tomography (CT), digital mammography, and other imaging modalities provide an effective means for noninvasively mapping the anatomy of a subject. These technologies have greatly increased knowledge of normal and diseased anatomy for medical research and are a critical component in diagnosis and treatment planning. Magnetic Resonance Imaging (MRI) is a test that has been useful for decades in diagnosing problems of the brain, spine, joints, and other stationary organs. Accurate segmentation is the important step in the workflow of cardiac function evaluation process. Ejection fraction (EF), left ventricle volume, and muscle wall thickness are some of the parameters need to be measured precisely to evaluate the cardiac function. Calculation of

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A COMPARATIVE STUDY OF SUPERVISED AND UNSUPERVISED MACHINE LEARNING TECHNIQUES ON LUNG CANCER PREDICTION

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Abstract— Lung cancer is one of the most dangerous type of cancers which has the high spread rate. Lung cancer metastases spreads through fluid lymph nodes and bloodstreams to other organs like bone, glands and brains. Due to the air and industrial pollution the rate of people who has affected by the lung cancer is increasing enormously. According to the prediction reports of World Health Organization (WHO) the number of lung cancer deaths will reach 9.6 million in 2020, which is an alarming issue. Diagnosis the lung cancer at its earlier stage could help the physicians to treat the patients. Though the manual analysis of CT scan exists in the medical field, it is too hard for the medical advisors to predict the exact stage of the disease using the CT scan images. Hence, the medical informatics research community has created several machine learning model to predict the lung cancer and its type in the earlier stage. In this comparative research study, we have downloaded the lung cancer dataset from the Cancer Image Archive and given as the input to the two most accepted machine learning models such as, Artificial Neural Networks (ANN), Support Vector Machine (SVM) from supervised learning method and another unsupervised dataset as input for Apriori and K-means model from unsupervised learning to observe the changes. The final results and the performance metrics of the machine learning algorithms such as accuracy, precision and recall are compared with each other and tabulated.

Keywords— Machine Learning; Lung Cancer Prediction; Supervised Learning; Cancer Diagnosis.

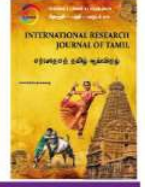
1. INTRODUCTION

Lung cancer is a type cancer which starts in the cells of the lungs and spreads to the other parts of the human body [3]. Likewise, cancer cells such as breast, mouth and kidney can also spread to the lungs via lymph nodes or bloodstreams[2, 3]. The lung are is made up of sponge like structure in the chest of the human. The main objective of the lungs is to take oxygen into the body and release the carbon dioxide [1]. While breathing air passes through pipe like structure called trachea and propagates through bronchi nodes to enter lungs and come outs in the same path. The small sized holes in the bronchi nodes called alveoli passes the oxygen to the blood and takes out the carbon dioxide out from the blood [4,5].

At initial stage of lung cancer, DNA of the patient will change or damage and mutate the genes. Mutated genes will not work properly because they will not get any instruction from DNA properly or in a correct manner. This will cause the cells in the lung to divide and grow out of control in and around the lungs and causes the lung cancer [6].

As stated by Global Cancer Observatory (GCO), every 5.4 person has lung cancer among one million peoples in India. The alarming issue in the raise of lung cancer is, it has very low survival rate compare to any other cancer diseases. In India, 25% of cancer victims loses their life every year. Due to late stage diagnosis and fast outspread, deaths rate of lung cancer is too high compared to other prostate, colorectal, skin, kidney and breast cancers [7]. Accurately identify the lung cancer cells in its initial stage through manual analysis of CT scan is not possible. It makes difficult for medical advisors to predict the exact stage of the cancer using the CT scan images.

To overcome these issues and to identify the cancer type in early stage, Machine Learning techniques are used on the patient data. It helps the physicians



பனை ஓலைச்சுவடிகளில் எழுதப்பட்டுள்ள தமிழ் எழுத்துக்களை கணினி வழி அடையாளப்படுத்துதல்

இரா. ஸ்பர்ஜன் ரத்தீஷ் அ. *, மு.முகம்மது சாதிக் அ

அ சதக்கத்துல்லாஹ் அப்பா கல்லூரி, (மனோன்மணியம் சுந்தரனார் பல்கலைக்கழகத்துடன் இணைவு பெற்றது). திருநெல்வேலி-627011, தமிழ்நாடு, இந்தியா.

Tamil Character Recognition in Palm Leaf Manuscripts

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ABSTRACT

Tamil characters are of historical significance. The shapes of the character and its writing continued to be changed by several reformers in each century until the period of the nineteenth century. The Tamil characters in the palm leaf manuscripts are based on the author's writing style and strokes in use at the time. Reading palm leaf manuscripts is a challenge for the modern generation who are unaware of the character strokes and writing patterns written in earlier times, and the younger generation neglects to read and understand the contents written in palm leaf manuscripts. To read Tamil palm leaf manuscripts it is necessary to remember the shapes of the character that has changed over time and to compare and recognize the characters. This research paper explains how to recognize the Tamil characters written in palm leaf manuscripts by computer. By this research, the Tamil characters can be compared with different strokes and shapes and the exact character can be recognized accurately and quickly.

Keywords: Tamil manuscripts, Tamil character, Text line segmentation, Character segmentation, Character recognition

ஆசிரியர் குறிப்பு



இரா. ஸ்பர்ஜன் ரத்தீஷ், சதக்கத்துல்லாஹ் அப்பா கல்லூரியின் ஆராய்ச்சி மாணவர் ஆவார். இது இந்தியாவின் தமிழ்நாட்டில் உள்ள திருநெல்வேலி மனோன்மணியம் சுந்தரனார் பல்கலைக்கழகத்துடன் இணைக்கப்பட்டுள்ளது. எண்மின் மயமாக்கல் பட செயலாக்கம், ஆவண பட பகுப்பாய்வு மற்றும் தமிழ் மொழி பனை ஓலை கையெழுத்துப் பிரதிகளின் எழுத்து அங்கீகாரம் ஆகியவை அவரது முக்கிய ஆராய்ச்சி ஆர்வங்களில் அடங்கும்.



முனைவர் மு. முகம்மது சாதிக், இந்தியாவின் திருநெல்வேலியில் உள்ள சதக்கத்துல்லாஹ் அப்பா கல்லூரியின் முதல்வராக உள்ளார். இந்தியாவின் திருநெல்வேலியில் உள்ள மனோன்மணியம் சுந்தரனார் பல்கலைக்கழகத்தில் கணினி அறிவியல் மற்றும் கணினி அறிவியல் மற்றும் தகவல் தொழில்நுட்பத்தில் தேர்ச்சி பெற்ற இரண்டு முனைவர் பட்டங்களைப் பெற்றார். அவர் பல தேசிய மற்றும் சர்வதேச கருத்தரங்குகள், மாநாடுகளில் கலந்து கொண்டு ஏராளமான ஆய்வுக் கட்டுரைகளை வழங்கியுள்ளார். பல சர்வதேச பத்திரிகைகளில் வெளியீடுகளுடன், 40 க்கும் மேற்பட்ட ஆராய்ச்சி

TEXT LINE SEGMENTATION IN TAMIL LANGUAGE PALM LEAF MANUSCRIPTS – A NOVEL APPROACH

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Abstract. Segmentation of text lines from palm leaf manuscripts is an essential prior activity for character recognition. The scribes writing style creates intricacy in text line segmentation by low space between text lines and elongated characters placed in the text lines. Inefficient text line segmentation makes unproductive when promoting to character segmentation and character recognition process. The researchers have proposed a new way of text line segmentation algorithm named as Text Line Slicing algorithm for Tamil palm leaf manuscripts. This article explores text line segmentation from the scratch of preprocessing. The identification, segmentation of touching and overlapping text lines by an elongation of the character proves uniqueness of an algorithm. Text Line Slicing provides successful result in Tamil text line segmentation amidst several challenges. This outcome is an evidence of novelty among aplenty of text line segmentation methods in Tamil and other language palm leaf manuscripts.

Keywords: binarization, line segmentation, obstacle, palm leaf, preprocessing, Tamil manuscripts, text line slicing, touching line, overlapping lines.

Introduction

Tamil, one of the most ancient classical languages, has its inscriptions that date back to 600 BC. During the ancient period, many of the literatures, medicinal hints, astrology and much more essential information are present in palm leaves. Lifespan of preserved palm leaf manuscripts is minimum years. The reasons for the dilapidated condition of the manuscripts are weather, fungal and termite. The information of palm leaf manuscripts can be preserved when they are copied into new leaf by the scribes. The palm leaf writing is unique skill that needs patience, practice, and training to the writers. Generally, the Tamil palm leaf manuscripts are written by a pointed needle metal named as stylus [1]. Many of the text lines are not in exact straight line as typed letters. Writing the Tamil characters with stylus creates extension in shapes of the character and makes to touch with the succeeding text lines (Fig. 1). The stylus writing produces the challenges of low space, cross line, touching and overlapping text lines in the process of character recognition from the text images [2]. The successful text line segmentation can lead accuracy when character images are recognizable. In Tamil language, elongation categorizes the strokes as upper part and lower part of the text lines. Tamil character strokes are elongated by nature or in the course of writing by the writers. The letters such as *g* /thu/, *ṁ*/ra/ are the examples of downward and *ṁ*/nee/, *ṁ*/ree/ are upward elongated characters respectively [3]. The impediment in line segmentation starts from the text lines during the segmentation when they have elongated characters. The proposed Text Line Slicing (TLS) algorithm identifies elongation of the character as an obstacle. The existence or prolongation of an obstacle categorizes the space between the text lines as space without obstacle and space with obstacle. An obstacle touches with the succeeding text lines are considered touching text lines and it

Semantic Segmentation of Ventricular and Myocardium Regions in Cardiac MRI

G. Gomathi, Dr. V.Subha

Keywords: Deep Learning, Unet, Segnet, FCN (Fully ConvolutionalNetwork), Cardiac MRI(Magnetic Resonance Imaging).

ABSTRACT

Deep Learning has been most widely used in Cardiac MRI segmentation as it comprises of stack of layers. Manual demarcation is a time consuming and tiresome operation whereas automated process makes it easier and significant to identify the clinical parameters of Cardiac MRI. Over the last few decades, extensive study has been conducted on automation of the necessities. This study aims to compare the three deep learning subsets Unet, Segnet, and Fully ConvolutionalNetwork (FCN) that are being implemented to segment the ventricle regions Left Ventricle (LV), Right Ventricle (RV) and Myocardium (MYO) in systolic and diastolic phases of cardiac cycle. The performance analysis is done based on the values obtained using Dice Coefficient and Hausdorff Distance. While comparing the three methods, Unetarchitecture provides the best outcome. The results are affirmative to the statement-‘Unet is the multiclass segmentor’.

PDF

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Plant Disease Detection Using IOT

Subbu Lakshmi.L.S., Assistant Professor, Department of Information Technology, Sadakathullah Appa College, Tirunelveli, TamilNadu, India.

Abstract:-

Agriculture is the key development of the rise in human civilization but the quality of agricultural is seriously affected by plant disease; this system is proposed to rectify the problem occurred by plant disease while in early stage of infection. Using IOT, an automated system has been developed to detect disease in leaf which improves the quality of agriculture. This paper attempts to develop an automated system that detects the presence of disease in the plants using image processing techniques and the values predicted using sensors like temperature, humidity and color parameters, the result is recognized based on variation in predicted values between infected plant leaf and healthy plant leaf.

Keywords:-

Agriculture, Disease, Sensors.

VENTRICLE AND MYOCARDIUM SEGMENTATION OF CARDIAC MRI USING TRADITIONAL AND DEEP LEARNING METHODS

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ABSTRACT

Segmentation is the process of distinguishing the representation of an image into various sections for better understanding and easy accessibility. For diagnosing cardiac diseases, various parameters such as stroke volume, ejection fraction, and myocardial wall thickness are required. Amidst of them, the Left Ventricle (LV), Right Ventricle (RV) and Myocardium segmentation of cardiac MRI are vital. Manual segmentation is a tiresome burden for physicians. Automatic segmentation of the ventricle region is consequential to detect the clinical parameters. Deep learning arose to surplus attention in computer vision as it is achieving the highest accuracy than traditional methods. It is being prominent in the field of medical science. This study experimented with the most widely used clustering methods(KMEANS, MEANSHIFT) and deep learning method (UNET). The results are determined according to the metrics accuracy, precision, recall, dice coefficient, f1 score, and Intersection over Union (IOU).

Keywords: Cardiac MRI, LV, RV, Segmentation, Deep learning



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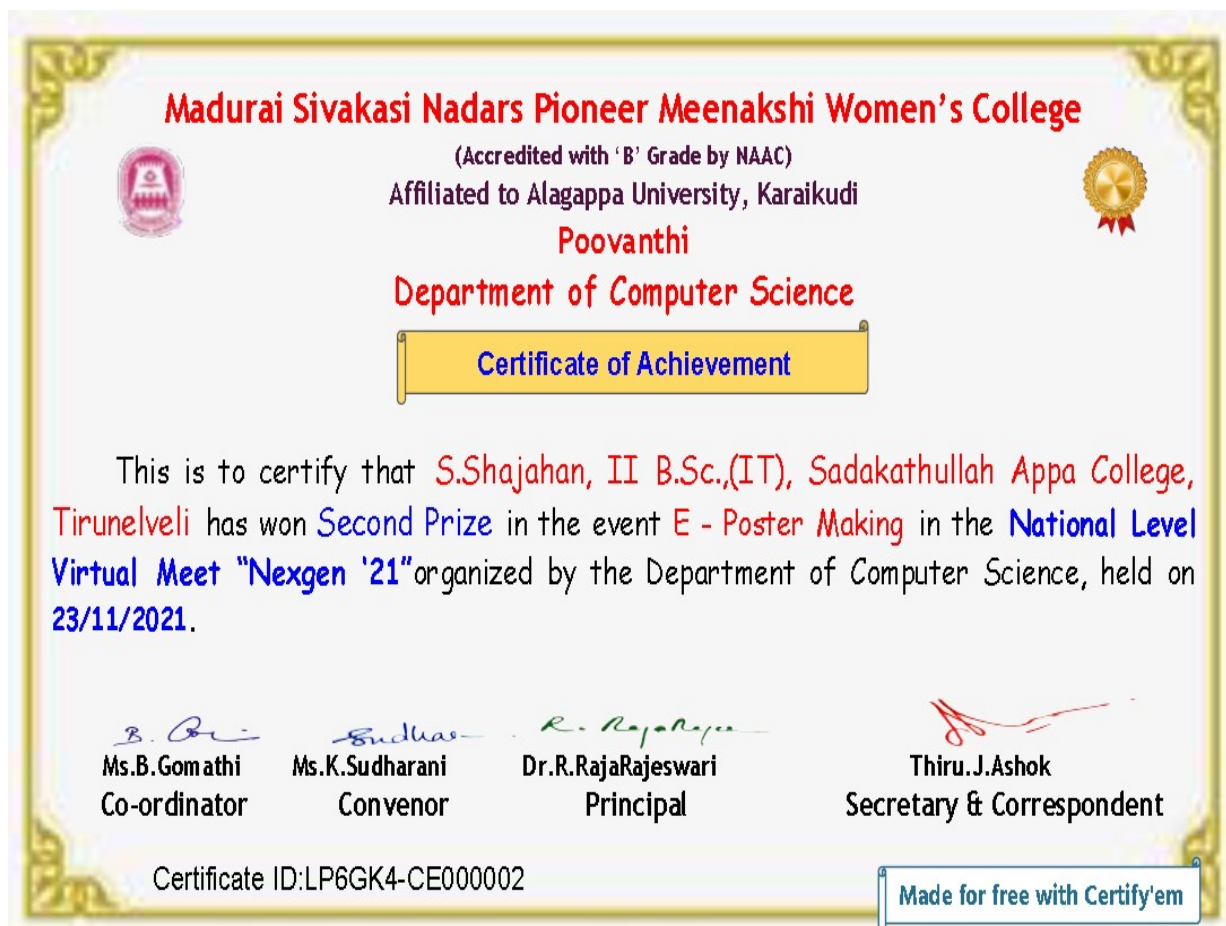


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E-Mail Id : 2020179032@annauniv.edu.in
Validity : From 01/12/2020 To 01/07/2022
Dean Office Phone No : +91-044-22358491
Anti Regging Helpline : 1800-180-5522
helpline@antraggng.net
Verify card with Ref.No.@www.aukdc.edu.in/smartinfo/

Fig.Pandiaraja_year 19_20

SANTHOSH K [145985]

Reg. Number : 21112297
Gender : Male
Nativity : Tamil Nadu
Date of Birth : 11-08-2000
Community : BC
Nationality : Indian
Entrance Test : MCA Only
Subject Choice : Not Applicable

Signature of the candidate



TANCET 2021			
Exam	Actual Score	Percentile Score	Number of candidates appeared
MCA	29.333	82.102	6174
MBA	—	—	—
ME(ON SUBJECT CHOICE)	—	—	—
ME(OVERALL)	—	—	—

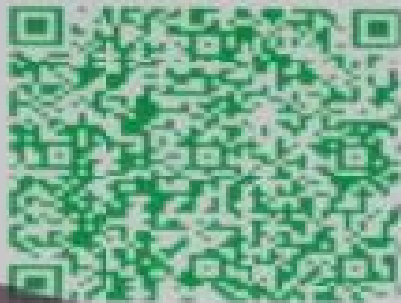


Fig.Santhosh_year 20-21



ANNA UNIVERSITY
Chennai - 600 025

STUDENT IDENTITY CARD
MAHARAJAN G



M.C.A.
Computer Application
2018202022
அண்ணா
பல்கலைக்கழகம்
ANNA
UNIVERSITY



Dean

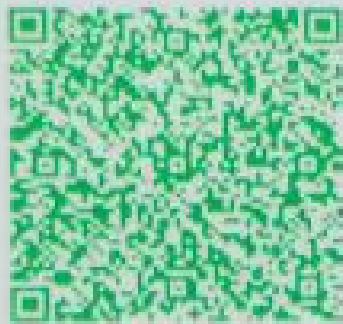
Campus : C.E.G.Campus 21-08-2018
Blood Group : O+ve
Phone No : 9042937099
Address : # 21, Maruthuvar Street,
Kalakadu, Tirunelveli Dist-627501
Ref. No. : 18011322567449
E-Mail id : 2018202022@annauniv.edu.in
Valid From : August 2018 to July 2021
Dean Office Phone No : +91-44-22358491
Anti Ragging Helpline : 1800-180-5522
helpline@antiragging.net
Verify card with Ref.No.@www.aaukdc.edu.in/smartinfo/

Fig.Maharaja year2017-2018



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STUDENT IDENTITY CARD
RAJKUMAR KUEARA K



M.B.A.
Business Administration
710018631045



Registrar

Fig.Rajkumarkuvera_year2017-2018