Resume

01. Personal Information

01	Name, Designation and Address:	Dr. M Ravikumar Professor, Dept of Computer Science, Kuvempu University, Jnanasahyadri, Shankaraghatta- 577451 Shivamogga, Karnataka, India
02	Contact Number and E-mail:	9449185645, ravi2142@yahoo.co.in
03	Date of Birth:	21/03/1971
04	Gender and Marital Status:	Male, Married
05	Nationality:	Indian

02. Educational Qualification

Sl. No	Name of the Degree	University /Institution	Year of Degree Awarded	Remarks
01	Ph. D	University of Mysore, Mysore	May, 2016	**Topic**: Estimation of multiple skews in tri lingual handwritten document images
02	M. Tech	Visweshvaraiah Technological University	2001	Computer Science and Engg.
03	B.E	Kuvempu University	1996	Instrumentation Technology

Research Supervisor: Dr D S Guru
Professor, Dept of Computer Science,
University of Mysore, Mysore,
Karnataka, India

03. A. Teaching Experience

Sl. No	Designation	University/Institution	Period
01	Professor	Kuvempu University, Dept of Computer science	31/03/2003 to till Date

04. Minor Research Project

Sl No.	Title	Principal Investigator	Funding Agency	Amount	Status
01	Vision based solution for early diagnosis of cancer cells. A case study: Breast cancer	Dr. M Ravikumar	UGC	38,000/-	Completed

05. Publications

Sl.No	Name(s) of the author/ Co-author	Title of the Article	Journal / year	Page No. Vol.
1.	**M. RaviKumar**, R. Pradeep, B. S. Puneeth Kumarand Prasad Babu	A Simple Text-line Segmentation Method for Handwritten Documents	International Journal of Computer Applications,2012, Impact Factor 3.12	PP 46-51
2.	D S Guru, **M Ravikumar**, andB S Hrish	A Review on Offline Handwritten Script Identification	International Journal of Computer Applications, 2012, 8 citations, Impact Factor 3.12	PP 13-16
3.	**M.RaviKumar**, Nayana N Shetty and B. P. Pragathi	Text Line Segmentation of Handwritten Documents using Clustering Method based on Thresholding Approach	International Journal of Computer Applications 2012, 4 citations, Impact Factor 3.12	PP 09-12
4.	Suresha M and **Ravikumar M**	Classification of Vegetables based on Decision Tree for Multiclass Problem	International Journal of Image Processing and Visual Communication 2012	PP 42-51 Vol.1
5.	Suresha M and **Ravikumar M**	Dimensionality Reduction and Classification of Color Features data using SVM and KNN	International Journal of Image Processing and Visual Communication 2013, 3 citations	PP 16-21 Vol.1

6.	D. S. Guru, **M. Ravikumar**, and S. Manjunath	Multiple Skew Estimation In Multilingual Handwritten Documents	International Journal of Computer Science Issues 2013, 2 citations, Impact factor 0.242	PP 65-69 Vol.10
7.	S. Manjunath, D. S. Guru, and **M. Ravikumar**	Handwritten Script Identification: Fusion based Approaches	Association of Computer Electronics and Electrical Engineers 2013	PP 216-217
8.	Mukhtar Abdulashman mohammed, **MRavikumar** and R Pradeep	Text line segmentation of Arabic handwritten documents using line height method	IJARCSSE 2014, impact factor 2.5	PP 170-174 Vol.4
9.	**M. Ravikumar,** S. Manjunath, and D. S. Guru	Analysis and Automation of Handwritten Word Level Script Recognition	Advances in Intelligent Systems and Computing 2015, 1 citation	PP 213-225
10.	D S Guru, MohamadSuhil and **M. Ravikumar**	Small Eigenvalue based Skew Estimation of Handwritten Devanagari Words	Springer publishes MIKE 2015 Proceedings in Lecture Notes in Artificial Intelligence 2015	PP 216-225 Vol.9468
11.	**Ravikumar M,** Guru D S, Manjunath S and Mnajunath Aradhya	Script Based Trilingual Handwritten Word Level Multiple Skew Estimation	Springer's in Advances in Intelligent Systems and Computing 2016	PP 541-549
12.	**M Ravikumar,** PG Rachana, BJ Shivaprasad and G Shivakumar.	Segmentation of Words From Unconstrained Multilingual handwritten Documents.	Journal of Innovation in Computer Science and Engineering	PP 26-29 Vol. 6(2)
13.	**M Ravikumar** and BJ Shivaprasad	Segmentation of Brain Tumor from MR Images using the Hybrid Architecture:"BCon vLSTMSegX-Net"	Turkish Journal of Computer and Mathematics Education (TURCOMAT)	PP 737-747 Vol. 9(2)
14.	**M Ravikumar,** BJ Shivaprasad, G Shivakumar and PG Rachana.	Estimation of Skew Angle from Trilingual Handwritten Documents at Word Level: An Approach Based on Region	Soft Computing and Signal Processing: Proceedings of ICSCSP 2018.	PP 419-426 Vol. 2

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15.	**M Ravikumar** and G Shivakumar	A Survey on Text Detection from Document Images	International Conference on Intelligent Computing and Smart Communication 2019.	PP 961-972
16.	**M Ravikumar,** S Sampathkumar, MC Prashanth and BJ Shivaprasad	Object Recognition Using SBMHF Features	International Conference on Intelligent Computing and Smart Communication 2019: Proceedings of ICSC 2019	PP 973-983
17.	**M Ravikumar** and Omar Ali Boraik	Low Pass Filter-Based Enhancement of Arabic Handwritten Document Images	Information and Communication Technology for Intelligent Systems: Proceedings of ICTIS 2020.	PP 271-277 Vol. 1
18.	**M Ravikumar,** PG Rachana, BJ Shivaprasad and DS Guru	Enhancement of mammogram images using CLAHE and bilateral filter approaches	Cybernetics, Cognition and Machine Learning Applications: Proceedings of ICCCMLA 2020.	PP 261-271
19.	**M Ravikumar** and MC Prashanth	Analysis of DNA sequence pattern matching: a brief survey	Cybernetics, Cognition and Machine Learning Applications: Proceedings of ICCCMLA 2020.	PP 221-229
20.	**M Ravikumar,** S Sampath Kumar and G Shivakumar	Automation of Answer Scripts Evaluation-A Review	Cybernetics, Cognition and Machine Learning Applications: Proceedings of ICCCMLA 2020.	PP 177-183
21.	**M Ravikumar** and BJ Shivaprasad	Segmentation of brain tumor from MR images using SegX-net an hybrid approach	Information and Communication Technology for Competitive Strategies (ICTCS 2020) Intelligent Strategies for ICT.	PP 1007-1015
22.	**M Ravikumar,** BJ Shivaprasad and Devanur S Guru	Enhancement of MRI brain images using fuzzy logic approach	Recent Trends in Image Processing and Pattern Recognition: Third International	PP 131-

			Conference, RTIP2R 2020, Aurangabad, India, January 3–4, 2020, Revised Selected Papers, Part II 3.	137
23.	**M Ravikumar** and BJ Shivaprasad	Bidirectional ConvLSTMXNet for brain tumor segmentation of MR images	Tehnički glasnik	PP 37-42 Vol.15(1)
24.	**M Ravikumar,** PG Rachana and BJ Shivaprasad	Segmentation of Tumor Region from Mammogram Images Using Deep Learning Approach	International Conference on Advanced Informatics for Computing Research.	PP 30-42
25.	**M Ravikumar** and S Sampathkumar	Recognition of Kannada Handwritten Words from Answer Scripts Using Machine Learning Approaches	Information and Communication Technology for Competitive Strategies (ICTCS 2020) ICT: Applications and Social Interfaces.	PP 1077-1084
26.	**M Ravikumar** and Omar Ali Boraik	Estimation and Correction of Multiple Skews Arabic Handwritten Document Images	International Conference on Innovative Computing and Communications: Proceedings of ICICC 2021.	PP 553-564 Vol. 1
27.	**M Ravikumar,** MC Prashanth and BJ Shivaprasad	Searching Pattern in DNA Sequence Using ECC-Diffie-Hellman Exchange Based Hash Function: An Efficient Approach.	Machine Learning and Big Data Analytics (Proceedings of International Conference on Machine Learning and Big Data Analytics (ICMLBDA) 2021).	PP 117-127
28.	**M Ravikumar** and PG Rachana	Study on different approaches for breast cancer detection: A review.	SN Computer Science	PP 43 Vol. 3(1)
29.	Omar Ali Boraik, **M Ravikumar** and Mufeed Ahmed Naji Saif	Characters segmentation from Arabic handwritten document images: hybrid approach.	International Journal of Advanced Computer Science and Applications.	Vol. 13(4)

30.	**M Ravikumar,** BJ Shivaprasad and DS Guru	Enhancement of MRI brain images using notch filter based on discrete wavelet transform.	International Journal of Image and Graphics	PP 2250010 Vol.22(1)
31.	BJ Shivaprasad, **M Ravikumar** and DS Guru	Analysis of Brain Tumor Using MR Images: A Brief Survey.	International Journal of Image and Graphics	PP 2250023 Vol. 22(2)
32.	G Shivakumar, **M Ravikumar,** BJ Shivaprasad and DS Guru	Signature Extraction from Bilingual Document Images Using Blobs Method	Modern Approaches in Machine Learning & Cognitive Science: A Walkthrough	PP 283-294
33.	**M Ravikumar,** MC Prashanth and DS Guru	Matching Pattern in DNA Sequences Using Machine Learning Approach Based on K-Mer Function	Modern Approaches in Machine Learning & Cognitive Science: A Walkthrough	PP 159-171
34.	G Shivakumar, **M Ravikumar,** BJ Shivaprasad and DS Guru	Extraction of Logo from Real Time Document Images Using Masking and Median Filter Approaches	2022 3rd International Conference for Emerging Technology (INCET)	PP 1-7
35.	G Shivakumar, **M Ravikumar** and BJ Shivaprasad	Classification of Text and Non-Text from Bilingual Real-Time Document Using Deep Learning Approach	Research Square https://doi.org/10.21203/rs.3.rs-2152190/v1	
36.	**M Ravikumar** and S Sampathkumar	Segmentation of Handwritten Characters from Answer Scripts	Proceedings of the International Conference on Cognitive and Intelligent Computing: ICCIC 2021.	PP 891-903 Vol. (1)
37.	BJ Shivaprasad and **M Ravikumar**	Enhancement of brain magnetic resonance images using cascade of notch filter and linear transformation methods	Pattern Recognition and Image Analysis	PP 66-79 Vol. 33(1)

06. Details of Abroad Visit in connection with Academic/Research Programme

Sl. No.	Duration	Purpose	Sponsored by
01	12th June to 20th June 2015, Burgos, Spain.	To present research paper in the international conference	UGC

References

1	Dr. D S Guru Professor, Dept of Studies in Computer Science, Manasagangothri, University of Mysore, Mysore, Karnataka, India
2	Dr.Ashok Rao Former Head, Network Project, CEDT , IISc, Bangalore.

Abstract of the thesis

In this thesis, issues related to estimation of multiple skews in handwritten text with multi-scripts are addressed. As a result of this, two different approaches, one independent of scripts and the other dependent on of scripts and the other dependent on scripts have been proposed. In other words, problem of skew estimation has been studied with and without having knowledge on scripts present in document images.

A novel script independent algorithmic model for estimation of multiple skews in trilingual hand written documents has been designed. The designed model works at block level of text. The designed model uses connected component analysis to identify each individual word present in a handwritten document image. Each identified word is the circumscribed by an ellipse, the slope of the major axis of which gives the skew angle of the particular word. The identified words across the entire document are subsequently clustered by the use of their spatial co-ordinates and skew angle of the particular word. The identified words across the entiredocument are subsequently clustered by the use of their spatial co-ordinates and skew angles by employing adaptive k-means clustering algorithm. Each cluster of words is then labeled as a block of text with a different orientation. The overallskew angle of such an identified block of text is calculated to be the average of slope angles of the major axis of the ellipse of the words present in that particular block. Since this model does not take into account any parameter related to type of scripts present in a document image, this skew estimation model is claimed to be independent of script.

In order to design a script dependent skew estimation model, we initially address the problem of script identification both at clock level and at word level. The script identification both at block level and at word level. The script identification problem has been studied by considering six different south Indian languages under possible combinations. An empirical study for possibility of exploring fusion based approaches for script identification is made. For purpose four different feature extraction methods, two different classifiers and their possible fusions have been empirically investigated. Experiments have been conducted for both bi-script and tri-script combinations with and without skew.

It has been argued in the thesis that estimation of skew angle or handwritten text by knowing the script is more effective than that of not knowing the script. Therefore, in this thesis, different algorithmic models have been designed and recommended for estimating the skew angle of Devanagari, Kannada and English scripts at word level. A novel algorithmic model is proposed for Devanagari script exploiting the inherent advantages of small Eigenvalue of a set of connected pixels in preserving the linearity of those pixels for the purpose of detecting Shirorekha existing at the top of a Devanagari word.

For estimating the skew angle of Kannada and English words, approaches by combining different feature point extraction methods and skew angle estimation methods have been studied. Convex hull based model and Gaussian mixture based

models are considered for extraction of candidate feature points, while linear regression analysis, second order moments and Eigenvector orientation are considered for skew angle estimation.

Further, all the proposed models have been experimentally demonstrated for their effectiveness on relatively large datasets of handwritten text document images. Based on analysis of the research findings through rigorous experimentation, we recommended suitable models for different issues related to estimation of multiple skews in handwritten text with multiple scripts.

Furthermore, a successful attempt towards creation of datasets of handwritten document images is also made during the course of this research work. Various datasets, a datasets of 3000 monolingual document images six different scripts, a dataset of 30,000 word images and a dataset of 100 trilingual document images, are created.

Nevertheless, the proposed algorithmic models for estimating multiple skews in trilingual handwritten document images have been demonstrated on a dataset of 100 real time office document images as a case study.