

BIO-DATA

1. Personal Details

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Official Address : Associate Professor,
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Date of Birth : 2nd September, 1957

2. Educational Details

June 2005 : Awarded Ph.D (Computer Science) by Mysore University

1986 – 1988 : M.S from Purdue University, USA
Secured a GPA of 5.81 out of 6

1983-1985 : M.Phil (Mathematics) from Bharathi Dasan University
Secured I class

1977-1979 : M.Sc (Mathematics) from Madras University
Secured 'O' (Outstanding) grade

3. Professional Experience

Since July 1999 : Department of Studies in Computer Science,
University of Mysore, Manasa Gangothri, Mysore

From Sep 1988 to June 1999 : Lecturer (Temporary), Department of Studies in
Computer Science, University of Mysore,
Manasa Gangothri, Mysore

From Jan 1987 to May 1988 : Teaching Assistant, School of Industrial Engineering,
Purdue University, West Lafayette, Indiana, USA

From March 1985 to Feb 1986 : Lecturer, Department of Computer Science,
JSS Polytechnic and SJ College of Engineering, Mysore

From Aug 1980 to : Assistant Professor, Department of Mathematics,
March 1985 S.R.College, Trichy

4. Additional Academic Information

Participated in a Summer Institute for college teachers, sponsored by UGC, conducted at Department of Applied Mathematics, MIT, Madras (4th to 30th June 1984)

Participated in a short term course on ‘Cognition and Recognition Applications’ held at DoS in Computer Science, University of Mysore (11th to 23rd June 2001)

Actively participated and presented papers in various Conferences and Workshops (ICVGIP 2000, SCI 2000, NCDAR 2001 and 2003, NCCIT 2001, WVGIP 2002)

Actively involved in the conduction of the research project of ISRO titled ‘Some novel methods of Dimensionality Reduction, Data Reduction and analysis of Temporal Remotely Sensed Data’ (PI: Prof. P.Nagabhushan, DoS in Computer Science, University of Mysore) and presented progress reports at NRSA, Hyderabad

Closely associated with the research project of AICTE titled ‘Parallel algorithms for analysis of Remotely Sensed Satellite Data’ (PI: Prof. P.Nagabhushan, DoS in Computer Science, University of Mysore)

Invited to participate in the International School for Applied Mathematics and Pattern recognition (CIMPA) at Calcutta during Dec 2002

5. Professional Activities

Member of Board of Examiners and Board of Studies for UG and PG Computer Science, University of Mysore

Member Board of Examiners, Calicut University

Have guided many projects for M.Sc, MCA and M.Tech students

Selection Committee member for admission to M.Sc and MCA

Participated in the Workshop conducted by PSSCIVE, Bhopal, a constituent of NCERT, to frame syllabus for vocational education on ‘Information Technology’

Invited by other colleges for delivering Lectures in selected topics

Member of Faculty of Science and Technology, University of Mysore

Deputed by University of Mysore to visit China on teaching assignment

Member Board of Studies in the University and other autonomous colleges

Invited as visiting faculty by Huang Huai University, China

Have been invited as Speaker for National and International Conferences in India

Have visited Bharthiyar University, Karpagam University, and VTU affiliated colleges for Ph.d final viva examiner / Ph.D progress assessment

6. Research Activities

Submitted dissertation titled 'Non dominated Solutions in Decision Space' as part of requirement of M.Phil program

Done a project on Genetic Algorithm for solving Polynomial Equations to get all real roots simultaneously

Submitted a thesis for the award of Ph.D in the area of Pattern Recognition and Image Analysis on the ISRO sponsored project

Have guided Ph.D and M.Phil dissertations

6 candidates have completed Ph.D and 5 are currently pursuing Ph.D

Research interests: Dimensionality reduction in pattern recognition, Bio Informatics (non-coding sequence analysis), Image Retrieval, Medical Image retrieval, Code similarity detection, Micro-arra image processing, Micro-array expression analysis

Currently in close contact with Dr. Kshitish Acharya, Faculty Scientist, IBAB, for Bio Informatics work

7. Publications

Book Chapter: 1

International Journal: 30

National journal: 1

International Conference: 26

National Conference: 17

Study Material: 5 subjects (for KSOU)

PUBLICATIONS OF Dr.LALITHA RANGARAJAN

Pattern Recognition – Feature Reduction

1. Towards accurate mapping of Class of Interest through Dimensionality Reduction: An approach useful in the management of natural resources and natural calamities, Proceedings on International Conference on Systemics, Cybernetics and Informatics (SCI), Hyderabad, India, Dec 17 2000
2. A new method for Pattern Classification through Dimensionality Reduction based on Regression Analysis, Proceedings of Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), Dec 20-22, 2000
3. Dimensionality Reduction based on Block wise Cluster Analysis of Multi Spectral Data, Proceedings of National Conference on Document Analysis and Recognition (NCDAR), Jul 13-14, 2001
4. Pattern and Image Analysis along the edges of the blocks for dimensionality Reduction and Clustering of multi Spectral Images, Proceedings of National Conference on Computers and Information Technology, Sep 24-25, 2001
5. Tracing Class of Interest in a Multi Spectral Image through a new Block Wise Cluster Analysis approach, National Conference on Recent Trends in Advanced Computing (NCRATAC), Feb 9, 2002
6. Dimensionality Reduction and Classification of Multi Spectral Data using Regression, Proceedings of the Workshop on Computer Vision, Graphics and Image Processing, Feb 14-15, 2002
7. Logistic Regression for Querying Class of Interest in a Multi Spectral Frame, National Conference in Document Analysis and Recognition (NCDAR), Jul 2003
8. Dimensionality Reduction of Multi Dimensional Temporal Data through Regression, Journal of Pattern Recognition Letters 25, pp. 899-910, Mar 2004
9. Content Driven Dimensionality Reduction at block level in the design of an efficient Classifier for Spatial Multi Spectral Images, Journal of Pattern Recognition Letters 25, pp. 1833-1844, Sep 2004
10. Diagonal and Secondary Diagonal Locality Preserving projection for object recognition, Journal of Neurocomputing (Elsevier), Volume 73, No. (16-18), pp. 3328-3333, 2010
11. Diagonal Locality Preserving projection as dimensionality reduction technique with application to face recognition, International Journal of Computer Applications(IJCA) Special Issue on Recent Trends in Image Processing and Pattern Recognition, RTIPPR(3):5, pp. 135-140, 2010
12. Bi-level dimensionality reduction methods using feature selection and feature extraction. International Journal of Computer Applications (IJCA), Volume 4, No.2, pp. 33-38, 2010
13. Multi-level dimensionality reduction methods using feature selection and feature extraction. International Journal of Artificial Intelligence and Applications (IJAIA), Volume 1 No.4, pp. 54-68, 2010
14. $(2D)^2LPP$: A new dimensionality reduction technique with application to face/object representation and recognition, International Journal of Systemic, Cybernetics and Informatics (IJSCI), pp. 17-22, 2009

15. Dimensionality reduction through transformation of features into line segments, International Journal of Recent Trends in Engineering and Technology (IJRTET), ACEEE, Volume 4, No.2, pp. 91-95, 2010
16. Two level dimensionality reduction for high dimensional data, International Conference on Advanced Computing and Communication (ICACC07), Madhurai, Tamilnadu, India, pp. 450-453, 2007
17. Alternate 2DLPP: A new dimensionality reduction technique for clustering, National Conference on Recent Trends in Information and Communication Technology (RTICT2008), Sathyamangalam Tamilnadu, India, pp. 240-244, 2008
18. $(2D)^2LPP$: A new dimensionality reduction technique, International Conference on Cognition and Recognition (ICCR 08), Mysore, Karnataka, India, pp. 443-448, 2008
19. Diagonal two dimensional Locality Preserving Projection for clustering, International Conference on Open Source Computing (INCOSC 08), Mangalore, Karnataka, India, pp. 162-167, 2008
20. Diagonal Locality Preserving Projection for face recognition, National Seminar on Recent Trends in Image Processing and Pattern Recognition (RTIPPR 2010), Bidar, Karnataka, India, pp. 60-64, 2010
21. Face Identification from Manipulated Facial Images using SIFT, Third International Conference on Emerging Trends in Engineering and Technology (ICETET 2010), Goa, India, pp. 192-195, 2010
22. Dimensionality Reduction based on Feature Quality Measure, First International ACM Conference on Intelligent Interactive Technologies and Multimedia (IITM 2010), Allahabad, India, pp. 35-38, 2010

Detection of Forgery in Images

23. Efficient Image Matching using Local Invariant Features for Copy Detection, **Book Chapter** in New Technologies for Digital Crime and Forensics: Devices, Applications and Software, Editors: Chang-Tsun Li and T.S. Anthony, IGI Global Publications, pp. 257-276, 2011
24. Detecting Forgeries for Digital Image Forensics, Journal of Indian Academy of Forensic Sciences, Volume 41, pp. 73-77, Jan 2007
25. Robust Near Duplicate Image Matching for Digital Image Forensics, International Journal of Digital Crime and Forensics, Volume 1, No. 3, pp. 62-79, July 2009
26. Source Camera Identification based on Sensor Readout Noise, International Journal of Digital Crime and Forensics, Volume 2, No. 3, pp. 28-42, July 2010
27. Image Splicing Detection using Inherent Lens Radial Distortion, International Journal of Computer Science Issues, Volume 7, Issue 6, pp. 149-158, Nov 2010
28. Analysis and Evaluation of Digital Date and Time Stamps, Proceedings of the 17th All India Forensic Science Conference, pp. 209-212, Raipur, India, Nov. 2005
29. Detecting Forgeries for Digital Image Forensics, Proceedings of the 18th All India Forensic Science Conference, pp. 292-295, Kolkata, India, Nov. 2007
30. Identification of Source Camera Based on Image Sensor Specifications, Proceedings of the 18th All India Forensic Science Conference, pp. 296-304, Kolkata, India, Nov. 2007

31. Efficient Image Matching with Feature Points for Sub-Image Retrieval, Proceedings of the International Conference on Cognition and Recognition (ICCR), pp. 199-205, Mysore, India, Apr. 2008
32. Face Identification from Manipulated Facial Images Using SIFT, Proceedings of the IEEE 3rd International Conference on Emerging Trends in Engineering & Technology (ICETET), Goa, India, Nov. 2010

Bio Informatics

33. CMP Promoters Database: A systematic study on site-specific transcription factors in CMP genes, Journal of Biochem Tech 1(3), ISSN: 0974-2328, pp. 85-87, 2009
34. Computational approach towards finding evolutionary distance and gene order using promoter sequences of central metabolic pathway, Interdisciplinary Sciences, Computational Life Sciences, Volume 1, No. 2, DOI: 10.1007/s12539-009-0017-3, pp. 128-132, 2009 [Springer link]
35. Comparison of promoter sequences by motif sequence alignment, Journal of Computing, Volume 2, Issue 10, ISSN 2151-9617, October 2010
36. Computational approach towards promoter sequence comparison via TF mapping using a new distance measure, Interdisciplinary Sciences, Computational Life Sciences, Volume 3, No.1, doi:10.1007/s12539-011-0057-x Key: citeulike:8942517, pp. 43-49, 2011
37. New Distance Measure for Sequence Comparison using Cumulative Frequency Distribution, IJCA, International journal of computer applications, Volume 19, No.2, pp. 875-887, April 2011
38. Promoter Database Search using Hidden Markov Model, IJCA Special Issue on Artificial Intelligence Techniques - Novel Approaches & Practical Applications e (2), Published by Foundation of Computer Science BibTeX, pp. 24-28, 2011
39. Comparison of Promoter sequences based on inter motif distance, IJSSCI, International Journal of Software Science And Computational Intelligence, 3(3), pp. 57-68, July-September 2011
40. Towards computational approach for DNA sequence comparison, Symposium on Integrated Nano Biosystems, B.M.S College of Engineering, Bangalore, Oct.5-6, 2007
41. Computational approach towards promoter sequence comparison via TF mapping using a new distance measure, Proceedings of ICCSB- International Conference on Computational and Systems Biology, Shanghai, China, Oct.9-11, 2009
42. A statistical approach towards comparison of upstream sequences of DNA, Proceedings of (ICCET) International Conference on Computer Engineering and Technology'10, Jodhpur, Rajasthan, (published by IEEE), November 13-14, 2010
43. An approach towards promoter database search using HMM, Proceedings of CNC 2011 - International Conference on Computers, Networking and Communication, Published by LNCS-CCIS [Springer link], March 10- 11, 2011
44. Dissimilarity Metric for Promoter Sequence Comparison, Proceedings of the 2nd International Conference on Current Trends in Engineering and Management ICCTEM-2014, Mysore, India, pp. 17-19, July 2014

45. Weighted Alignment Free Dissimilarity Metric for Promoter Sequence Comparison, *International Journal for Computational Biology*, pp. 31-38, 2014
46. Weighted Alignment Free Dissimilarity Metric for Promoter Sequence Comparison, Abstract accepted and poster presented in *Bioinformatica Indica*, Kerala, India January 2014
47. Similarity Analysis of Position Specific Motif Matrices using Lacunarity for Promoter Sequences, *ICONIAAC '14*, International Conference on Interdisciplinary Advances in Applied Computing, Amritapuri, India, ACM Digital Library, October 10 - 11 2014
48. Alignment Free Frequency Based Distance Measures for Promoter Sequence Comparison, *IWBBIO-15* (International Work-Conference on Bioinformatics and Biomedical Engineering), LNCS (LNBI) - Springer, Granada, Spain, April 2015

Micro Array Images

49. Skew Correction and Noise Reduction for Automatic Gridding of Microarray Images, (IJCSIS) *International Journal of Computer Science and Information Security*, Volume 8, No. 4, pp. 326-334, 2010
50. Refinement of K means clustering for Segmentation of Microarray Images, *Journal of Convergence and Information Technology*, Volume 6, No. 9, pp. 403-411
51. Automatic Technique for Gridding of Skewed and Noisy Microarray Images, *Journal of Computational Intelligence in Bioinformatics* ISSN: 0973-385X Volume 3 Number 2, pp. 185–198, 2010
52. Automatic Technique for Skew Correction and De-noising of Microarray Images, *CiiT International Journal of Digital Image Processing*, Volume 3, No. 14, September 2011
53. Application of Mathematical Morphology for the Enhancement of Microarray Images, *International Journal of Advances in Engineering & Technology*, Volume 1, No. 5, pp 329-336, Nov 2011
54. Applying Segmentation Methods to DNA Microarray- The State of Art, *Proceedings of the International Conference on Cognition and Recognition*, 2006
55. Microarray Image Restoration Using Blind Deconvolution, *International Conference on Information, Multimedia Technology (IEEE)*, 2009
56. Efficient Enhancement of Microarray Image Using Histogram Specification, *International Conference on Computer Technology and Development*, South Korea, IEEE, 2009

Welding Defect Detection from Radiographic Images

57. A Method for Detection Welding Defects in Radiographic Images, *International Journal of Machine Intelligence*, ISSN 0975–2927 & E-ISSN: 0975–9166, Volume 3, Issue 4, pp.307-309, 2011
58. A Method for Segmentation Radiographic Images with case study on Welding Defects, *Proceedings of the Fourth International Conference on Signal and Image Processing 2012 (ICSIP 2012)*, Lecture Notes in Electrical Engineering 222, DOI: 10.1007/978-81-322-1000-9_26, Springer India, pp. 277-283, 2013

59. A Novel Algorithm for De-Noising Radiographic Images, International Journal of Image, Graphics and Signal Processing, 2012, 6, pp. 22-28, Published Online July 2012 in MECS
60. Enhancing Radiographic Images using Two Dimensional Left Median Filter, Third National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics 978-0-7695-4599-8/11 IEEE, DOI 10.1109/NCVPRIPG.2011.50, pp. 204, 2011
61. Segmentation of welding defects in Radiographic Images, National Welding Seminar, Bangalore, India, 2013

Medical Image Processing and Retrieval

62. Classification of Medical Imaging Modalities Based on Visual and Signal Features, Lecture Notes in Electrical Engineering, Proceedings of the Fourth International Conference on signal and Image Processing (ICSIP 2012), Volume 2, pp. 465 – 475, 2012
63. Classification of radiology images using histogram and moments of segmented region, Proceedings of Fifth Indian International conference on AI, pp. 404-414, 2011
64. Symbolic Classification of Medical Imaging Modalities, International Conference on Digital Contents and Applications, Computer Applications for Communication, Networking and Digital Contents, (Springer), Volume 350, pp. 312-323, (South Korea), 2012
65. Medical image texture segmentation using range filter, International workshop on SIP, CS & IT pp. 273–280, © CS & IT-CSCP 2012 DOI: 10.5121/csit.2012.2125, 2012
66. Symbolic features for classification of medical X ray body organ images, 12th International Conference on Hybrid Intelligence Systems (HIS), Pune, India, pp. 378-383, 2012
67. Symbolic Representation over Skeleton Endpoints for Classification of Medical X-ray Images, Second ICPRAM (International Conference on Pattern Recognition Applications and Methods) pp. 526-529, 2013
68. Segmentation of Pre-processed Medical Images: An Approach Based on Range Filter, International Journal of Image, Graphics and Signal Processing, Volume 9, pp. 8-16, Published Online September 2012 in MECS (<http://www.meecspress.org/>) DOI: 10.5815/ijigsp.2012.09.02
69. Medical Image Segmentation using Linear Combination of Gabor Filtered Images, International Journal of Machine Intelligence ISSN: 0975–2927 & E-ISSN: 0975–9166, Volume 3, Issue 4, pp. 212-216, 2011
70. Wavelet Features Extraction for Medical Image Classification, Research Cell: An International Journal of Engineering Sciences ISSN: 2229-6913, Volume 4, pp. 131-141, Issue Sept 2011
71. Matching and Retrieval of Medical Images, International Symposium on DCAI, AISC 91, pp. 27–33, springerlink.com © Springer-Verlag Berlin Heidelberg 2011
72. Symbolic representation and classification of Medical X-ray Images, Journal of Signal, Image and Video Processing, ISSN 1863-1703, SIViP DOI 10.1007/s11760-013-0486-6, 2013

73. A novel approach for brain tumor detection using neural network, *IMPACT: International Journal of Research in Engineering & Technology (IMPACT: IJRET)* ISSN (E): 2321-8843; ISSN(P): 2347-4599, Vol. 2, Issue 7, pp. 93-104 © Impact Journals, Jul 2014

Gene Expression Analysis

74. Multi Category Classification using Classifier Fusion Method for Microarray Gene Expression for Cancer Diagnosis, *Proceedings of 2nd International Conference on Emerging Research in Computing, Information and Communication Applications*, Elsevier, 2014

Detection of similarity of code segments

75. Structural similarity detection using structure of control statements, *Procedia Computer Science* 46 (2015), pp. 892 – 899 (Elsevier), doi: 10.1016/j.procs.2015.02.159, *International Conference on Information and Communication Technologies (ICICT)*, 2014