

BIO-DATA

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Designation: Professor, School of Computer & Systems Sciences;
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Educational Qualifications:

Course	Institution/University
Ph.D	University of Delhi
M.Tech (C.S)	IIT, Delhi

Teaching Experience: 30 years approximately

Administrative Appointments:

Chief Coordinator Communication & Information Services, August, 2022 – till date
Dean, School of Engineering: January, 2018- January, 2020
Dean, School of Computer & Systems Sciences: July, 2015- July, 2017

Research Areas: Data Mining, Machine Learning, Pattern Recognition and Medical Imaging

Research Collaborations (with):

Prof. Madhuri Behari, Prof. Senthil Kumaran, Prof. Achal Kumar Srivastava, Dr. Leve Joseph from AIIMS

Number of Sponsored Projects: 04 (Completed)

01 (Ongoing): (Joint project with Dr. Leve Joseph, AIIMS), Computer Aided Diagnostic System for the Detection and Evaluation of Intracranial Atherosclerotic Disease Using Computed Tomography Angiography, Sponsored by DBT, (11-3-2020 to 10-3-2023)

Membership of Professional Bodies: IEEE, ACM

Invited Talk/Lecture in International Workshop/Symposium/Conference: 11

Invited Talk/Lecture in National Workshop/Symposium/Conference: 170

No. of Supervision of Ph. D Thesis: 17 (Awarded), 6 (ongoing)

No. of Supervision of M. Tech Dissertation: 38 (Awarded), 1 (ongoing)

No. of Publications of SCI/SCIE/Scopus indexed Journals

1. Agrawal R. K., (with D Kumar, Puneet Kumar), Fast and robust spatial fuzzy bounded k-plane clustering method for human brain MRI image segmentation, Applied Soft Computing, 133, 109939 (2023)
2. Agrawal R. K., (with Baljeet Kaur, Swati Rathi), Enhanced Depression Detection from Speech using Quantum Whale Optimization Algorithm for Feature Selection, Computers in Biology and Medicine, 150, 106122, November (2022)
3. Agrawal R. K., (with Baljeet Kaur, Parul Agarwal), Multi-objective particle swarm optimization with guided exploration for multimodal problems, Applied Soft Computing, 120, 108684, (2022)
4. Agrawal R. K., (with Swati Rathi, Baljeet Kaur), Selection of Relevant Visual Feature Sets for Enhanced Depression Detection using Incremental Linear Discriminant Analysis. Multimedia Tools Appl. 81(13), 17703-17727 (2022)
5. Agrawal R. K., (with D Kumar, Puneet Kumar), Fuzzy k-plane clustering method with local spatial information for segmentation of human brain MRI image, Neural Comput. Applications, 34(6), 4855-4874 (2022)

6. Agrawal R. K., (with D Kumar, Puneet Kumar), Bias-corrected intuitionistic fuzzy c-means with spatial neighborhood information approach for human brain MRI image segmentation, *IEEE Transaction on Fuzzy Systems*, 30 (3), 687-700 (2022)
7. Agrawal R. K., (with Harsh Bhasin), Triploid genetic algorithm for convolutional neural network-based diagnosis of mild cognitive impairment, *Alzheimer's & Dementia*, (2022)
8. Agrawal R. K., (with Baljeet Kaur, Parul Agarwal), Quantum inspired Particle Swarm Optimization with guided exploration for function optimization, *Applied Soft Computing*, 102, 107122, (2021)
9. Agrawal R. K., (with Akshansh Gupta, Jyoti Singh Kirar, Andreu Perez Javier, Weiping Ding, Chin-Teng Lin, Mukesh Prasad), On the Utility of Power Spectral Techniques with Feature Selection Techniques for Effective Mental Task Classification in Noninvasive BCI, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 51 (5), 3080-3092, (2021)
10. Agrawal R. K., (with Harsh Bhasin), A combination of 3-D discrete wavelet transform and 3-D local binary pattern for classification of mild cognitive impairment, *BMC Medical Informatics and Decision Making*, 20, 1-10, (2020)
11. Agrawal R. K., (with Baljeet Kaur, Surbhi Sharma), Quantum based Whale Optimization Algorithm for Wrapper Feature Selection, *Applied Soft Computing*, 89, 106092, (2020)
12. Agrawal R. K., (with D Kumar, H Verma), Kernel intuitionistic fuzzy entropy clustering for MRI image segmentation, *Soft Computing*, 24, 4003–4026, (2020)
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16. Agrawal R. K., (with Utkarsh Niranjana, Anurag Singh), A Mean-Field-Theoretic Model for Dual Information Propagation in Networks, *Journal of Complex Networks*, 7(4), 585-602, (2019)
17. Agrawal R. K., (with Navjot Singh, Rinki Arya), A novel approach for salient object detection using double-density dual-tree complex wavelet transform in conjunction with superpixel segmentation, *Knowledge and Information Systems*, 60 (1), 327-361,(2019)
18. Agrawal R. K., (with D Kumar, H Verma, A Mehra), A modified intuitionistic fuzzy c-means clustering approach to segment human brain MRI image, *Multimedia Tools and Applications*, 78 (10), 12663-12687 (2019)
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20. Agrawal R. K., (with Jyoti Singh Kirar), Relevant Feature Selection from a Combination of Spectral-Temporal and Spatial Features for Classification of Motor Imagery EEG, *Journal of medical systems*, 42(5), 78 (2018)
21. Agrawal R. K., (with A Juneja, B Rana), A Novel Fuzzy Rough Selection of Non-linearly Extracted Features for Schizophrenia Diagnosis using fMRI, *Computer Methods and Programs in Biomedicine*, 155, 139-152 (2018)
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23. Agrawal R. K., (with Navjot Singh, Rinki Arya), Performance enhancement of salient object detection using superpixel based Gaussian mixture model, *Multimedia Tools and Applications*, 77 (7), 8511–8529 (2018)
24. Agrawal R. K., (with Rinki Arya, Navjot Singh), A novel combination of second-order statistical features and segmentation using multi-layer superpixels for salient object detection, *Applied Intelligence*, 46 (2) 254-271 (2017)
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26. Agrawal R. K., (with B Rana, A Juneja, M Saxena, S Gudwani, SS Kumaran, Madhuri Bihari), Relevant 3D local binary pattern based features from fused feature descriptor for differential diagnosis of Parkinson's disease using structural MRI, *Biomedical Signal Processing and Control*, 34, 134-143 (2017)
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28. Agrawal R. K., (with A Juneja, B Rana), An enhanced texture-based image retrieval approach with features selected from integration of feature extraction techniques, *International Journal of Computer Vision and Robotics*, 7(4), 357-380 (2017)

29. Agrawal R. K., (with Nitin Kumar, Ajay Jaiswal), Incremental and Decremental Nonparametric Discriminant Analysis for Face Recognition, *Computing and Informatics*, 35(5), 1231-1248 (2016)
30. Agrawal R. K., (with Hanuman Verma, Aditi Sharan), An improved intuitionistic fuzzy c-means clustering algorithm incorporating local information for brain image segmentation. *Applied Soft Computing*, 46: 543-557 (2016)
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35. Agrawal R. K., (with Namita Aggarwal, Bharti Rana), 3D discrete wavelet transform for computer aided diagnosis of Alzheimer's disease using t1-weighted brain MRI, *Int. J. Imaging Systems and Technology*, 25(2): 179-190 (2015)
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48. Agrawal R. K., (with Hanuman Verma Naveen Kumar), Improved Fuzzy Entropy Clustering Algorithm for MRI Brian Image Segmentation, *International Journal of Imaging Systems & Technology Journal*, 24 (4), 277-283 (2014)
49. Agrawal R. K., (with Ratnadip Adhikari), A linear hybrid methodology for improving accuracy of time series forecasting, *Neural Computing and Applications* 25 (2), 269-281 (2014)
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55. Agrawal R. K., (with Ratnadip Adhikari), Forecasting Strong Seasonal Time Series with Artificial Neural Networks, *Journal of scientific and industrial research*, 71(10), 657-666 (2012)
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Publications in Proceedings of Conferences

1. Agrawal R. K. (with Harsh Bhasin), Multiple-Activation Parallel Convolution Network in Combination with t-SNE for the Classification of Mild Cognitive Impairment. *BIBE 2021*: 1-7, (2021)
2. Agrawal R. K., (with Puneet Kumar, D Kumar), Fuzzy Entropy k-Plane Clustering Method and Its Application to Medical Image Segmentation. *CVIP (2) 2021*: 350-361, (2021)
3. Agrawal R. K. (with Snigdha Agrawal, S. Senthil Kumaran, Achal Kumar Srivastava, Manpreet Kaur Narang), Study of 2D Feature Extraction Techniques for Classification of Spinocerebellar Ataxia Type 12 (SCA12). *MedInfo 2021*: 670-674, (2021)
4. Agrawal R. K. (with Harsh Bhasin), Applicability of Manually Crafted Convolutional Neural Network for Classification of Mild Cognitive Impairment, 2nd Asia Conference on Computers and Communications (ACCC), 127-131, (2021)
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6. Agrawal R. K. (with Akanksha Juneja), Deep Learning Models for Medical Image Analysis: Challenges and Future Directions. *International Conference on Big Data Analytics (BDA 2019)*, 20-32, (2019)
7. Agrawal R. K., (with Swati Rathi, Baljeet Kaur), Enhanced Depression Detection from Facial Cues Using Univariate Feature Selection Techniques, *International Conference on Pattern Recognition and Machine Intelligence (PReMI 2019)*, 22-29, (2019)

4. Agrawal R. K., (with D Kumar,), Intuitionistic Fuzzy Clustering Method with Spatial Information for MRI Image Segmentation, 2019 IEEE International Conference on Fuzzy Systems, FUZZ-IEEE 2019, New Orleans, LA, USA, IEEE 2019, 1-7, (2019) ISBN 978-1-5386-1728-1
5. Agrawal R. K., (with Jyoti Singh Kirar, Ayesha Chaudhary), Selection of Relevant Electrodes Based on Temporal Similarity for Classification of Motor Imagery Tasks, Proceedings of the International Conference on Pattern Recognition and Machine Intelligence, PReMI 2017, 96-102 (2017).
6. Agrawal R. K., (with Jyoti Singh Kirar) Relevant Frequency Band Selection using Sequential Forward Feature Selection for Motor Imagery Brain Computer Interfaces, IEEE Symposium Series on Computational Intelligence, SSCI 2018, Bangalore, India, November 18-21, 2018. IEEE 2018, ISBN 978-1-5386-9276-9
7. Agrawal R. K., (Bharti Rana, Akanksha Juneja, Mohit Saxena, Sunita Gudwani, S Kumaran, Madhuri Behari), Voxel-based Morphometry and Minimum Redundancy Maximum Relevance Method for Classification of Parkinson's Disease and Controls from T1-Weighted MRI, ICVGIP 2016, 22:1-22:6
8. Agrawal R. K., (Jyoti Singh Kirar), Optimal Spatio-spectral Variable Size Subbands Filter for Motor Imagery Brain Computer Interface, IHCI, 14-21, 2015
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11. Agrawal R. K., (Nitin Kumar, Ajay Jaiswal), A Comparative Study of Linear Discriminant and Linear Regression Based Methods for Expression Invariant Face Recognition, Advances in Signal Processing and Intelligent Recognition Systems, 23-32, 2014
12. Agrawal R. K., (Namita Aggarwal, Bharti Rana), Detection of Alzheimer's Disease via Statistical Features from Brain Slices, Proceedings of the Twenty-Sixth International Florida Artificial Intelligence Research Society Conference, FLAIRS 2013, St. Pete Beach, Florida. May 22-24, 2013. AAAI Press , 2013
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14. Agrawal R. K., (Ajay Jaiswal, Nitin Kumar), Statistical Framework for Facial Pose Classification, MICAI 2012: 87-98, 11th Mexican International Conference on Artificial Intelligence, , San Luis Potosí, Mexico, October 27 - November 4, 2012, Proceedings, Part I. Lecture Notes in Artificial Intelligence, vol. 7629, ISSN 0302-9743
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20. Agrawal R. K., (Nitin Kumar, Ajay Jaiswal), Performance evaluation of subspace methods to tackle small sample size problem in face recognition. ICACCI 2012: 938-944, Chennai, India, August 3-5, 2012. ACM 2012, ISBN 978-1-4503-1196-0.
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22. Agrawal R. K., (Ratnadip Adhikari), A Novel Weighted Ensemble Technique for Time Series Forecasting. PAKDD (1) 2012: 38-49, Kuala Lumpur, Malaysia, May 29-June 1, 2012, Proceedings, Part I. Lecture Notes in Computer Science 7301 Springer 2012, ISBN 978-3-642-30216-9.
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- Part II. Lecture Notes in Computer Science 7302 Springer 2012, Montreal, Quebec, Canada, May 16-18, 2011, Proceedings. ACM 2011, ISBN 978-1-4503-0626-3.
24. Agrawal R. K., (Hanuman Verma), Intuitionistic Gustafson-Kessel Algorithm for Segmentation of MRI Brain Image, International conference on soft computing for problem solving, SocProS (2) 2011: 133-144, Advances in Soft Computing 131 Springer 2012, ISBN 978-81-322-0490-9.
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 35. Agrawal R. K., (Gaurav K. Rajput), Detection of Stegoimages: A Comparative Study of Classifiers, International Conference on Information Security and Privacy, Orlando, Florida, July 13-16, 2009.
 36. Agrawal R. K., (Ashish Chaudhary), Modified Incremental Linear Discriminant Analysis for Face Recognition, International Conference on Artificial Intelligence and Pattern Recognition, Orlando, Florida July 13-16, 2009.
 37. Agrawal R. K., (Rajni Bala), A Two Stage Approach for relevant Gene Selection for Cancer Classification, IADIS European Conference on Data Mining 2009, Algarve, Portugal, June 17-23, 2009.
 38. Agrawal R. K., (Namita Aggarwal, H. M. Jain), Genetic Algorithm to determine relevant features for intrusion detection, IADIS European Conference on Data Mining 2009, Algarve, Portugal, June 17-23, 2009.
 39. Agrawal R. K., (Manju Bala and Rajni Bala), Incremental Framework for Feature Selection and Bayesian Classification for Multivariate Normal Distribution, IEEE International Conference on Advance Computing, Page(s):1469 –1474, 6-7 March 2009
 40. Agrawal R. K., (Manju Bala), Kernel Parameter Selection for Support Vector Machine Using AdaBoost, International Congress on Pervasive Computing and Management 12-14, Dec 2008
 41. Agrawal R. K., (Rajni Bala, Manju Bala) Discriminant Function Revisited for Incremental Learning, Sixth Indian Conference on Computer Vision, Graphics & Image processing, ICVGIP Dec. 16-19, 435-441, 2008, IEEE 2008
 42. Agrawal R. K., (M. M. Fadel), Multimodal Biometric Authentication System: A Comparative Study of Classifier Fusion, National Conference on Mathematical Modeling Optimization and Their Applications, 28-29 April, 2007
 43. Agrawal R. K., (Rajni Bala), Gene Selection for Multi-class Cancerous Datasets Using A Hybrid Approach, International Conference on Intelligent Systems & Networks, February 23-25, 2007
 44. Agrawal R. K., (Rajni Bala, A hybrid of Feature Ranking and Genetic Algorithm with Multi-class SVM for Gene Subset Selection (Abstract), International Conference on Bioinformatics-2006, December 18th-20th, 2006

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46. Agrawal R. K., (M. Bala), Multi-class Support Vector Machines: A Comparative Study of Kernels, National Conference on Methods and Models in Computing, December, 2006

Membership of Boards/Committees (Present/Past):

- **Expert member, Selection Committee at:** IIM, Jammu; University of Delhi; University of Hyderabad; Banaras Hindu University; Delhi Technological University; Netaji Subhas University of Technology; National Institute of Technology, Delhi; IIM Bodh Gaya; Birla Institute of Technology and Science, Pilani; Tezpur University; Jammu University, Jammu; Central University of Jammu, Jammu; Mahatma Gandhi Central University, Motihari; Kannur University, Kerala; Indira Gandhi Delhi Technical University for Women, Delhi; Tripura University, Tripura; Mizoram University, Mizoram; Gangadhar Meher University, Sambalpur; Indira Gandhi National Open University, New Delhi; INFLIBNET Centre, Gandhinagar; Shri Lal Bahadur Shastri National Sanskrit University, New Delhi; Gautam Buddha University, Greater Noida; The Northcap University, Gurugram; Galgotia University, Noida; Amity University, Gurugram; Indian Council of Social Science Research(ICSSR), New Delhi; National Institute of Financial Management (NIFM), Faridabad; Morarji Desai National Institute of Yoga, New Delhi; Pt. Ravishankar Shukla University, Raipur; Banasthali University, Jaipur; Member, Selection committee, G L Bajaj group of Institutes, Mathura; ML Sukhadia University, Udaipur
- **Expert member, Selection Board at:** Staff Selection Commission, New Delhi; Haryana Staff Selection Commission; Rajasthan Staff Selection Commission; Jammu Kashmir Staff Selection Commission; Himachal Pradesh Staff Selection Commission; CSIR, New Delhi; ICMR, New Delhi; RAC (DRDO); UPSC ; EdCIL (India) Limited, Ministry of Human Resource Development; Ministry of AYUSH; University Grant Commission, Bhopal;
- **Member, Academic Council:** Doon University; Kannur University
- **Member, Board of Studies:** Member, Governing Body, Delhi School of Analytics, University of Delhi; Department of Electronics & Communication, Delhi Technological University; NIT, Uttarakhand; School of Information Technology, Gautam Buddha University; School of Engineering & Technology, Central University of Rajasthan; SOCIS, Indira Gandhi National Open University; Sushant University, Gurugram; Sharda University, Greater Noida; Department of Computer Science, Central University of Rajasthan; Department of Computer Science, Jamia Hamdard; Department of Data Science & Analytics, Central University of Rajasthan; Department of Computer Science & Engineering, NIT, Srinagar; GLA University, Mathura;
- Chairperson, Department Research Committee, Department of ASH, IGDTUW, Delhi
- Member, Advisory Committee, Department of Computer Science, University of Delhi
- Convenor, the committee of the courses in Computer Science, CBSE, New Delhi
- Member, the Curriculum committee, CBSE, New Delhi
- Member, National Board of Accreditation
- Member, National Assessment and Accreditation Council
- Jury member, INSPIRE AWARD- National Level Exhibition and Project Competition , DST, Delhi
- Jury member for the Northern Region Level IET Scholarship Program
- Expert Member, National Research Development Corporation(NRDC), New Delhi
- Member, Expert Committee, Minor research projects and organization of seminars/conferences/ workshop, University Grant Commission, New Delhi;
- Expert Member, Selection Committee, CSIR-SRF, Delhi;
- Chairperson, Project Advisory Monitoring Committee, DST, New Delhi
- Member, Nokia Advisory Committee, IIT Delhi
- Member, Project Review and Steering Group, DST
- Member, Project Review and Steering Group for the project at: CDAC Mohali; Tezpur University; Assam University; MNIT, Jaipur
- Member, Project Review and Steering Group, Defence Research and Development Organisation (DRDO)
- Expert Member, Scientific Expert Committee for evaluation of ASIAN-India R&D proposals, SERB, N Delhi
- Member, Syllabus formulation Committee for UGC-NET in Computer Science & Applications
- Chairman, New course committee, Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeetha, New Delhi
- Member, Curriculum Development for UG and PG programs, MNIT, Jaipur

- Member, Curriculum Development for M.Sc. (Maths), Delhi Technological University, Delhi
- Member, M. Sc, M.Phil/Ph. D in Information Technology, Curriculum Design & Syllabus Framing Committee, School of Mathematics, Computers and Information Technology, Central University of Himachal Pradesh
- Member, Curriculum Development for M. Sc. Computer Science, Central University of Rajasthan
- Expert member for E-Content development for the subject, “Digital Image Processing and Machine Vision”, IIT, BHU, Varanasi
- Member, The committee for creation of virtual class room/video conference room, Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeetha, New Delhi
- Member Expert Committee for revision of Certificate in Information Technology programme, School of Computer and Information Sciences, IGNOU, New Delhi
- Member of the Technical committee, Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeetha, New Delhi
- Expert Member, Selection Committee for MCA, Department of Computer Science, University of Delhi, Delhi