

Research Profile of Prof. Amit Kumar Saxena

- **Research Specializations**

- ❖ Artificial Neural Networks and their applications,
- ❖ Soft Computing
- ❖ Data Mining, Rule Extraction from databases
- ❖ Evolutionary Computing, Swarm Intelligence, Particle Swarm Optimization
- ❖ Dimensionality reduction
- ❖ Feature selection in High Dimensional Databases
- ❖ Machine Learning

- **Post Graduate Students**

- **Ph. D. Guidance**

- ❖ Ph.D. Awarded : 04 (One each in 2006, 2012, 2019,2019 respectively) with following details of students

1. Hari Shankar Hota: Design of Neuro-Fuzzy Based Power Protection System – 2006
2. Abhishek Dubey: A Study of Classification Techniques Using Soft Computing – 2012
3. Vimal Kumar Dubey: Feature Selection Using Soft Computing Technique -2019
4. Madan Madhav Shrivastava: Classification Using Evolutionary Techniques – 2019

Two more students are registered and pursuing their PhD work

- **Significant Publications**

A. Journals

1. (2023) Chugh, D.; Mittal, H.; Saxena, A.; Chauhan, R.; Yafi, E.; Prasad, M. “Augmentation of Densest Subgraph Finding Unsupervised Feature Selection Using Shared Nearest Neighbor Clustering”, *Algorithms* 2023, 16, 28. <https://doi.org/10.3390/a16010028>
2. (2022) Saxena, A.; Chugh, D.; Mittal, H.; Sajid, M.; Chauhan, R.; Yafi, E.; Cao, J.; Prasad, M. “ A Novel Unsupervised Feature Selection Approach Using Genetic Algorithm on Partitioned Data”. *Adv. Artif. Intell. Mach. Learn.* 2022, 2, 500–515. <https://www.oajaiml.com/uploads/archivepdf/82321134.pdf> ISSN :2582-9793
3. (2021) Hong, G.-J.; Li, D.-L.; Pare, S.; Saxena, A.; Prasad, M.; Lin, C.-T. Adaptive Decision Support System for On-Line Multi-Class Learning and Object Detection. *Appl. Sci.* 2021, 11, 11268. <https://doi.org/10.3390/app112311268>
4. (2021) Pare, S.; Mittal, H.; Sajid, M.; Bansal, J.C.; Saxena, A.; Jan, T.; Pedrycz, W.; Prasad, M. Remote Sensing Imagery Segmentation: A Hybrid Approach. *Remote Sens.* 2021, 13, 4604. <https://doi.org/10.3390/rs13224604>

5. (2021) Amit Saxena, John Wang, Wutiphol Sintunavarat, “An Empirical Study on Initializing Centroid in K-Means Clustering for Feature Selection”, International Journal of Software Science and Computational Intelligence (IJSSCI) Volume 13, Issue 1, Jan_Mar 2021, pp. 1-16, 9781799860648. <https://www.igi-global.com/gateway/issue/254095> ISSN: 1942-9045 EISSN: 1942-9037
6. (2020) Hsu, Ting W.; Pare, Shreya; Meena, Mahendra S.; Jain, Deepak K.; Li, Dong L.; Saxena, Amit; Prasad, Mukesh; Lin, Chin T.. "An Early Flame Detection System Based on Image Block Threshold Selection Using Knowledge of Local and Global Feature Analysis." **Sustainability** 2020, **12(21)**, 8899; <https://doi.org/10.3390/su12218899> -ISSN 2071-1050 https://www.mdpi.com/journal/sustainability/sections/energy_sustainability
7. (2020) Chang, Liang C.; Pare, Shreya; Meena, Mahendra S.; Jain, Deepak; Li, Dong L.; Saxena, Amit; Prasad, Mukesh; Lin, Chin T.. "An Intelligent Automatic Human Detection and Tracking System Based on Weighted Resampling Particle Filtering." *Big Data and Cognitive Computing*. 2020, 4(4), 27; <https://doi.org/10.3390/bdcc4040027> <https://www.mdpi.com/journal/BDCC> ISSN - 2504-2289
8. (2020) Amit Saxena , Shreya Pare , Mahendra Singh Meena , Deepak Gupta , Akshansh Gupta , Imran Razzak , Chin-Teng Lin and Mukesh Prasad, “A Two-Phase Approach for Semi-Supervised Feature Selection”, Algorithms 2020, 13(9), 215; doi:10.3390/a13090215, www.mdpi.com/journal/algorithms ISSN 1999-4893
9. (2020) Chou, K.P., Prasad, M., Yang, J., Sheng-Yao Su, Xian Tao, Amit Saxena, Wen-Chieh Lin, Chin-Teng Lin “ A robust real-time facial alignment system with facial landmarks detection and rectification for multimedia applications”, Multimedia Tools Appl Springer (2020). <https://doi.org/10.1007/s11042-020-09216-7> ISSN 1380-7501
10. (2020) Neha Bharill, Aruna Tiwari, Aayushi Malviya, Om Prakash Patel, Akshansh Gupta, Deepak Puthal, Amit Saxena, Mukesh Prasad, “ Fuzzy Knowledge Based Performance Analysis on Big Data,” Neurocomputing, Vol. 389, 2020, pp. 218-228. <https://doi.org/10.1016/j.neucom.2018.10.088> ISSN 0925-2312
11. (2017) Amit K. Saxena, Vimal K. Dubey & John Wang, “Hybrid Feature Selection Methods for High Dimensional Multi-class Datasets”, Int. J. Data Mining, Modelling and Management, Vol. 9, No. 4, 2017, pp. 315-339. ISSN 1759-1171

12. (2017) Amit Saxena, Madan Madhaw Shrivasa, "Filter – GA Based Approach to Feature Selection for Classification", International Journal on Future Revolution in Computer Science & Communication Engineering (IJFRCSCE), November 17 Volume 3 Issue 11 , PP: 202 – 212, ISSN- 2454-4248.
13. (2017) Amit Saxena, Mukesh Prasad, Akshansh Gupta, Neha Bharill , .Om Prakash Patel, Aruna Tiwari, .Er Meng Joo , .Ding Weiping, .Lin Chin-Teng A review of clustering techniques and developments, Neurocomputing, Vol 267,6 December 2017, pp. 664-681
14. (2017) Abhishek Dubey, Amit Sxaena, Vimal Dubey "A Binary Greedy Algorithm for Feature Selection and Classification", Enhanced Technologies and Recent Trends in ICT Symposium, Oman April-2016, International Journal of Science Progress and Research (IJSPR), 39 (110), pp. 23-29.
15. (2017) Amit Saxena, Madan Madhaw Shrivasa, "Filter – PSO based approach for Feature Selection", in International Journal of Advanced Research in Computer Science (IJARCS), <http://www.ijarcs.info>, ISSN:0976-5697, Vol 8, No. 5, May – June 2017, , pp. 2063-2073.
16. (2017) Vimal K. Dubey & Amit K. Saxena, "A Cosine Similarity- Mutual Information Approach For Feature Selection on High-Dimensional Dataset". Journal of Information Technology Research, Volume 10, Issue 1, January-March, 2017, pp. 15-28 , ISSN: 1938-7857, EISSN: 1938-7865, <http://www.igi-global.com/journal/journal-information-technology-research-jitr/1100>
17. (2016) J. Singh, M. Prasad, O. K. Prasad, M. J. Er, A. Saxena, C. T. Lin, "A Novel Fuzzy Logic Model for Pseudo Relevance Feedback based Query Expansion," Springer, International Journal of Fuzzy Systems, Vol. 18, No. 6, 2016, pp. 980-989.
18. (2016) Amit Saxena, Madan Madhav, "Leave One Out Cross Validated Hybrid Model of Genetic Algorithm and Naïve bayes for Classification Problem", in International Journal of Engineering Research and Application(IJERA), <http://www.ijera.com>, ISSN : 2248-9622, Vol. 6, Issue 3, March 2016, pp.107-114. (Part -4),
19. (2015) C T Lin, Mukesh Prasad, Amit Saxena, "An Improved Polynomial Neural Network Classifier Using Real-Coded Genetic Algorithm", IEEE Transaction on Systems, Man and Cybernetics: Systems, Volume: 45, Issue: 11, pp. 1389-1401, Nov. 2015, .

20. (2015) Madan Madhaw, Amit Saxena, L. Gavel, “A Review of Particle Swarm Optimization: Feature Selection, Classification and Hybridizations”, International Journal of Recent and Innovation Trends in Computing and Communication, (IJRITCC), ISSN 2321-8169, Volume-3 Issue 4, April 2015, pp 1816-1820.
21. (2015) Amit Saxena, Vimal Dubey, “A Survey on Feature Selection Algorithms”, International Journal of Recent and Innovation Trends in Computing and Communication, (IJRITCC), ISSN 2321-8169, Volume-3 Issue 4, pp 1895-1899, April 2015,.
22. (2015) Amit Saxena, L. Gavel, Madan Madhaw “Rough Sets: an Overview, Hybridization and Applications”, International Journal of Emerging Science and Engineering™ (IJESE), ISSN 2319-7378, Volume-3 Issue 3, pp 17-26, January 2015,
23. (2014) Amit Saxena, L. Gavel, Madan Madhaw, “Rough Sets for Feature Selection and Classification: An Overview with Applications”, International Journal of Recent Technology and Engineering™ (IJRTE), ISSN 2277-3878, Volume-3 Issue 5, November 2014:, pp 62-69.
24. (2013) Amit Saxena “On the importance of Ensemble of Classifiers”, International Journal of Information Technology, Website: www.bvicam.ac.in (ISSN 0973-5658), Volume 5, No.1, June 2013,.
25. (2013) Amit Saxena, Apoorva Mondal, Itfaq Mir, “Improving the Classification Accuracy with Ensemble of Classifiers”, International Journal of Emerging Technology and Advanced Engineering, Website: www.ijetae.com (ISSN 2250-2459 (Online), An ISO 9001:2008 Certified Journal, Volume 3, Special Issue 2, pp. 52-56. , January 2013
26. (2011) Amit Saxena, D. Patre, Abhishek Dubey, “An Evolutionary Feature Selection Technique Using Polynomial Neural Network”, International Journal of Computer Science Issues, (www.IJCSI.org), Volume 8, July, Issue 4(1), Impact Factor 0.242, pp 494-502. <http://www.ijcsi.org/issues.php> , ISSN (print): 1694-0784, ISSN (online): 1694-0814
27. (2011) Amit Saxena, D. Patre, Abhishek Dubey “ Investigating a novel GA-Based Feature Selection Method Using Improved KNN Classifiers”, International Journal of Information and Communication Technology (IJICT), (<http://www.inderscience.com>) published by Inderscience Publishing House, Vol. 3, No. 3, pp. 274-288, ISSN:1741-8070, DOI 10.1504/IJICT.2011.041929.

Resume of Dr. Amit Kumar Saxena

28. (2010) Amit Saxena, Nikhil Pal, Megha Vora, “ Evolutionary methods for unsupervised feature selection using Sammon’s stress function” , Fuzzy Information and Engineering__Volume 2, Number 3,___229-247, DOI: 0.1007/s12543-010-0047-4, Springer, ISSN : 1616-8658 (Print) 1616-8666 (Online) <http://www.springerlink.com/content/1616-8658/2/3/> .
29. (2010) Amit Saxena, John Wang, “Dimensionality Reduction with Unsupervised Feature Selection and Applying Non-Euclidean Norms for Classification Accuracy”, International Journal of Data Warehousing and Mining (IJDWM), (<http://www.igi-global.com>) Vol. 6, Issue 2, 2010, pp. 22-40, ISSN: 1548-3924.
30. (2010) Amit Saxena, D. Patre, Abhishek Dubey “ An Analytical Review of Classification Methodologies”, APEEJAY Journal of Management & Technology, vol. 5 (1) , pp. 27-37, Jan 2010, ISSN : 0974-3294.
31. (2009) Qureshi M.F.,Singh Ramesh Pratap, Saxena A.K, ” Validation of Self-Organizing Map tuned Adaptive Neuro-Fuzzy Inference System (SONFIS) for Visualization and Rectification of Power System Problems”, International Journal Association for the Advancement of Modelling & Simulation AMSE France (<http://www.amse-modeling.com>) Advances in Modelling, A, 82(3-4), pp 1-17.
32. (2008) Amit Saxena, H S Hota, “Fuzzy Sliding Mode Controller Design For Controlling The Structural Vibration of Multistoreyed Building”_ Journal of C.G. State Science and Technology and published by G.G. University, Bilaspur, India, Vol. 3 & 4 (2006,2007), pp. 157-168.
33. (2005) Amit Saxena, P K Dash, G Panda, “Lossless Data Compression using Neural Networks”, published in Journal of Institution of Engineers, India, vol. 86, No., pp. 65-70. ISSN 0971-0469
34. (2004) Amit Saxena, Megha Kothari, “Development of a Fuzzy rule based System for measuring skill through games playing” published in the Journal of C.G. State Science and Technology and published by G.G. University, Bilaspur, India, Vol. 1(1), pp. 197-206.
35. (2003) Amit Saxena, A. Dwivedi, “Semi-Hypocycloid Membership Function for Fuzzy Systems” published in Bulletin of Pure and Applied Sciences (International Research Journal of Sciences), vol. 22E (2), 2003, pp 405-419. ISSN – 0970-6577
36. (2003) Amit Saxena, A. Dwivedi , “A Fuzzy Based Novel Approach for Comparing the Scanners” published in Bulletin of Pure and Applied Sciences (International Research Journal of Sciences), vol. 22E (2) pp 313-333. ISSN – 0970-6577.
37. (1997) Amit Saxena, R K Singh, G Panda, “Development of an Efficient Deconvolver using Artificial Neural Network Technique” published in the

38. (1996) Amit Saxena, R K Singh, G Panda “Computer Simulation of DSP Algorithm Using LMS Techniques”, published in the Journal of Computer Science and Informatics, India, Vol. 26, No. 1, pp. 11-28. ISSN 0254-7813.

B. Papers Published in the Proceedings of International Conferences

1. (2021) S. Pare, M. Prasad, D. Puthal, D. Gupta, A. Malik and A. Saxena, "Multilevel Color Image Segmentation using Modified Fuzzy Entropy and Cuckoo Search Algorithm," 2021 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), 2021, pp. 1-7, doi: 10.1109/FUZZ45933.2021.9494443. ISBN 978-1-6654-4407-1
2. (2018) Mukesh Prasad, Shantanu Rajora, Deepak Gupta, Yousef-Awwad Daraghmi, Eman Daraghmi, Pranay Yadav, Prayag Tiwari and Amit Saxena, Fusion based EN-FEC Transfer Learning Approach for Automobile Parts Recognition System accepted for IEEE Symposium Series on Computational Intelligence (SSCI 2018), pp 2193 - 2199 .
3. (2017) J. Singh, M. Prasad, Y. A. Daraghmi, P. Tiwari, P. Yadav, N. Bharill, M. Pratama, Amit. Saxena, “Fuzzy Logic Hybrid Model with Semantic Filtering Approach for Pseudo Relevance Feedback-based Query Expansion”, IEEE SSCI, 2017, pp. 1-7..
4. (2016) Vimal K. Dubey & Amit Saxena, “A hybrid Classification model of correlation based feature selection and Support vector machine”, in Proc. Of IEEE ICCTAC Conference, March-2016, DOI 10.1109/ICCTAC.2016.7567338, pp. 1-6.
5. (2016) Vimal K. Dubey & Amit Saxena, “Cosine Similarity Based Filter Technique for Feature Selection”, IEEE Conference, Allahabad, DOI: 10.1109/ICCCCM.2016.7918222, pp. 1-6.
6. (2016) Vimal K. Dubey, Amit K. Saxena & Madan Madhaw Srivas, “ A Cluster Filter Feature Selection Approach”, IEEE ICTBIG, Nov. 2016, Indore MP, India, DOI: 10.1109/ICTBIG.2016.7892637, pp 1-5
7. (2015) Amit Saxena, Madan Madhaw, “Leave One Out Cross Validated GA K-NN Approach For Feature Selection In Classification”, in Proc. International Conference on Emerging Research in Computer Science and Software Engineering, 21 November 2015, R D University, Jabalpur – India, pp 155-159, ISSN No. 2393-9931.
8. (2015) Vimal K. Dubey & Amit K. Saxena, “Sequential Cosine Similarity based feature Selection Technique for High-Dimensional Datasets”, IEEE National Systems

Conference, Ghaziabad, Dec-2015, **Electronic ISBN: 978-1-4673-6829-2, DOI: 10.1109/NATSYS.2015.7489113**, pp. 1-5

9. (2014) M. Prasad, D. L. Li, Y. T. Liu, L. Siana, C. T. Lin, A. Saxena, “A Preprocessed Induced Partition Matrix Based Collaborative Fuzzy Clustering for Data Analysis,” IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), 2014; 6-11 July, 2014, Beijing, pp 1553-1558, DOI 10.1109/FUZZ-IEEE.2014.6891876. http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6891876
10. (2014) M. Prasad, K. P. Chou, A. Saxena, O. P. Kawrtiya, D. L. Li, C.T. Lin, “Collaborative Fuzzy Rule Learning for Mamdani Type Fuzzy Inference System with Mapping of Cluster Centers,” IEEE Symposium on Computational Intelligence in Control and Automation (CICA), 2014.Dec. 9-12, 2014, pp 15-20, DOI 10.1109/CICA.2014.7013227, http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=7013227&tag=1
11. (2011) Amit Saxena, D.Patre, “Feature Selection Using Polynomial Neural Networks”, published in the Proc. of SCICT2011 (International Conference on Emerging Trends in Soft Computing and ICT), 16-17 March 2011 at Guru Ghasidas University, Bilaspur India, published by Excellent Publishing House, New Delhi, India, pp 70-73, ISBN – 978-81-920913-3-4.
12. (2008) Amit Saxena, Megha Vora, “Novel Approach for the use of Small World Theory in Particle Swarm Optimization”, published in the Proc. of ADCOM2008 (The International Conference on Advances in Computing 2008, 14-17 Dec. 2008 at Anna University, Chennai, India) pp. 363-366, IEEE Press, USA.
13. (2007) Amit Saxena, Megha Kothari, “Unsupervised Approach for Structure Preserving Dimensionality Reduction”, published in the Proc. of ICAPR07 (The 6th International Conference on Advances in Pattern Recognition 2007) pp. 315-318, ISBN – 13 978-981-270-553-2, 10 981-270-553-8, World Scientific Publishing Co. Pte. Ltd. Singapore.
14. (2006) Amit Saxena “Intelligent mining of 3D Medical Images”, published in the Proceedings of National Conference (18-19 Jan) on Cyber Security, Data Mining and ICT for the Society, at G G University, Bilaspur, India.
15. (2003) Amit Saxena “Rule Extraction From Binary Databases Using Neural Networks”, published in the Proc. (CDROM) of National Seminar, (17-18 Jan.) at Rourkela, India.
16. (2002) Amit Saxena, “Soft Computing Techniques for Data Mining Using Wavelet based Data Compression”, published in the Proc, International Conference (17-19 Nov) on . e- Manufacturing at Bhopal, India pp. 596-601. ISBN- 81-7484-066-4, Phoenix Publishing House Pvt Ltd, 2002.

Resume of Dr. Amit Kumar Saxena

17. (2001) Amit Saxena, "Neuro-controller for a nonlinear discrete time system", in Proc. (CD ROM) 3rd International Conference on Communications and Signal Processing, IEEE/ICICS '2001, 15-18 October 2001, at NTU, Singapore.
18. (2001) Amit Saxena "Neural Nets for Data Mining Applications in Rule Extraction", published in the Proc. of IASTED International Conference, IMSA 2001, Aug. 13-16, Hawaii, Honolulu, USA. pp 274-277. ISBN- 088986-299-0, Acta Press.
19. (2000), Amit Saxena "E-commerce: Challenges to benefit India", published in the proceedings of the National Conference (Feb. 18-19) on E-commerce at Hyderabad, India, pp.137-144,
20. (2000) Amit Saxena "Information Technology in 21st Century in India (Evaluation of I.T. Investment: Benefits and Risks)" published in the proceedings National Seminar (Jan-1) at S.P. University, Ballabh Vidyanagar, Gujarat, India
21. (1999) Amit Saxena, "ANN based adaptive equalizers", published in the proceedings of International Conference (CMSC'99, 1-3 Dec. 1999) Jaipur, India, pp. 341-347, ISBN- 0-07-463752-5, Tata McGraw – Hill Publishing Company Limited.
22. (1998) Amit Saxena, "An Efficient ANN Scheme for Identification of Nonlinear systems" published in the Proceedings of ICCS'98 at Delhi, India on 13-15 December 1998, pp. 48-57. ISBN- 81-7023-846-3, Allied Publishers Ltd.
23. (1998) Amit Saxena "Computation of Discrete Fourier Transform using L.M.S. Techniques", published in the Proceedings of Fifth National Conference (4-6 Sept) at Bhopal, India pp. 167-173.
24. (1996) Amit Saxena "Microcomputer Based Linear Deconvolver for Engineering Application" published in the proceedings of National Conference (20-21 January CONMICRO'96) at Bhubneswar, India.
25. (1994) Amit Saxena "An Efficient Data Communication Scheme Using Artificial Neural Network" published in the proceedings National Conference(23-24 April COMNET'94) at Patna, India pp. 78-83

C. Book Authored

1. **Book:** "C Programming – An Introduction", released in February 2007, ISBN- 13 978-81-88342-93-8; published by Anamaya Publishers, New Delhi, India.

D. Book Chapters

Resume of Dr. Amit Kumar Saxena

1. **(2013)** Amit Saxena, C T Lin, Mukesh Prasad, Book Chapter titled “Vertical Collaborative Fuzzy C-Means for Multiple EEG Data Set”, Intelligent Robotics and Applications, Lecture Notes in Computer Science Volume 8102, 2013, pp 246-257, Springer Berlin Heidelberg , http://link.springer.com/chapter/10.1007/978-3-642-40852-6_26
2. **(2008)** Amit Saxena, Megha Kothari, Navneet Pandey, “Evolutionary Approach to Dimensionality Reduction” , Encyclopedia of Data Warehousing and Mining, Second Edition, Vol II pp 810-816, ISBN 978-1-60566-010-3 (hardcover) , ISBN 978-1-60566-011-0 (ebook), IGI Global,2008, <http://www.igi-global.com/downloads/pdf/Wang810.pdf> .

G. Book Edited

- Proceedings of International Conference on Soft Computing and ICT SCICT-2011 on 16-17 March 2011 at G G Vishwavidyalaya, Bilaspur India, ISBN – 978-81-920913-3-4

Membership of Professional Bodies

- Life member of Computer Society of India
- Senior Member of IEEE, USA, Computer Society

Google Citation <https://scholar.google.com/citations?user=xkg-4nYAAAAJ&hl=en>

Last Revised on 10 April 2023

Amit Kumar Saxena