

## **Pabitra Mitra**

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Date of birth: May 12, 1974.

### **Educational Qualifications:**

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<b>Degree</b>	<b>Institution</b>	<b>Year</b>	<b>Department</b>
Ph.D.	Indian Statistical Institute	2004	Computer Science
B.Tech	I.I.T. Kharagpur	1996	Electrical Engineering

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### **Professional Experience:**

- *Professor, IIT Kharagpur, Feb 2018 – till date*
- *Associate Professor, IIT Kharagpur, Nov 2010 – Feb 2018*
- *Assistant Professor, IIT Kharagpur, 2005 – 2010*
- *Assistant Professor, IIT Kanpur, 2004-2005*
- *Research Fellow, ISI Calcutta, 1998-2004*
- *Scientist, Center for Artificial Intelligence and Robotics, Bangalore, 1996-1998*

### **Awards:**

- Yahoo Faculty Award 2013
- IBM Faculty Award 2010
- Indian National Academy of Engineering Young Engineer Award 2008
- Royal Society UK India Science Network Award 2006

### **Teaching Experience:**

Data Mining, Machine Learning, Advanced Machine Learning, Information Retrieval, Artificial Intelligence, Database Management Systems, Programming and Data Structures

### **Dissertations Supervised:**

PhD: 6 completed, 8 ongoing    Masters: 50 completed, 5 ongoing

### **Sponsored Projects:**

Completed: 8 (total value: INR 5 crores), Ongoing: 8

### **Membership of Professional Bodies:**

Chair, IEEE Kharagpur Section, 2014  
Vice Chair and Treasurer, IEEE Kharagpur Section 2013  
Secretary and Treasurer, IEEE Kharagpur Section 2012

Executive Body Member, Information Retrieval Society of India

## Publications:

### Books:

S. K. Pal and P. Mitra, Pattern Recognition Algorithms for Data Mining, Chapman & Hall CRC Press, Boca Raton, FL, May 2004, ISBN: 1-58488-457-6

V. Srinivas and P. Mitra, Link Prediction in Social Networks, Springer Briefs in Computer Science, Springer, 2016, ISBN: 978-3-319-28921-2.

### Journal:

1. S Misra, S Sarkar, P Mitra, Statistical downscaling of precipitation using long short-term memory recurrent neural networks, Theoretical and Applied Climatology Vol. 134 (3-4), pp. 1179-1196, 2018
2. O Chakraborty, A Das, A Dasgupta, P Mitra, SK Ghosh, T Mazumder, A multi-objective framework for analysis of road network vulnerability for relief facility location during flood hazards: A case study of relief location analysis in Bankura, Transactions in GIS Vol. 22 (5), pp. 1064-1082, 2018
3. M Saha, P Mitra, Identification of Indian monsoon predictors using climate network and density-based spatial clustering, Meteorology and Atmospheric Physics, pp. 1-14, 2018
4. SR Sreeja, RR Sahay, D Samanta, P Mitra, Removal of Eye Blink Artifacts From EEG Signals Using Sparsity, IEEE Journal of Biomedical and Health Informatics Vol. 22 (5), pp. 1362-1372, 2018
5. A Illanes, P Poudel, M Friebe, P Mitra, D Sheet, Anatomical Structure Segmentation in Ultrasound Volumes using Cross Frame Belief Propagating Iterative Random Walks, IEEE Journal of Biomedical and Health Informatics, 2018
6. A Basu, A Dasgupta, A Thyagarajan, A Routray, R Guha, P Mitra, A portable personality recognizer based on affective state classification using spectral fusion of features, IEEE Transactions on Affective Computing, Vol. 9 (3), pp. 330-342, 2018
7. A. Ghose, L. Dokara, S. Dey, and P. Mitra, A Framework for OpenCL Task Scheduling on Heterogeneous Multicores, Parallel Processing Letters, Vol. 27, 2017
8. K. Biswas, D. Chakravarty, P. Mitra, and A. Misra, Spatial-Correlation Based Persistent Scatterer Interferometric Study for Ground Deformation, Journal of the Indian Society of Remote Sensing, Vol. 45(6), pp. 913-926, 2017
9. M. Saha, P. Mitra, R.S. Nanjundiah, Deep learning for predicting the monsoon over the homogeneous regions of India, Journal of Earth System Science, Vol. 126 (4), 54, 2017.
10. A. Santara, K. Mani, P. Hatwar, A. Singh, A. Garg, K. Padia, and P. Mitra, BASS Net: Band-Adaptive Spectral-Spatial Feature Learning Neural Network for Hyperspectral Image Classification, IEEE Transactions Geoscience and Remote Sensing, 2017
11. M. Saha, P. Mitra, and R.S. Nanjundiah, Autoencoder-based identification of predictors of Indian monsoon, Meteorology and Atmospheric Physics, Vol. 128(5), pp. 613-628, 2016.
12. M. Saha, A. Chakraborty, and P Mitra, Predictor-Year Subspace Clustering Based Ensemble, Prediction of Indian Summer Monsoon, Advances in Meteorology, 2016.
13. M.S. Desarkar, S. Sarkar, and P. Mitra, Preference relations based unsupervised rank aggregation for metasearch, Expert Systems with Applications, Vol. 49, pp. 86-98, 2016.
14. S. Chakraborty, and P Mitra, A dense subgraph based algorithm for compact salient image region detection, Computer Vision and Image Understanding, Vol. 145, pp. 1-14 2016.

15. M. Mandal, B. Ghosh, A. Anura, P. Mitra, T. Pathak, J. Chatterjee, Modeling continuum of epithelial mesenchymal transition plasticity, *Integrative Biology*, Vol. 2(8), pp. 167-176, 2016.
16. T. Swarnkar, S.N. Simões, A. Anura, H. Brentani, J. Chatterjee, R.F. Hashimoto, D.C. Martin, and P. Mitra, Identifying dense subgraphs in protein–protein interaction network for gene selection from microarray data, *Network Modeling Analysis in Health Informatics and Bioinformatics*, Vol. 4, No. 1, pp. 33, 2015.
17. S. Chakraborty, and P. Mitra, A site entropy rate and degree centrality based algorithm for image co-segmentation, *Journal of Visual Communication and Image Representation*, Vol. 33, pp. 20-30, 2015.
18. T. Swarnkar, and P. Mitra, Graph-based unsupervised feature selection and multiview clustering for microarray data, *Journal of Biosciences*, Vol. 40, No. 4, pp. 755-767, 2015.
19. M. Saha, P. Mitra, and A. Chakraborty, Fuzzy clustering based ensemble approach to predicting Indian monsoon, *Advance in Meteorology*, 2015.
20. S. Bandhyapadhyay, T. Bhadra, P. Mitra, and U. Maullik, Integration of dense subgraph finding with feature clustering for unsupervised feature selection, *Pattern Recognition Letters*, Vol. 40, pp. 104-112, 2014.
21. A. Mandal, K. R. Prasanna Kumar, and P. Mitra, Recent developments in spoken term detection: a survey, *International Journal of Speech Technology*, pp. 1381-2416, 2013.
22. S. Bhattacharjee, P. Mitra, and S. K. Ghosh, Spatial interpolation to predict missing attributes in GIS using semantic kriging, *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 52, No. 8, pp. 4771-4780, 2013.
23. B. Das, S. Mandal, P. Mitra, and A. Basu, Aging speech recognition with speaker adaptation techniques: A study on medium vocabulary continuous Bengali speech, *Pattern Recognition Letters*, Vol. 34, No. 3, pp. 335-443, 2013.
24. B. Das, S. Mandal, P. Mitra, and A. Basu, Effect of aging on speech features and phoneme recognition: A study on Bengali voicing vowels, *International Journal of Speech Technology*, 2012.
25. S. K. Saha, S. Narayan, S. Sarkar and P. Mitra, A composite kernel for named entity recognition, *Pattern Recognition Letters*, 2010.
26. R. Pal, A. Mukherjee, P. Mitra and J. Mukherjee, Modeling visual saliency using degree centrality, *IET Computer Vision*, 2010.
27. S. K. Saha, S. Sarkar, P. Mitra, Feature selection techniques for maximum entropy based biomedical named entity recognition, *Journal of Biomedical Informatics*, Vol 42, No. 4, pp. 905-911, 2009.
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29. K.V. Arya, P. Gupta, P. Mitra and P.K. Kalra, Robust image registration using M-estimators, *Pattern Recognition Letters*, Vol. 28, No. 15, 1, pp. 1957-1968, November 2007.
30. S.K. Pal, B. Uma Shankar and P. Mitra, Granular computing, rough entropy and object extraction, *Pattern Recognition Letters*, Vol. 26, No. 16, pp. 2509-2517, December 2005.
31. P. Mitra, B. Uma Shankar and S. K. Pal, Segmentation of multispectral remote sensing images using active support vector machines, *Pattern Recognition Letters*, Vol. 25, No. 9, pp. 1067-1074, July 2004.
32. S.K. Pal, B. Das Gupta and P. Mitra, Rough Self Organizing Map, *Applied Intelligence*, Vol. 21, No. 3, pp. 289-299, December 2004.
33. P. Mitra, C. A. Murthy and S. K. Pal, A Probabilistic Active Support Vector Learning Algorithm, *IEEE*

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34. S. K. Pal and P. Mitra, Case Generation Using Rough Sets with Fuzzy Representation, IEEE Transactions on Knowledge and Data Engineering, Vol 16, No 3, pp. 292-300, March 2004.
  35. S. K. Pal, S. Mitra and P. Mitra, Rough Fuzzy MLP: Modular Evolution, Rule Generation and Evaluation, IEEE Transactions on Knowledge and Data Engineering, Vol. 15, No. 1, pp. 14-25, January 2003.
  36. P. Mitra, S. K. Pal and M. A. Siddiqi, Nonconvex Clustering Using Expectation Maximization Algorithm with Rough Set Initialization, Pattern Recognition Letters, Vol. 24, No. 6, pp. 863-873, February 2003.
  37. P. Mitra, C. A. Murthy and S. K. Pal, Density Based Multiscale Data Condensation, IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 24, No. 6, pp. 734-747, June 2002.
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  39. S. Mitra, S. K. Pal and P. Mitra, Data Mining in Soft Computing Framework: A Survey, IEEE Transactions on Neural Networks, Vol. 13, No. 1, pp 3-14, January 2002.
  40. S. K. Pal, V. Talwar and P. Mitra, Web Mining in Soft Computing Framework: Relevance, State of the Art and Future Directions, IEEE Transactions on Neural Networks, Vol. 13, No. 5 pp 1163-1177, September 2002.
  41. S. K. Pal and P. Mitra, Multispectral Image Segmentation Using the Rough Set-Initialized-EM Algorithm, IEEE Transactions on Geoscience and Remote Sensing, Vol. 40, No. 11, pp. 2495-2501, November 2002.
  42. S. Mitra, P. Mitra and S. K. Pal, Evolutionary Modular Design of Rough Knowledge-based Network using Fuzzy Attributes, Neurocomputing, Vol 36, pp. 45-66, 2001.
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  45. P. Mitra, Self Control of Chaotic Dynamics using LTI Filters, IEEE Transactions on Circuits and Systems-I, Vol. 47(11), pp. 1649-1652, 2000.

#### **Conference:**

1. D. China, P. Mitra, and D. Sheet, On the Fly Segmentation of Intravascular Ultrasound Images Powered by Learning of Backscattering Physics, Classification in BioApps, pp. 351-380, 2018
2. A. Mandal, KR Prasanna Kumar, and P. Mitra, Point Process Modeling of Spectral Peaks for Low Resource Robust Speech Recognition, International Conference on Mining Intelligence and Knowledge Exploration, 2017
3. SR Sreeja, J Rabha, D Samanta, P Mitra, and M Sarma, Classification of Motor Imagery Based EEG Signals Using Sparsity Approach, International Conference on Intelligent Human Computer Interaction, pp. 47-59, 2017
4. M. Pramanick, and P. Mitra, A Metaphor Detection Approach Using Cosine Similarity, International Conference on Pattern Recognition and Machine Intelligence, 2017
5. V. Lodhi, D. Chakravarty, and P. Mitra, Hyperspectral Data Processing: Spectral Unmixing, Classification, and Target Identification, Hybrid Intelligence for Image Analysis and Understanding, 2017
6. A. Lahiri, K. Ayush, P.K. Biswas, and P. Mitra, Generative adversarial learning for reducing manual

annotation in semantic segmentation on large scale microscopy images: Automated vessel segmentation, Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops, 2017

7. A. Kumar Jain, A. Agarwalla, K. Krishna Agrawal, and P. Mitra, Recurrent Memory Addressing for Describing Videos, Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops, 2017
8. J. Grover and P. Mitra, Sentence Alignment using Unfolding Recursive Autoencoders, Proceedings of the 10th Workshop on Building and Using Comparable Corpora, 2017
9. S. Mitra, and P. Mitra, Intelligent Generation of Flavor Preserving Alternative Recipes for Individuals with Dietary Restrictions, International Conference on Computational Intelligence, Communications, and Business Analytics, pp. 531-539, 2017
10. M. Saha, P. Mitra, and R.S. Nanjundiah, Predictor Discovery for Early-late Indian Summer Monsoon Using Stacked Autoencoder, Procedia Computer Science, 80, pp. 565-576, 2016
11. S. Dey, P. Mitra, and K. Gupta, Recommending Repeat Purchases using Product Segment Statistics, Proceedings of the 10th ACM Conference on Recommender Systems, pp. 357-360, 2016
12. V. Pahuja, R.K. Layek, and P. Mitra, Learning a Probabilistic Boolean Network model from biological pathways and time-series expression data, IEEE 38th Annual International Conference of the Engineering in Medicine and Biology Society, 2016
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16. R. Aziz, M. Kedia, S. Dan, S. Basu, S. Sarkar, S. Mitra, and P. Mitra, Identifying and Characterizing Truck Stops from GPS Data, Industrial Conference on Data Mining, 2016
17. S. Gope, S. Sarkar, P. Mitra, and S. Ghosh, Early Prediction of Extreme Rainfall Events: A Deep Learning Approach, Industrial Conference on Data Mining, 2016
18. O. Chakraborty, J. Das, A. Dasgupta, P. Mitra, and S.K Ghosh, A geospatial service oriented framework for disaster risk zone identification, International Conference on Computational Science and Its Applications, 2016.
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21. D. Majhi, A. Santara, S. Ghosh, D. Sheet, and P. Mitra, Deep neural network and random forest hybrid architecture for learning to detect retinal vessels in fundus images, IEEE Intl. Conf. Engineering in Medicine and Biology, 2015
22. M. Saha, and P. Mitra, Climate Network Based Index Discovery for Prediction of Indian Monsoon, Intl. Conf. Pattern Recognition and Machine Intelligence, 2015
23. M. Saha, and P. Mitra, Co-Clustering Based Approach for Indian Monsoon Prediction, Procedia Computer Science 51, 2938-2942, 2015
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- Media, Workshop Computational Approaches to Subjectivity, Sentiment Social Media Analysis, 2015
25. A. Choudhury, S Sharma, P Mitra, C Sebastian, SS Naidu, M Chelliah, SimCat: an entity similarity measure for heterogeneous knowledge graph with categories, Proc. ACM IKDD Conference on Data Sciences, pp. 112-113, 2015
  26. M. Saha, S. Agarwal, I. Arun, R. Ahmed, S. Chatterjee, P. Mitra, C. Chakraborty, Histogram Based Thresholding for Automated Nucleus Segmentation Using Breast Imprint Cytology , Advancements in Medical Electronics, 2015
  27. T. Swarnkar, S. Nery Simões, D. Martins-Jr, A.i Anura, H. Brentani, R. F. Hashimoto, P. Mitra, Multiview clustering on PPI network for gene selection and enrichment from microarray data, IEEE Intl. Conf. Bioinformatics and BioEngineering, 2014
  28. J Mukherjee, SM Aswatha, P Mondal, J Mukherjee, and P Mitra , Duplication Detection for Image Sharing Systems, Proceedings of the 2014 Indian Conference on Computer Vision Graphics and Image Processing, 2014
  29. S. Virinchi and P. Mitra, Two-phase approach to link prediction, Proc. Intl. Conf. Neural Information Processing, (ICONIP), 2014
  30. M. Saha and P. Mitra, VLGAAC: Variable length genetic algorithm based alternate clustering, Proc. Intl. Conf. Neural Information Processing, (ICONIP), 2014
  31. S. Virinchi and P. Mitra, Similarity measures for link prediction using power law degree distribution, Proc. Intl. Conf. Neural Information Processing, (ICONIP), 2013.
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  33. P. Chheda, M. Faruqui, and P. Mitra, Handling OOV Words in Indian-language - English CLIR, Proc. European Conference on Information Retrieval (ECIR 2012), pp. 476-479, 2012.
  34. S. Mandal, B. Das, P. Mitra, and A. Basu, A Robust Bengali Continuous Speech Recognizer Using Triphone and Trigram Language Model, IC3 2011, pp. 556-558, 2011.
  35. S. Das and P. Mitra, Author Identification in Bengali Literary Works, PReMI 2011, pp. 220-226, 2011.
  36. S. Maiti, D. P. Mandal, and P. Mitra, Sentence Ranking for Document Indexing, PReMI 2011, pp. 274-279, 2011.
  37. V. Ramanathan, S. Mishra and P. Mitra, Quadtree decomposition based extended vector space model for image retrieval, IEEE Workshop on Applications of Computer Vision, WACV, Hawaii, 2011.
  38. B. Das, S. Mandal and P. Mitra, Bengali speech corpus for continuous automatic speech recognition system, Proc. Conf. Speech Database and Assessments (Oriental COCODSA), pp. 51-55, Taiwan, 2011
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54. R. Pal, P. Mitra, J. Mukhopadhyay, ICam: Maximizes Viewers' Attention on Intended Objects, Proc. PCM 2008, pp. 821-824, 2008.
55. Pallavi P., H. Karnick, P. Mitra, Personalized Web Search Using Probabilistic Query Expansion, Proc. Web Intelligence/IAT Workshops, pp. 83-86, 2007.
56. U. Sajjanhar and P. Mitra, Distributive energy efficient adaptive clustering protocol for wireless sensor networks, Workshop on Data Intensive Sensor Networks, Intl. Conf. Mobile Data Management (MDM07), Mannheim, Germany, 2007.
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60. N. Gupta, N. Mangal, K. Tiwari and P. Mitra, Mining quantitative association rules in protein sequences, Data Mining, LNAI 3755, pp. 273-281, 2006, Springer Verlag.
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