Dr. Moumita Roy
Associate Professor
PhD (Jadavpur University)

Department of Computer Science & Engineering

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Joined the Institute in September 2014

About

I am presently working as an Associate Professor in the Department of Computer Science and Engineering, Indian Institute of Information Technology Guwahati. I have joined IIITG on September, 2014. I have received M.E and Ph.D. degrees in Computer Science and Engineering from IIEST, Shibpur and Jadavpur University, Kolkata (in external collaboration with ISI, Kolkata) in 2009 and 2015, respectively. I have also carried out my research work as a visiting scholar at University of Trento, Italy from 2013-2014.

Research Interests

My broad research interests include artificial intelligence, machine learning, image analysis, signal processing. More specifically, I am currently working on the domain related to the application of artificial intelligence/machine learning in remote sensing and structural health monitoring.

Sponsored Research Project-1: Adaptive learning models for land-cover classification with application in remote sensing based monitoring of agriculture and forestry (under ECR scheme funded by SERB, DST) [completed on March 2020]

Sponsored Research Project-2: On performance of structural damage detection based on: mathematical and machine-learning models in harmony, and domain adaptation with scaled physical model using limited sensors (multi-institutional project in collaboration with NIT-Silchar under CRG scheme funded by SERB, DST) [Ongoing]

Teaching

Artificial Intelligence, Machine Learning, Deep Learning, Formal Language and Automata Theory, Computer Programming

Ph.D Students

1. Dr. Shounak Chakraborty (presently working as Assistant Professor, IIITDM-Kurnool)
Scheme: Senior Research Fellow under DST Inspire Fellowship [Full-time]
Status: Completed
Year of Completion: 2020 (under Sole Supervision)
Thesis title: Neural approaches towards adaptive land-cover classification using remotely sensed images

2. Dr. Indrajit Kalita (presently working as a Research Associate, Cyens-Centre of Excellence, Nicosia, Cyprus)
Scheme: JRF under SERB, DST Project and Institute Fellowship [Full-time]
Status: Completed
Year of Completion: 2022 (under Sole Supervision)
Thesis title: Deep learning based adaptive land-cover monitoring by analyzing remotely sensed images

3. Ms. Manashi Saharia
Scheme: Project Assistant under SERB, DST Project [Full-time]
Status: Ongoing
Year: 2022
Thesis title: Deep learning models for structural health monitoring

4. Mrs. Chinmoyee Gogoi
Scheme: Part-time
Status: Ongoing
Year: 2020

Publication

Journal

- Indrajit Kalita, Gyan Prakash Singh, Moumita Roy, "Crop classification using aerial images by analyzing an ensemble of DCNNs under multi-filter & multi-scale framework", Multimedia Tools and Applications, (2022), pages. 1-25, Springer US
- Indrajit Kalita, Moumita Roy, "Class-Wise Subspace Alignment-Based Unsupervised Adaptive Land Cover Classification in Scene-Level Using Deep Siamese Network", IEEE Transactions on Neural Networks and Learning Systems, (2022), IEEE
- Indrajit Kalita, Runku Nikhil Sai Kumar, Moumita Roy, "Deep Learning-Based Cross-Sensor Domain Adaptation Under Active Learning for Land Cover Classification", IEEE Geoscience and Remote Sensing Letters,vol. 19, (2021), pages. 1-5, IEEE
- Indrajit Kalita, Moumita Roy, "Deep Neural Network-based Heterogeneous Domain Adaptation using Ensemble Decision Making in Land Cover Classification", IEEE Transactions on Artificial Intelligence, (2020), IEEE
- Shounak Chakraborty, Moumita Roy, "A multi-level weighted transformation based neuro-fuzzy domain adaptation technique using stacked auto-encoder for land-cover classification", International Journal of Remote Sensing,Vol 41, Issue 17, (2020), pages. 6831-6857, Taylor & Francis
- Nikumani Choudhury, Rakesh Matam, Mithun Mukherjee, Jaime Lloret, "A performance-to-cost analysis of IEEE 802.15. 4 MAC with 802.15. 4e MAC modes", IEEE Access, (2020), pages. 41936-41950, IEEE
- Shounak Chakraborty, Jayashree Phukan, Moumita Roy, Bidyut Baran Chaudhuri, "Handling the Class Imbalance in Land-Cover Classification Using Bagging-Based Semisupervised Neural Approach", IEEE Geoscience and Remote Sensing Letters, (2019), IEEE
- Shounak Chakraborty, Moumita Roy, Farid Melgani, "Semisupervised Two-Level Fusion-Based Autoencoded Approach for Low-Cost Domain Adaptation of Remotely Sensed Images", IEEE Geoscience and Remote Sensing Letters, (2019), IEEE
- Shounak Chakraborty, Moumita Roy, "A neural approach under transfer learning for domain adaptation in land-cover classification using two-level cluster mapping", Applied Soft Computing, (2017), Elsevier

- Moumita Roy, Farid Melgani, Ashish Ghosh, Enrico Blanzieri, Susmita Ghosh, "Land-cover classification of remotely sensed images using compressive sensing having severe scarcity of labeled patterns", IEEE Geoscience and Remote Sensing Letters,Vol 12, Issue 6, (2015), pages. 1257-1261, IEEE

- Susmita Ghosh, Moumita Roy, Ashish Ghosh, "Semi-supervised change detection using modified self-organizing feature map neural network", Applied Soft Computing,Volume 15, (2014), pages. 1-20, Elsevier

- M Roy, S Ghosh, A Ghosh, "A novel approach for change detection of remotely sensed images using semi-supervised multiple classifier system", Information Sciences,Volume 269, (2014), pages. 35-47, Elsevier

- Moumita Roy, Susmita Ghosh, Ashish Ghosh, "MOUMITA ROY [PDF] from isical.ac.in A neural approach under active learning mode for change detection in remotely sensed images", IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing,Vol 7, Issue 4, (2014), pages. 1200-1206, IEEE

- Moumita Roy, Dipen Routaray, Susmita Ghosh, Ashish Ghosh, "Ensemble of multilayer perceptrons for change detection in remotely sensed images", IEEE Geoscience and Remote Sensing Letters,vol. 11, Issue. 1, (2014), pages. 49-53, IEEE

- Moumita Roy, Susmita Ghosh, Ashish Ghosh, "Change detection in remotely sensed images using semi-supervised clustering algorithms", International Journal of Knowledge Engineering and Soft Data Paradigms,Vol 4, Issue 2, (2013), pages. 118-137, Inderscience Publishers Ltd

- Moumita Roy, Susmita Ghosh, Ashish Ghosh, "Change detection in remotely sensed images using semi-supervised clustering algorithms", International Journal of Knowledge Engineering and Soft Data Paradigms,Vol. 4, Issue 2, (2013), pages. 118-137, Inderscience Publishers Ltd

- Moumita Roy, Susmita Ghosh, Ashish Ghosh, "Search-based semi-supervised clustering algorithms for change detection in remotely sensed images", India Conference (INDICON), 2012 Annual IEEE, (2012), pages. 503-507, IEEE

Book Chapters

- Shounak Chakraborty, Nilesh Agarwal, Moumita Roy, "A Deep Semi-supervised Approach for Multi-label Land-Cover Classification Under Scarcity of Labelled Images", Soft Computing for Problem Solving, (2021), pages. 1-12, Springer, Singapore

- Ajoy Mondal, Badri Narayan Subudhi, Moumita Roy, Susmita Ghosh, Ashish Ghosh, "A Study on Nonlinear Classifier-Based Moving Object Tracking", Intelligent Computing, Communication and Devices, (2015), pages. 571-578, Springer India

Conference

- Indrajit Kalita, Shounak Chakraborty, Moumita Roy, "Deep Ensemble Network for Handling Class-Imbalance Problem in Land-Cover Classification", 2019 International Conference on Information Technology (ICIT), (2019), pages. 505-509, IEEE

- Indrajit Kalita, Shounak Chakraborty, Moumita Roy, "Deep Ensemble Network for Handling Class-Imbalance Problem in Land-Cover Classification", 2019 International Conference on Information Technology (ICIT), (2019), pages. 505-509, IEEE

- Moumita Roy, Susmita Ghosh, Ashish Ghosh, "Search-based semi-supervised clustering algorithms for change detection in remotely sensed images", India Conference (INDICON), 2012 Annual IEEE, (2012), pages. 503-507, IEEE

- Moumita Roy, Suvadeep Das, Susmita Ghosh, Ashish Ghosh, "Semi-supervised Hopfield-Type Neural Network for change detection in remotely sensed images", Recent Advances in Information Technology (RAIT), 2012 1st International Conference on, (2012), pages. 379-384, IEEE

- Moumita Roy, Susmita Ghosh, Ashish Ghosh, "A semi-supervised change detection for remotely sensed images using ensemble classifier", Intelligent Human Computer Interaction (IHCI), 2012 4th International Conference on, (2012), pages. 1-5, IEEE

- Moumita Roy, Suvadeep Das, Susmita Ghosh, Ashish Ghosh, "Semi-supervised Hopfield-Type Neural Network for change detection in remotely sensed images", Recent Advances in Information Technology (RAIT), 2012 1st International Conference on, (2012), pages. 379-384, IEEE

- Susmita Ghosh, Moumita Roy, "Modified self-organizing feature map neural network with semi-supervision for change detection in remotely sensed images", International Conference on Pattern Recognition and Machine Intelligence, (2011), pages. 98-103, Springer Berlin Heidelberg