Mirza Mohammad Lutfe Elahi

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Research Interest

Computer Vision, Machine Learning.

Education

- **M.Sc.** in **Computer Engineering** [Dec , 2008]
  University of Texas at Arlington, TX 76019.
- **B.Sc.** in **Computer Science and Engineering** [July, 2005]
  University of Dhaka, Bangladesh.

Skills & Expertise

- Programming/Scripting Languages: - C/C++, Python, SQL.
- Tools - MATLAB, LaTeX.
- Framework - PyTorch.

Work Experience

■ Teaching

Senior Lecturer [Mar, 2015 - Present]
Department of Electrical and Computer Engineering
North South University, Dhaka, Bangladesh.

Lecturer [Jan, 2011 - Mar, 2015]
Department of Electrical and Computer Engineering
North South University, Dhaka, Bangladesh.

■ Intern

Software Engineer Intern [Jun, 2010 - Dec, 2010]
CISCO, Milpitas, CA 95035.

■ Graduate Research/Teaching Assistant

Graduate Teaching Assistant [May, 2007 - Dec, 2007]
Department of Electrical and Electronics Engineering [Aug, 2008 - Dec, 2008]

Graduate Research Assistant [Jan, 2008 - Jul, 2008]
Department of Computer Science and Engineering Department
University of Texas at Arlington, TX 76019.

Research & Project Experience

- **Vulnerability Assessment**: Proposed a fast approach of assessing the vulnerability of the people who reside in coastal regions and earn their living through engaging in agricultural work through the use of machine learning models.
- **Forecasting River Sediment Deposition**: Demonstrated remote sensing and unsupervised machine learning techniques coupled with appropriate validation metric can be employed to quickly forecast regions that are subject to future river sediment deposition using Satellite Image.
- **Computer Vision-based Traffic Monitoring System**: Proposed features of this project included route planning, congestion detection and accident alert using computer vision. This project was prompted by the need of reducing the cost of collecting transport data using electronic sensor with computer vision technology, making decision based on perceived data and the transmission of alert messages through network to appropriate authorities.

M.Sc. Thesis

Designed and implemented a discrete event based simulation model for General Motors conveyor system for paint shop, using a custom decision optimizer. The model was connected to an optimization framework that receives data from the simulator to make routing decisions and relays these decisions back to the simulator. Trials were performed with different parameters to analyze the plant's performance with and without the decision optimizer.

Grants

As PI - TK 300K BDT, North South University Innovation Funding, 2012-2013.
As Co-PI - TK 400K BDT, North South University Innovation Funding, 2018-2019.

Publication

Peer Reviewed Journal Articles/Conference Proceedings

1. Md. Jakariya, Md. Sajadul Alam, Md. Abir Rahman, Silvia Ahmed, **M. M. Lutfe Elahi**, Abu Mohammad Shabbir Khan, Saman Saad, H.M. Tamim, Taoseef Ishtiak, Sheikh Mohammad Sayem, Mirza Shawkat Ali, Dilruba Akter, "Assessing climate-induced agricultural vulnerable coastal communities of Bangladesh using machine learning techniques," Science of The Total Environment, Volume 742, November 2020. [Impact Factor: 6.6551]
2. Nahian Ahmed, Safin Mahmud, **M. M. Lutfe Elahi**, Silvia Ahmed, Mohammad Sujauddin, "Forecasting River Sediment Deposition through Satellite Image Driven Unsupervised Machine Learning Techniques," Remote Sensing Applications: Society and Environment, Volume 13, Pages 435-444, January 2019. [CiteScore: 3.2]
3. **Mirza M. Lutfe Elahi**, Karthik Rajpurohit, Jay M. Rosenberger, Gergely Zaruba, John Priest, "Optimizing Real-time Vehicle Sequencing of a Paint Shop Conveyor System," *Omega (The International Journal of Management Science)*, Volume 55, Pages 61-72, September 2015. [Impact Factor: 5.324]
4. M. H. Rohit, S. Barua, I. Akter, S. M. M. Karim, S. Akter and **M. M. Lutfe Elahi**, "IOT Based Submersible ROV for Pisciculture," *28th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*, pp. 1-6, IEEE, 2019.
5. A. Kamal, **M. M. Lutfe Elahi**, Bruce Poon, M. Ashraful Amin, "Fusion Based Approach to Discovering Social Circles in Ego Networks," *International Conference on Machine Learning and Cybernetics (ICMLC)*, pp. 511-517, IEEE, 2015.
6. M. Amirul Islam, M. Rasheduzzaman, **M. M. Lutfe Elahi**, Bruce Poon, M. Ashraful Amin, Hong Yan, "Feature Fusion for Robust Object Tracking," *International Conference on Wavelet Analysis and Pattern Recognition (ICWAPR)*, pp. 138-145, IEEE, 2015.
7. **Mirza M. Lutfe Elahi**, R. Yasir, M. A. Syrus, M. S. Q. Z. Nine, I. Hossain and N. Ahmed, "Computer Vision Based Road Traffic Accident and Anomaly Detection in the Context of Bangladesh," *International Conference on Informatics, Electronics and Vision (ICIEV)*, pp. 1-6, IEEE, 2014.
8. K. M. Akram, **Mirza M. Lutfe Elahi**, M. A. Amin, "Multiple Level Set Region Based Single Line Road Extraction," *International Conference on Machine Learning and Cybernetics (ICMLC)*, pp. 1201-1206, IEEE, 2013.

Teaching Experience

- CSE 115 Programming Language I [Summer 2011 - Summer 2015, Spring 2018 - Fall 2020]
- CSE 173 Discrete Mathematics [Summer 2015, Spring 2016 - Fall 2017]
- CSE 215 Programming Language II [Spring 2011 - Fall 2011]
- CSE 225 Data Structures and Algorithms [Spring 2012-Fall 2016]
- CSE 273 Theory of Computing [Summer 2011]
- CSE 299 Junior Design Project [Spring 2018 - Summer 2018]
- CSE 323 Operating Systems Design [Spring 2011]
- CSE 373 Design and Analysis of Algorithms [Spring 2014, Fall 2016 - Fall 2018, Fall 2019-Fall 2020]
- CSE 440 Artificial Intelligence [Fall 2015, Summer 2015, Fall 2017 - Spring 2018]
- CSE 445 Machine Learning [Summer 2018 - Summer 2019]
- CSE 468 Computer Vision [Spring 2015]
- CSE 499 Senior Design Project [Summer 2011 - Summer 2012, Spring 2013, Summer 2014, Spring 2015, Fall 2018 - Fall 2019]

Honors & Awards

- Special increment for outstanding teaching and research 2019, North South University.
- Dean of Engineering Scholarship 2008, University of Texas at Arlington, TX 76019.
- Full tuition fee waiver grant for the study at University of Dhaka, 1999-2002.
- Board Merit Scholarship, 1999-2002, Dhaka Board, Bangladesh.

Department & University Services

- Supervisor, department's web page development team [2015-Present]
- Faculty Advisor, ACM SIGAPP Student Chapter, North South University [2018-2019]
- Course Coordinator, CSE 373 Design and Analysis of Algorithms [Spring 2017-Present]
- Undergraduate Advisor [2011-2014]
- Supervisor, Problem Solving Community [2011-2013]