Rashidul Islam

Curriculum Vitae

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Education

2016–2022 **Doctor of Philosophy**, *Department of Information Systems, University of Maryland, Baltimore County (UMBC), USA. CGPA 3.82/4.00*.
Title of Dissertation: Intersectional Fairness in Machine Learning: Measurements, Algorithms, and Applications
Doctoral advisor: Dr. James Foulds

2018–2020 **Master of Science**, *Department of Information Systems, University of Maryland, Baltimore County (UMBC), USA. CGPA 3.82/4.00*.

2013-2014 **Master of Science**, *Department of Electrical & Electronics Engineering, University of Dhaka (DU), Bangladesh. CGPA 3.66/4.00*.

2009-2012 **Bachelor of Science**, *Department of Applied Physics, Electronics & Communication Engineering, University of Dhaka (DU), Bangladesh. CGPA 3.48/4.00*.

Research Statement

My research interests are in the broader field of artificial intelligence (AI) and machine learning (ML), particularly in the area of AI/ML Fairness and Ethics. It is now well understood that AI/ML systems frequently behave unfairly and discriminatorily toward specific demographic groups when trained on data without the proper attention. Various AI-automated tasks may suffer negative societal effects as a result of this phenomenon. My research is focused on building socially responsible machine learning methods by modeling, measuring, and correcting unfairness or implicit bias.

Work Experience

Aug'22 - Present **Staff Research Scientist**, Visa Research, Visa USA Inc., Atlanta, GA
- Developing trustworthy AI methods.
- The intersection of the AI fairness (AIF) and the explainable AI (XAI).

Jan'18 - Jul'22 **Research Assistant**, Information Systems Department, UMBC, MD
- Removing the barriers to deployment of fair AI technologies.
- Ensuring fairness in Bayesian inference for arbitrary probabilistic models.
- Stochastic learning of intersectional fair algorithms.
- Mitigating demographic biases in social media-based career recommendations.
- Developing statistically efficient Bayesian modeling for intersectional fairness.
- Developing a sparse stochastic collapsed inference algorithm to scale up the topic models.

May'19 - Aug'19 **Wavelet Development Intern**, The MathWorks Inc., Natick, MA
- Scattering transform has established itself as an effective feature extractor for machine learning workflows. This internship is mainly responsible to investigate proof of concepts: Gabor scattering transforms, mixed filters, pooling, and non-linearities.

Aug'16 - Dec'17 **Graduate Assistant**, CSEE Department, UMBC, MD
- Responsible for conducting discussion sessions, lab, grading, and proctoring exams for undergraduate courses.
- Artifact detection and removal system for brain signal in low power embedded processors.
- FPGA-based scalable accelerator for high-throughput MCMC algorithm.

Dec'14 - Jul'16 **Core Network Engineer**, Huawei Technologies Ltd., Bangladesh
- Operation and Maintenance of core network systems which include routine activities, troubleshooting, and resolving network issues and any other O&M related activities.
- Identify, modify, and upgrade core network equipment to enhance product services.

Publications

- **R. Islam***, K.N. Keya, S. Pan, A.D. Sarwate, and J.R. Foulds*. An Intersectional Approach to Fair Machine Learning. *Under submission*, 2022.
- **R. Islam**, S. Pan, and J.R. Foulds. Fair Inference for Discrete Latent Variable Models. *Under submission*, 2022.
- C. Wang, K. Wang, A. Bian, **R. Islam**, K. Keya, J. R. Foulds and S. Pan. Do Humans Prefer Debiased AI Algorithms? A Case Study in Career Recommendation. *ACM International Conference on Intelligent User Interfaces (IUI)*, 2022.
- **R. Islam**, S. Pan, and J.R. Foulds. Can we obtain fairness for free? *Proceedings of AAAI/ACM Conference on Artificial Intelligence, Ethics and Society (AIES)*, 2021.
- **R. Islam**, K. Keya, Z. Zeng, S. Pan, and J. R. Foulds. Debiasing career recommendations with neural fair collaborative filtering. *Proceedings of The Web Conference (WWW)*, 2021.
- K. Keya, **R. Islam**, S. Pan, I. Stockwell and J. Foulds. Equitable allocation of healthcare resources with fair survival models. *SIAM International Conference on Data Mining (SDM)*, 2021.
- Z. Zeng, **R. Islam**, K. Keya, J. Foulds, Y. Song, and S. Pan. Fair heterogeneous network embeddings. In *Proceedings of the 15th International AAAI Conference on Web and Social Media (ICWSM)*, 2021.
- K. Keya, **R. Islam**, S. Pan, I. Stockwell and J. R. Foulds. Equitable allocation of healthcare resources with fair Cox models. *AAAI Fall Symposium on AI in Government and Public Sector (AAAI FSS)*, 2020.
- C. Wang, K. Wang, A. Bian, **R. Islam**, K. Keya, J. R. Foulds and S. Pan. A user study on a de-biased career recommender system. *Mid-Atlantic Student Colloquium on Speech, Language and Learning (MASC-SLL)*, 2020.
- J. R. Foulds*, **R. Islam***, K. Keya*, S. Pan. Bayesian modeling of intersectional fairness: The variance of bias. *SIAM International Conference on Data Mining (SDM)*, 2020.
- J. R. Foulds, **R. Islam**, K. Keya, and S. Pan. An intersectional definition of fairness. *36th IEEE International Conference on Data Engineering (ICDE)*, 2020.
- J. R. Foulds, **R. Islam**, K. Keya, and S. Pan. Differential fairness. *NeurIPS 2019 Workshop on Machine Learning with Guarantees*, 2019.
- **R. Islam**, K. Keya, S. Pan, and J. R. Foulds. Mitigating demographic biases in social media-based recommender systems. *The 25th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) Social Impact Track (extended abstract)*, 2019.

- **R. Islam** and J. R. Foulds. Scalable collapsed inference for high-dimensional topic models. In *Proceedings of the 2019 Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL)*, 2019.
- **R. Islam** and J. R. Foulds. Towards a highly efficient online inference algorithm for latent Dirichlet allocation. In *Mid-Atlantic Student Colloquium on Speech, Language and Learning (MASC-SLL)*, 2018.
- M. Hosseini,**R. Islam**, L. Marni, and T. Mohsenin. MPT: Multiple parallel tempering for high-throughput MCMC samplers. In *31st IEEE International System-on-Chip Conference (SOCC) (pp. 244-249)*, 2018.
- **R. Islam**, W. D. Hairston, T. Oates and T. Mohsenin. An online EEG artifact detection and removal system for embedded processors. In *Signal Processing in Medicine and Biology Symposium (SPMB)*, 2017.
- M. Hosseini, **R. Islam**, A. Kulkarni and T. Mohsenin. A scalable FPGA-based accelerator for high-throughput MCMC algorithms. In *Proceedings of the 25th Annual IEEE Symposium on Field-Programmable Custom Computing Machines (FCCM)*, 2017.

* Equal contribution.

Technical Skills

Research	AI Fairness and Ethics, Machine Learning, Deep Learning, Natural Language Processing
Programming Language	Python, PyTorch, Keras, Pyro, PyMC3, Gensim, Scikit-learn MATLAB, GNU Octave, Julia, R Verilog
Applications	Latex, SQL, MS Word, PowerPoint, Excel

Academic Services

Reviewer	NeurIPS 2021, ICML 2020, ICTAI 2020.

Honors and Awards

- *PhD Student Research Award* from the Department of IS, UMBC, 2022
- *PhD Student Research Award* from the Department of IS, UMBC, 2021
- *Best Poster Award* in PHD Completed Research category at IS Poster Day, UMBC, 2021
- *Student Scholarship Award* to attend The Web Conference (WWW), 2021
- *GSA Professional Development* and *IS Dept. Travel Grant* to attend in NAACL, 2019
- *NST Fellowship for M.S. Thesis* from Ministry of Science & Technology, Bangladesh, 2014