Farhad Mohsin

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https://github.com/farhadmohsin
https://scholar.google.com/citations?user=Akfw1iQAAAAJ

Summary

PhD student doing research in preference aggregation, fair decision-making in ML and reinforcement learning with experience as telecommunications engineer and data analyst.

Education

2018 – Present **Ph.D. student in Computer Science**
Rensselaer Polytechnic Institute (RPI), Troy, NY

2010 – 2015 **B.Sc. in Electrical and Electronic Engineering**
Bangladesh University of Engineering and Technology (BUET), Bangladesh

Experience

Aug 2018 - Present **Dept. of Computer Science, Rensselaer Polytechnic Institute**
Graduate Research Assistant. Advised by Prof. Lirong Xia.

- Working on AI-aided group decision making.
  - ML-based design of new voting rules for fair and ethical decision-making.
  - Learning and aggregating preferences from natural language.
- Previously worked in the SCALES (Smart Contracts Augmented with LEarning and Semantics) project with Prof. Xia and Dr. Oshani Seneviratne.

Graduate Teaching Assistant
Data Structures (Fall 2018), Introduction to Artificial Intelligence (Spring 2021, Spring 2022).

Sep 2015 - Aug 2018 **Grameenphone Ltd, Dhaka, Bangladesh**
Telecommunications Engineer at Service Assurance and Security

- Developed tools for automating resource planning and auditing in telecommunication network and efficient database management using SQL and Python.
- Developed new algorithms using standard machine learning techniques to do efficient fault detection in high dimensional Radio Access Network data.

Research Publications

Journal Papers

1. **Mohsin**, **F.**, Liu, A., Chen, P.-Y., Rossi, F., & Xia, L. (2022). Learning to Design Fair and Private Voting Rules. *Journal of Artificial Intelligence Research[AI and Society Track]*.

Conference Proceedings

2. Liu, S., **Mohsin**, **F.**, Xia, L., & Seneviratne, O. (2019). Strengthening Smart Contracts to Handle Unexpected Situations, In *2019 IEEE International Conference on Decentralized Applications and Infrastructures (DAPPCON)*. IEEE.

3. Hasan, S. M., Monjil, M. B., **Mohsin**, **F.**, Hayat, M. A., & Rashid, A. B. M. H.-u. (2015). Adaptive Beamforming with a Microphone Array, In *2015 18th International Conference on Computer and Information Technology (ICCIT)*. IEEE.

Workshop Papers

4. **Mohsin**, **F.**, Han, Q., Ruan, S., & Xia, L. (2022). Computational Complexity of Verifying the Group No-show Paradox, In *13th Multidisciplinary Workshop on Advances in Preference Handling (MPREF-22), IJCAI-22.*

5. **Mohsin**, **F.**, Kang, I., Chen, P.-Y., Rossi, F., & Xia, L. (2022). Learning Individual and Collective Priorities over Moral Dilemmas, In *13th Multidisciplinary Workshop on Advances in Preference Handling (MPREF-22), IJCAI-22.*

6. **Mohsin**, **F.**, Luo, L., Ma, W., Kang, I., Zhao, Z., Liu, A., Vaish, R., & Xia, L. (2021). Making Group Decisions from Natural Language-Based Preferences, In *The 8th International Workshop on Computational Social Choice (COMSOC-2021).*

7. **Mohsin**, **F.**, Zhao, X., Hong, Z., de Mel, G., Xia, L., & Seneviratne, O. (2019). Ontology Aided Smart Contract Execution for Unexpected Situations, In *Proceedings of the Blockchain enabled Semantic Web Workshop (BlockSW) and Contextualized Knowledge Graphs (CKG) Workshop*.

Ongoing Work

8. **Mohsin**, **F.**, Kang, I., Chen, Y., & Xia, L. (2022). Classifying Natural Language-based Preferences.

9. Han, Q., Ruan, S., Kong, Y., Liu, A., **Mohsin**, **F.**, & Xia, L. (2021). Truthful Information Elicitation from Hybrid Crowds. *arXiv preprint arXiv:2107.10119.*

Skills

Programming	**Python**: Data analysis: NumPy, SciPy, Pandas. Optimization: CVXOPT, CVXPy, Gurobi. ML libraries: scikit-learn, PyTorch, PyTorch Geometric, HuggingFace Transformers, XGBoost, Stable Baselines3. **C/C++**: C,C++ with STL **MPI**: Parallel programming done using MPI in C **Databases**: SQLite with Python.
Misc.	MS Excel (Macros, VBA), MS PowerPoint, LaTeX .

Miscellaneous Experience

Relevant Coursework

Graduate	Machine Learning from Data, Randomized Algorithms, Distributed Systems and Algorithms, Design and Analysis of Algorithms, Algorithmic Game Theory, Economics and Computation, Introduction to Optimization, Parallel Computing.
Undergraduate	Digital Signal Processing I and II, Random Signals and Processes, Control Systems.

Awards and Achievement

Programming Contests	Participated in numerous National Collegiate Programming Contests as one of the top teams from BUET in the years 2011-2012. Attained 11th Place in ACM ICPC Dhaka Regionals 2012 as part of team *BUET_Variables*. Attained 31st position worldwide in IEEE Xtreme 7.0 Programming Contest, 2013
Electronic Design Contest	Runner-up at Cadence Xtensa Design Contest 2015 for project titled Adaptive Beamforming for Microphone Array