Saaduddin Mahmud

(+1)347-948-0507 | smahmud@umass.edu | saadmahmud.com

Education

University of Massachusetts Amherst — Massachusetts, USA
2nd year CS MS/PhD Student — *September 2021 – Present*

University of Dhaka — Dhaka, Bangladesh
B.Sc. in Computer Science and Engineering (CGPA: 3.86/4.00) — *January 2016 – December 2019*

Experience

Research Assistant — September 2021 – Present
Resource-Bounded Reasoning Lab, CICS, University of Massachusetts Amherst. — *Massachusetts, USA*

- Advisor: Prof. Shlomo Zilberstein
- Reinforcement Learning.
- AI Safety (Value Alignment).
- Explainable AI.

Lecturer — January 2021 – July 2021
CSE, Ahsanullah University of Science and Technology. — *Dhaka, Bangladesh*

- Math for Computer Science.
- Compiler Design.

Research Assistant — September 2018 – December 2020
Cognitive Agents & Interaction Lab (CAIL), CSE, University of Dhaka — *Dhaka, Bangladesh*

- Decentralized Multi-Agent Coordination using Distributed Reasoning.
- Multi-Agent Deep Reinforcement Learning.

Current Research Projects

1. Semi-Autonomous Systems with Contextual Competence Awareness
Saaduddin Mahmud, Connor Basich, and Shlomo Zilberstein. **(AAMAS 2023)**.

2. REVEALE: A Framework for Reward Verification and Learning.
Saaduddin Mahmud, Sandhya Saisubramanian, and Shlomo Zilberstein. **(Under Review IJCAI-2023, SafeAI Workshop @ AAAI-23)**.

3. Causal Explanations for Sequential Decision Making Under Uncertainty: Foundations and Analysis.
Samer B. Nashed, **Saaduddin Mahmud**, Claudia V. Goldman, and Shlomo Zilberstein.**(AAMAS 2023, Ext. Abs.)**.

4. A Simulation-Based Online Planning Algorithm for Multi-Agent Cooperative Environments.
Rafid Amir Mahmud, Fahim Faisal, **Saaduddin Mahmud**, and Md. Mosaddek Khan. **(AAMAS, 2022, Ext. Abs.)**.

Undergrad Publications

1. Learning Optimal Temperature Region for Solving Mixed Integer Functional DCOPs.
Saaduddin Mahmud, Md. Mosaddek Khan, Moumita Choudhury, Long Tran-Thanh, and Nicholas R. Jennings. **(IJCAI, 2020)**.

2. AED: An Anytime Evolutionary DCOP Algorithm.
Saaduddin Mahmud, Moumita Choudhury, Md. Mosaddek Khan, Long Tran-Thanh, and Nicholas R. Jennings. **(AAMAS, 2020)**.

3. A Particle Swarm Based Algorithm for Functional Distributed Constraint Optimization Problems.
Moumita Choudhury, **Saaduddin Mahmud**, and Md. Mosaddek Khan. **(AAAI, 2020)**.

4. Applying Population-Based Algorithms to Solve Large (F)DCOPs.
Saaduddin Mahmud and Moumita Choudhury (Equal Contribution). **Undergrad Thesis, University Of Dhaka, 2020.**

Honors & Awards

B.Sc. Scholarship by the University Grants Commission
Awarded for outstanding performance in B.Sc.

ACM International Collegiate Programming Contest (ICPC), Dhaka Regional - 2017
Represented University of Dhaka in the biggest national-level programming contest.

H.S.C. Scholarship by the Bangladesh Government
Awarded for outstanding performance in High-School.

Skills

Languages: Python, Julia, C/C++, Java, JavaScript.
Frameworks: Node.js, Flask.
Database: Oracle, MongoDB
Libraries JAX, PyTorch, TensorFlow.
Hardware Level: MIPS, NASM Assembler, CUDA.
OS: Ubuntu, Windows.

Software Projects

AL.GO | *A JAVA Application For Visualization of Classical Algorithms.* 2017

- Step by step visualizer for sorting and graph algorithms.
- Contains codes, problem links on these algorithms to help students learn faster.

MuSyc | *An Android Application For Music Synchronization Across Mobile Devices.* 2017

- Music synchronization across different mobile devices using shared music files.
- Functions as a social network where you can share music and become friends with other users.

EasyML | *A Python Web Application For Visual Machine Learning.* 2018

- High-dimensional data visualization using different Dimensionality Reduction Algorithms with intuitive UI.
- Visual Performance Comparison and hyperparameter optimization for different machine learning algorithms.

Reference

Professor Shlomo Zilberstein | *Professor, CICS, University of Massachusetts Amherst, Amherst, MA, USA*

- Email: shlomo@cs.umass.edu
- Personal Website: https://groups.cs.umass.edu/shlomo/