Saaduddin Mahmud

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Education

B.Sc. in Computer Science and Engineering *Dhaka, Bangladesh*

Department of Computer Science and Engineering, University of Dhaka *January, 2016 - January, 2020*

- **CGPA:** 3.86/4.00

Research Experiences

Cognitive Agents & Interaction Lab, University of Dhaka

Full-time Research Assistant *February, 2020 - Present*

- Applying Reinforcement Learning for Multi-Agent Coordination.
- Applying Reinforcement Learning and Game-Theory to improve security resource allocation.
- Mentoring undergraduate students associated with the lab on final year research project.

Cognitive Agents & Interaction Lab, University of Dhaka

Undergraduate Research Assistant *September, 2018 - January, 2020*

- Decentralized Multi-Agent Coordination.

Research Interests

1. Multi-agent Systems (Coordination and Planning, Multi-agent RL, Game Theory).
2. Interaction Between Human and Robot/AI.
3. AI for Social Impact and Computational Sustainability (Game Theory and RL for social good).
4. Decentralized Optimization and Inference (Constraint Network, Factor Graphs, PGMs).

Current Research Projects

1. Saaduddin Mahmud, Md. Mosaddek Khan, and Nicholas R. Jennings. *On Population-Based Algorithms for Distributed Constraint Optimization Problems*. Under Review, 2020
2. AI for Social Good (AI4SG). Using Reinforcement Learning for Multi-Agent Coordination and Allocation of Security Resources. An on going research project at CAIL as a part of the ICT Innovation Grant, 2020.

Publications

1. Saaduddin Mahmud, Md. Mosaddek Khan, Moumita Choudhury, Long Tran-Thanh, and Nicholas R. Jennings. Learning optimal temperature region for solving mixed integer functional DCOPs. In *Proceedings of the 29th International Joint Conference on Artificial Intelligence (IJCAI)*, 2020
2. Saaduddin Mahmud, Moumita Choudhury, Md. Mosaddek Khan, Long Tran-Thanh, and Nicholas R. Jennings. AED: An anytime evolutionary DCOP algorithm. In *Proceedings of the 19th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*, 2020
3. Moumita Choudhury, Saaduddin Mahmud, and Md. Mosaddek Khan. A particle swarm based algorithm for functional distributed constraint optimization problems. In *Proceedings of the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*, 2020
4. Saaduddin Mahmud and Moumita Choudhury (Equal Contribution). *Applying Population-Based Algorithms to Solve Large (F)DCOPs*. Department of Computer Science and Engineering, University Of Dhaka, 2020

Honors & Awards

2016 **H.S.C. Scholarship of The Bangladesh Government,** A scholarship awarded to undergraduate students for their outstanding performance in high school.

2016 **1st in junior division,** Battle of Brains - 2016 (Competitive Programming)

2017 **1st Runner up,** Battle of Brains - 2017 (Competitive Programming)

2017 **Participated,** ACM International Collegiate Programming Contest, Dhaka Regional

Skills

Languages Python, Julia, C/C++, Ruby, Java

Web JavaScript, Flask

Databases MySQL, Oracle, MongoDB

Library Pytorch, Fast.ai

Hardware Level: MIPS, NASM Assembler, Nvdia CUDA

Software Projects

AL.GO (See project)

A project written in Java to visualize well known algorithms. *2017*

- Step by step algorithm visualizer.
- Contains codes, problem links on specific topics to help students learn faster.

MuSyc (See project)

An android application for music synchronization across mobile devices. *2017*

- Music synchronization across different mobiles.
- Social-network for sharing music.

EasyML (See project)

A web application written in Python for automated data visualization and classification. *2018*

- Automated data visualization and classification.
- Fast hyper-parameter optimization for different classifiers.

Reference

Dr. Md. Mosaddek Khan

- Assistant Professor, Department of Computer Science and Engineering
  University of Dhaka
  http://mmkhansajeeb.com
  mosaddek@du.ac.bd