Amit Sarker

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Education

University of Massachusetts Amherst *Sep. 2022 - Present*
Ms/PhD in Computer Science
Advisor: Dr. Ali Sarvghad
Research Group: HCI-VIS Lab

University of Dhaka *Jan. 2014 - Dec. 2019*
B.Sc. in Computer Science and Engineering
CGPA: 3.77/4.00
Advisor: Dr. Md. Mosaddek Khan

Research Experience

HCI-VIS Lab, University of Massachusetts Amherst

- *Graduate Research Assistant* *Sep. 2022 - Present*
  - Working on designing, building, and testing a novel visual data exploration platform for differentially private data.

Cognitive Agents and Interaction Lab (CAIL), University of Dhaka

- *Research Assistant* *Jan. 2020 - Dec. 2020*
  - Applied local search-based algorithms for solving Continuous Distributed Constraint Optimization Problems (C-DCOPs) in multi-agent systems.
  - Investigated different optimization methods that can solve both convex and non-convex continuous optimization problems.
  - Investigated population-based algorithms (i.e. Particle Swarm Optimization (PSO)) to solve large C-DCOPs.
  - Mentored undergraduate students and helped them on their senior year thesis projects on multi-agent planning and scheduling.
- *Undergraduate Research Student* *Oct. 2018 - Dec. 2019*
  - Investigated large-scale multi-agent coordination and optimization problems.
  - Investigated multi-agent planning, scheduling, and path finding problems.

Research Interest

- Human-Computer Interaction, Artificial Intelligence.
- Machine Learning, Automated Planning.

Publications

Conference Publications

1. **A Local Search Based Approach to Solve Continuous DCOPs.**
   Amit Sarker, Moumita Choudhury, and Md. Mosaddek Khan.
   In Proceedings of the *20th International Conference on Autonomous Agents and Multiagent Systems **(AAMAS)**, pages 1127–1135, 2021, IFAAMAS.*

2. **C-CoCoA: A Continuous Cooperative Approximation Algorithm to Solve Functional DCOPs.**
   Amit Sarker, Abdullahil Baki Arif, Moumita Choudhury, and Md. Mosaddek Khan.
   In Proceedings of the *19th International Conference on Autonomous Agents and Multiagent Systems **(AAMAS)**, pages 1990–1992, 2020, IFAAMAS.* (Extended Abstract)
   *11th International Workshop on Optimization and Learning in Multiagent Systems **(OptLearnMAS)** @ AAMAS, 2020.*

Preprints

1. **A Particle Swarm Inspired Approach for Continuous Distributed Constraint Optimization Problems.**
   Moumita Choudhury, **Amit Sarker**, Md. Mosaddek Khan, and William Yeoh.
   arXiv:2010.10192 (under review), 2021.

Thesis

1. **Applying Local Search Algorithms for solving Functional Distributed Constraint Optimization problems (F-DCOPs) in Multi-Agent Systems.**
   Amit Sarker, Abdullahil Baki Arif, and Md. Mosaddek Khan.
   Undergraduate Thesis, Computer Science and Engineering, University of Dhaka, 2019.

Professional Experience

TigerIT Bangladesh Limited *Apr. 2020 - Jul. 2021*

- *Software Quality Assurance (SQA) Engineer*
  - Identified the system requirements, studied the cutting-edge technologies and developed ideas.
  - Analyzed methodologies for implementing contact tracing module for reducing the spread of COVID-19.
  - Created and executed well-structured test plans, implemented automation scripts.

Honors and Awards

- **Conference Scholarship (AAMAS 2021, AAMAS 2020)**
- **1st Runner-Up in Code Samurai 2019** *Nov. 2019*
  - An inter-university hackathon organized by Bangladesh-Japan venture company BJIT and department of CSE, University of Dhaka.
  - The objective of the hackathon was to find efficient transportation routes in Dhaka city by considering several constraints including transportation method, traffic situation, time, distance, etc.
- **Recipient of Secondary School Certificate (SSC) Board Scholarship** *Jan. 2012*
  - Placed 32nd in Bangladesh, awarded by the Ministry of Education, Intermediate and Secondary Education Boards Bangladesh.

Activities & Services

Shabab-Murshid Development Foundation (SMDF) *Feb. 2016 - Jan. 2020*
Volunteer Teacher & Coach

- Took mathematics classes of underprivileged high school children.
- Motivated and prepared them to participate in National Mathematical Olympiad, Bangladesh.

Organizer *Jan. 2017 - Feb. 2020*

- Organized Freshers' Week, Treasure Hunt competition for the freshman year students of CSE, DU.
- Organized annual picnics, study tours with CS department students. Organized an international tour (India) during my senior year.

Academic Projects

My Food Diary: A Food Habit Tracking App 🏆**Best Project Award** *Feb. 2018 - Apr. 2018*

- An android app implemented in Java for keeping track of daily food, water consumption, and track weight.
- Genetic algorithm based automated food suggestions and goal oriented motivation.

Track Me: Personal Vehicle Tracking 🏆**Best Project Award** *Jul. 2017 - Oct. 2017*

- An android app implemented in Java for tracking personal vehicles on road by using Google Maps API.
- Clustering-based approach to detect anomaly in driving pattern and notify the car owner.

GRE_WebAPP: Preparation for GRE Exam *Jul. 2018 - Oct. 2018*

- Flash-card based web application for the students to take preparation for the GRE.
- The backend is developed using Python (Flask), and MongoDB.

CSEDU Book Club: Book Sharing and Review *Feb. 2019 - May. 2019*

- A website (See project) and an android app (See project) for book sharing and reviews for the reading club of department of CSE, University of Dhaka.

Stick Hero: A Game for Windows OS *Jun. 2016 - Aug. 2016*

- Windows version of the stick hero game. Implemented by using C++ and Simple and Fast Multimedia Library (SFML).

Technical Skills

Languages	Python, Java, C, C++, LaTeX	**Libraries**	PyTorch, Pandas, NumPy, Matplotlib
Databases	MySQL, Oracle, MongoDB, Firebase	**Web**	Flask, HTML, CSS, JS