# Tasfia Mashiat

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INFORMATION

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EDUCATION

**George Mason University**

Ph.D. Candidate
Computer Science Department
Starting Semester: Fall 2019
Expected Graduation: Fall 2024
Advisor: Sanmay Das

**Khulna University of Engineering & Technology**

B.Sc. in Computer Science & Engineering
Passing month: February 2018

RESEARCH
INTERESTS

Machine Learning, Algorithmic Fairness, Computational Social Science

RESEARCH
EXPERIENCE

**Graduate Research Assistant, George Mason University**
Department of Computer Science
Summer 2021 - Present
Focus: Characterizing Fairness in Societal Resource Allocation

**Applied Scientist Intern, Amazon ML Solutions Lab**, Washington DC, USA.
May 2023 - August 2023
Focus: Creating a benchmark dataset for evaluating unfairness in code generation by Large Language Models.

**Applied Scientist Intern, Amazon ML Solutions Lab**, Washington DC, USA.
May 2022 - August 2022
Focus: Mitigating gender bias in open-ended Natural Language Generation via conditional pre-training of Large Language Models.

**Engineering Intern, Ubitrix Inc.**, Dhaka, Bangladesh.
Focus: Developing an android application "Pain Tool" to monitor pain-level experienced by immobile cancer patients.
June 2016 - July 2016

TEACHING
EXPERIENCE

**Graduate Teaching Assistant, George Mason University**
Department of Computer Science

**Courses:**
SWE 437: Software Testing and Maintenance - Spring 2021
SWE 637: Software Testing - Fall 2021
CS 310: Data Structures - Fall 2019, Spring 2020

**Lecturer, Eastern University**, Dhaka, Bangladesh.
Department of Computer Science & Engineering
May 2018-May 2019

**Courses:**
Introduction to Programming, Software Engineering, Data Structure, Introduction to Algorithms

PUBLICATIONS

- **Tasfia Mashiat**, Alex DiChristofano, Patrick J. Fowler, Sanmay Das, *Beyond Eviction Prediction: Leveraging Local Spatiotemporal Public Records to Inform Action*. ACM Conference on Fairness, Accountability, and Transparency (FAccT '24), Rio de Janeiro, Brazil.

- Md Naimul Hoque, **Tasfia Mashiat**, Bhavya Ghai, Cecilia Shelton, Fanny Chevalier, Kari Kraus, Niklas Elmqvist. The HaLLMark Effect: Supporting Provenance and Transparent Use of Large Language Models in Writing with Interactive Visualization. Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), 2024

- **Tasfia Mashiat**, Xavier Gitiaux, Huzefa Rangwala, Sanmay Das, *Counterfactually Fair Dynamic Assignment: A Case Study on Policing*. Proceedings of the International Conference on Autonomous Agents and Multiagent Systems (AAMAS '23), London, UK.

- **Tasfia Mashiat**, *Characterizing Fairness in Societal Resource Allocation*. Proceedings of the International Conference on Autonomous Agents and Multiagent Systems (AAMAS '23), Doctoral Consortium, London, UK.

- **Tasfia Mashiat**, Xavier Gitiaux, Huzefa Rangwala, Patrick Fowler, Sanmay Das, *Trade-offs between Group Fairness Metrics in Societal Resource Allocation*. ACM Conference on Fairness, Accountability, and Transparency (FAccT '22), Seoul Republic of Korea.

- **Tasfia Mashiat**, Xavier Gitiaux, Huzefa Rangwala, Sanmay Das, *Fairness-Aware Resource Assignment: A Case Study on Policing*, The 15th Workshop for Women in Machine Learning (WiML), Neural Information Processing Systems (NeurIPS 2020).

- Nur Imtizul Haque, Kazi Md. Rokibul Alam, **Tasfia Mashiat**, Yasuhiko Morimoto, *A Technique to Enrich the Secrecy Level of High Capacity Data Hiding Steganography Technique in JPEG Compressed Image*, International Conference on Networking, Systems and Security (NSysS 2018), Dhaka, Bangladesh.

PROJECTS

- **Modeling and Characterizing Fairness in Eviction Filings:** This project examines a novel eviction dataset to analyze unfairness in eviction filings for different demographic groups and configures models to design outreach policies to assist under-represented populations facing eviction.
- **Equitable Resource Allocation in the Context of Homelessness:** We are designing a statistically efficient approach to ensure equitable allocation of homelessness services within different subgroups based on protected attributes such as age, gender, race, etc.
- **Fair Assignment of Policing Resources:** We proposed a causality-based approach for the allocation of limited policing resources within neighborhoods while ensuring the allocation is fair. We conducted experiments on both synthetic and real-world data. We showed that following our approach both over-policing and under-policing can be reduced in areas with a significant difference in population demographic.
- **A Deep Neural Network Approach for Retrofitting Word Embeddings:** In this project, we proposed a deep learning model that can identify morphologically related word embeddings for languages with a high morpheme-per-word ratio in a sparse word vector domain.
- **Examining The 4G/5G LTE Cellular Network Infrastructure (Advisor: Prof. Duminda Wijesekera):** The goal of this project was to set up 4G LTE and 5G cellular network testbeds to examine the data communication between User equipments and Base stations with the core network. This project was conducted as a part of CS701: Research Experience in CS.

- **Examining the Patterns of Taxi-rides in NYC:** The main goal of this project was to understand the demand pattern of taxi service in NYC through exploratory data analysis and machine intelligence. This project was conducted as a part of CS700: Research in CS.

ACHIEVEMENTS

- Outstanding Graduate Teaching Assistant, Department of Computer Science, George Mason University (2021).
- Recipient of the Computer Science Department's Ph.D. Research Initiation Awards, George Mason University (2020).
- Champion, Women Innovation Camp-2016, Arranged by A2I, ICT Division, Prime Minister's Office, Bangladesh (2016).
- Dean's Award for Excellence in Academic Results in session 2015-2016.
- Certification from Leveraging Information & Communication Technology (LICT) project of Bangladesh Computer Council, under Ministry of Posts, Telecommunications and Information Technology Bangladesh Government based on Training in Advanced JAVA.

ACTIVITIES AND SERVICES

- Program Committee: AIES 2024.
- Reviewer: ACM FAccT, AIES, JAIR (2022-2024).
- Student volunteer: ACM FAccT 2024, AAMAS 2023.
- Workflow Chair: AIES 2023.
- Local Chair: EAAMO 2022.
- Session Chair: ACM FAccT 2022
- Doctoral Consortium: AAMAS 2023, EAAMO 2022.
- Participated in DIMACS Workshop on Algorithm and Mechanism Design for Achieving the UN Sustainable Development Goals, May 2023.
- Volunteered for National High School Programming Contest Khulna Division (2016).
- Participated in National Girls Programming Contest (2015).
- Member of Special Group of Interest in Programming Contest of Khulna University of Engineering & Technology (KUET).
- Mentored Idea Contests arranged by Khulna University of Engineering & Technology (KUET).