

ADIBA MAHBUB PROMA

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Research Interest

Human-Computer Interaction, Machine Learning, Large Language Models, Computational Social Science, Network Analysis, Social Networks, Social Interactions, Climate Change, Policy Issues, AI for Social Good

Education

University of Rochester <i>Doctor of Philosophy in Computer Science (Human-Computer Interaction, Advisor: Dr.Ehsan Hoque)</i>	Jan 2023-Dec 2025 Rochester, NY, USA
University of Rochester <i>Master of Science in Computer Science</i>	Feb 2021-Dec 2022 Rochester, NY, USA
BRAC University <i>Bachelor of Science in Computer Science and Engineering, Highest Distinction Award (GPA: 3.97)</i>	Jan 2016-Dec 2019 Dhaka, Bangladesh

Experience

Graduate Research Assistant, University of Rochester <i>Rochester Human-Computer Interaction Lab (ROCHCI Lab)</i>	2021-Present Rochester, NY
Instructional Lecturer, Computer Science Department, BRAC University <i>BRAC University is a private university in Bangladesh</i>	Jan 2020 - Dec 2020 Dhaka, Bangladesh
Research Assistant, CMED Health(Breast Cancer Research Division) <i>Startup focused on developing digital health technology for Bangladesh</i>	2018-2021 Dhaka, Bangladesh
Data Intern, Tech for Development Unit, BRAC SDP, BRAC Bangladesh <i>BRAC SDP is an initiative by BRAC NGO to boost informal sector job placements</i>	Feb 2020-Jul 2020 Dhaka, Bangladesh

Awards and Recognition

- Selected for **Summer Institute in Computational Social Science-Rochester (SICSS-Rochester)**, 2024
- Selected for **Computing Research Association-Widening Participation (CRA-WP) Grad Cohort**, and awarded \$1100 as travel grant, 2023
- Selected for **CRA-WP Grad Cohort**, and awarded \$1500 as travel grant, 2022
- **Recipient of Research Grant of BDT 1,000,000 (10000 USD)** from ICT Ministry of Bangladesh, 2018
- **Vice Chancellor's list** for 8/12 semesters, (awarded to students with GPA over 3.9), BRAC University
- **Dean's list** for 2/12 semesters, (awarded to students with GPA between 3.70-3.9), BRAC University
- **Country highest in Mathematics in International Advanced Levels (IAL)**, 2014
- **World highest in Mathematics-B in International General Certificate of Secondary Education (IGCSE)**, 2013

Invited Articles

- **A. Proma, R. Wachter, E. Hoque. [The Untapped Potential of Computing and Cognition in Tackling Climate Change](#)**, NAE Perspectives, 2023

Peer-Reviewed Publications

- **A. Proma, Understanding the Rigidity of Beliefs in Temporal Social Networks**, 11th Int'l Conference on Affective Computing and Intelligent Interaction Workshops and Demos(ACIIW), 2023 [[Publication](#)]
- **M. S. Islam, A. Proma, C. Wohn, K. Berger, S. Uong, V. Kumar, K. S. Korfmacher, E. Hoque, SEER: Sustainable E-commerce with Environmental-impact Rating**, Cleaner Environmental Systems, 2023 [[Publication](#)]
- **A. Proma, M. S. Islam, S. Ciko, R. A. Baten, E. Hoque, NADBenchmarks – a compilation of Benchmark Datasets for Machine Learning Tasks related to Natural Disasters**. The Role of AI in Responding to Climate Change, AAAI Fall Symposium Series, 2022 [[Publication](#)]
- **M. S. Islam, A. Proma, Y. Zhou, S. N. Akter, C. Wohn, E. Hoque, KnowUREnvironment: An Automated Knowledge Graph for Climate Change and Environmental Issues**, The Role of AI in Responding to Climate Change, AAAI Fall Symposium Series, 2022 [[Publication](#)]

Papers Under Review/Work in Progress

- **A. Proma**, R. A. Baten, N. Pate, S. Chen, A. Zadeh, S. Kelty, J. Druckman, G. Ghoshal, E. Hoque, **Exploring the Role of Randomization on Belief Rigidity in Online Social Networks**, under preparation, 2024
- N.Pate, **A. Proma**, S. Chen, R. A. Baten, S. Kelty, A.Zadeh, G. Ghoshal, and E.Hoque, **Impact of Educational Attainment on Belief Rigidity and Social Network Construction**, under review at 12th Int'l Conference on Affective Computing and Intelligent Interaction (ACII), 2024
- S. Kelty, R. A. Baten, **A. M. Proma**, E. Hoque, J. Bollen, and G. Ghoshal, **Don't Follow the Leader: Independent Thinkers Create Scientific Innovation**, arXiv., 2023 [[Preprint](#)]

Research Experience

Using Large Language Models (LLMs) to tackle misinformation

- Designing an LLM pipeline for convincing people out of misinformed beliefs using established trust on news sources

Understanding Belief Rigidity in Temporal Social Networks [[Publication](#)]

- Designed and developed a social media-like platform to conduct case-control studies on how social interaction influences individual belief
- Our results show that increasing randomization in recommendation algorithms can reduce tendency to only stick to like-minded individuals by 22%, emphasizing the importance of optimizing for diversity in social media algorithms

Natural Disaster Dataset Curation Platform for Machine Learning Tasks [[Publication](#)] [[Website](#)]

- Conducted literature review to identify gaps in benchmark datasets for natural disasters, classifying over 30 datasets based on ML task type, domain and dataset type
- Led end-to-end development of dataset curation platform for natural disaster datasets, utilizing low-fidelity prototyping (Figma), and need-finding for a user-centric design

Redesigning Interface to Facilitate Eco-friendly Consumption in Online Platforms [[Publication](#)]

- Conducted a case-control study with 98 participants to explore how interface cues can promote eco-friendly products
- Our system boosted eco-friendly consumption, and scored high (79.18/100) on the System Usability Scale (SUS)
- Our estimates suggest that our custom-built platform can reduce 2.88M tonnes of carbon emission every year in the US

Automated knowledge graph for climate change [[Publication](#)]

- Contributed to building a knowledge graph for climate change and environmental issues, extracting information from scientific literature
- The knowledge graph finds 411,860 facts in the form - subject, object, predicate, where each fact is backed up with scientific evidence

Selected Projects

Questionnaire-based Risk Assessment and Early detection of Breast Cancer in Low-Income Countries

- Developed a questionnaire-based breast cancer risk assessment and early detection algorithm, achieving government grant of BDT 10,000,000 (10000 USD) from Bangladesh ICT Ministry
- Conducted feasibility analysis to develop web-platform functionalities for breast cancer awareness website, focusing on accessibility for individuals with low literacy levels [[Website](#)]

Press Coverage

- The CS department highlights my work on the role of technology for climate change [[Read](#)]
- Our efforts in undergrad mentoring gets recognized by University of Rochester's News Center [[Read](#)]
- Our development of breast cancer screening model gets featured in national Bangladeshi newspapers [[New Age](#)], [[Dhaka Tribune](#)]

Technical Skills

- **Programming Languages:** Python, R, Java, ReactJS, Javascript, HTML, CSS
- **Frameworks:** LangChain, TensorFlow, Keras, PyTorch, OpenCV, SenticNet
- **Software:** Tableau, Empirica, MongoDB, Figma, Canva, Meteor Galaxy

Teaching Experience

Teaching Assistant, University of Rochester

Sep 2021-Dec 2022

- **Courses conducted:** Human Computer Interaction (CSC-212/412), Technology and Climate Change(CSC 460), Undergraduate Problem Seminar (CSC200H), Database Systems (CSC261)

Instructional Lecturer, BRAC University

Jan 2020-Dec 2020

- **Courses conducted:** Introduction to computing(CSE101), Data Structures(CSE220), Algorithms(CSE221), Microprocessors(CSE341), Compilers(CSE420)

Student Tutor, BRAC University

May 2018-Aug 2019

- **Courses conducted:** Programming Language I (CSE161- Basic Programming in Java), Data Structures (CSE220), Digital Logic Design (CSE260)

Professional Services

- **Committee Member**, Ph.D. Admissions Committee, Department of Computer Science, University of Rochester, 2022
- **Reviewer**, 11th Int'l Conference on Affective Computing and Intelligent Interaction Workshops and Demos(ACIIW 2023), 11th Int'l Conference on Affective Computing and Intelligent Interaction (ACII 2023)

Mentorship

Graduate Research Mentees

(Published a paper together/writing a paper together is marked with *)

- **Neeley Pate***, PhD student in Computer Science, University of Rochester
- **Anik De**, MS student in Data Science, University of Rochester
- **Danni Shi**, MS student in Computer Science, University of Rochester (*currently an Application System Engineer at Samsung Austin Semiconductor*)

Undergraduate Research Mentees

(Published a paper together/writing a paper together is marked with *)

- **Sifeng (Chris) Chen***, Computer Science, University of Rochester
- **Jiamu Tang**, Data Science and Philosophy, University of Rochester
- **Juan Lucena**, Computer Science, University of Rochester
- **Nour Assili**, Data Science, University of Rochester
- **Seif Mohammed**, Computer Science, University of Rochester
- **Stela Ciko***, Computer Science and Business, University of Rochester
- **Yilin Zhou***, Data Science, University of Rochester
- **Roka Hosono**, Computer Science, University of Rochester (*currently MS student in Northeastern University*)
- **Varun Kumar***, Computer Science and Finance, University of Rochester
- **Yufei Li**, Computer Science, University of Rochester

Additional Activities

Testing Assistant, Office of Disability Resources, University of Rochester

Sept 2022 - Present

- Collaborated with administrative staff to ensure students' accessibility needs are met during testing
- Proctored tests for students with accessibility needs

Feature Writer, The Daily Star

Jan 2016-Apr 2020

The Daily Star is one of the leading English newspapers of Bangladesh

- Researched local and international trends; and collaborated with writers for the weekly sections Lifestyle and Next Step
- Wrote over 100 [articles](#) related to social issues, career development, and musings for print and online platform

Editorial Board Member and Feature Editor, BracuExpress

June 2017-August 2018

BracuExpress is BRAC University's student-run campus newspaper

Dhaka, Bangladesh

- Was part of a 5 people board member to make all administrative decisions related to the campus newspaper
- The role included meeting faculty members to make long-term goals, deciding on content, assigning and training writers, and editing their work

Author, The Mason Jar

- Published two short stories as part of a fiction book published by Worthy Publications