Samia Islam

Email : islamsa3@msu.edu
Website: https://samiashashmi.github.io/
Google Scholar: Samia Islam
Github: SamiaShashmi
Linkedin: samia-islam-37

Field of Interest

Dynamical Systems, Non-Linear Dynamics, Single-Cell Genomics, Deep Learning

Academic Credentials

- **Doctor of Philosophy in Computer Science and Engineering** GPA: 3.90/4.00
  Michigan State University *Fall 2023-Present*
  Advisor: Dr. Sudin Bhattacharya, Associate Professor,
  Departments of Biomedical Engineering and Pharmacology & Toxicology
  Co-advisor: Dr. Zijun Cui, Assistant Professor, Department of Computer Science and Engineering

- **Bachelor of Science in Computer Science and Engineering** CGPA: 3.96/4.00 (4th in class of 110)
  Islamic University of Technology, Gazipur, Bangladesh *January 2019 - May 2023*
  Advisor: Dr. Hasanul Kabir, Professor, Department of CSE
  Co-advisor: Md Bakhtiar Hasan, Assistant Professor, Department of CSE

Research

- **Modeling Single-Cell Dynamics from Single-Cell RNA Sequencing Data** *Fall 2025 - Present*
  PhD Research
  - Developing a framework to extract latent dynamics and infer gene–gene interactions directly from high-dimensional expression data

- **Inferring Gene Regulatory Networks from Single Cell RNA Sequencing Data** *January 2026 - Present*
  Collaborative Project
  - Developing a more accurate gene regulatory network inference tool with deep learning

- **Predicting Cellular Reprogramming Trajectories with Deep Generative Models** *Fall 2024 - Summer 2025*
  PhD Research
  - A case study on Epithelial to Mesenchymal Transition to reprogram the trajectory

- **Enhancing Workplace Accessibility with Computer Vision** *Fall 2023 - Summer 2024*
  PhD Research
  - Proposed a deep learning approach for the application of assistive sewing technology

- **Multiple Object Tracking with Transformer based Architecture** *November 2021 - May 2023*
  Undergraduate Thesis
  - Proposed a noble approach to track multiple objects in video with lower inference time with multi-scale attention

Publications [*Selected*]

- **Dynamical systems theory as an organizing principle for single-cell biology**
  Samia Islam, Sudin Bhattacharya
  npj Systems Biology and Applications, 2025
- **Wrinkle Detection and Cloth Flattening through Deep Learning and Image Analysis as Assistive Technologies for Sewing**
  Samia Islam, Charles Owen, Ranjan Mukherjee, Ira Woodring
  The PErvasive Technologies Related to Assistive Environments (PETRA) 2024
- **Multiple Object Tracking in Recent Times: A Literature Review**
  Mk Bashar*, Samia Islam*, Kashifa Kawaakib Hussain, Md. Bakhtiar Hasan, A.B.M. Ashikur Rahman, Md. Hasanul Kabir
  arXiv preprint arXiv:2209.04796

Work Experience

- **Graduate Research Assistant** *Summer 2025-Present*
  Department of Computer Science and Engineering at Michigan State University
  - Working on Dynamical Systems in Single-Cell Genomics

- **Graduate Teaching Assistant** *Fall 2024-Spring 2025*
  Department of Computer Science and Engineering at Michigan State University
  - Course: CSE 231 (Introduction to Programming I)
  - Conducting labs, help rooms, creating projects, creating and administrating exam questions

- **Graduate Research Assistant** *Spring 2024-Summer 2024*
  Department of Computer Science and Engineering at Michigan State University
  - Developed a system integrated with a robot that can flatten a wrinkled cloth while sewing

- **Graduate Teaching Assistant** *Fall 2023*
  Department of Computer Science and Engineering at Michigan State University
  - Course: CSE 260 (Discrete Structures in Computer Science)
  - Conducted student monitoring, office hours, and grading

Skills Summary

- **Languages**: Python, C, C++, SQL, Java, JavaScript, Dart
- **Tools**: Visual Studio Code, PyCharm, Google Colaboratory, Android Studio, Blender, GitHub, LaTeX
- **Libraries**: Scanpy, PyTorch, Tensorflow, OpenCV, NumPy, Scikit-learn
- **Framework**: React, Express, PostgreSQL, Flutter