Rabeya Hossain

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Education

University of Utah — Salt Lake City, UT
Ph.D. in Computer Science — *Aug. 2025 – Present*

Advisor: El Kindi Rezig

Bangladesh University of Engineering and Technology (BUET) — Dhaka, Bangladesh
B.Sc. in Computer Science and Engineering — *Apr. 2019 – Jun. 2024*

Research Interests

My research focuses on developing data preparation methods for machine learning, with an emphasis on preprocessing optimization and data quality. My recent work explores efficient parameter search for data preprocessing pipelines. I also built LabelScope, that identifies potential label inconsistencies in scientific datasets through context-aware analysis. My interest includes:
• Data Preparation • Data Quality • Data Management for Machine Learning • AI for Data Management

Publications

Publications since starting Ph.D. (2025–Present, ∼1.2 years)

- **(VLDB'26 Demo) Rabeya Hossain**, Brian Mason, Ryan Loomis, Jeff M. Phillips, and El Kindi Rezig. **"LabelScope: Context-Aware Discovery of Label Outliers in Radio Astronomy Signals."** *Proceedings of the VLDB Endowment (PVLDB)*, 19(12):4686–4689, 2026. [Paper Link]
- **(In Revision Round, VLDB'27) Rabeya Hossain** and El Kindi Rezig. **"PrepTune: Data-Aware Parameter Search for Black-Box Data Preprocessing Pipeline Operators."**

Research Experience

University of Utah — Salt Lake City, UT
Graduate Research Assistant — *Aug. 2025 – Present*

- Develop context-aware methods for identifying potential label inconsistencies in scientific datasets, with applications to radio astronomy data from the National Radio Astronomy Observatory (NRAO).
- Develop data-aware methods for efficiently searching parameter configurations of black-box data preprocessing operators while reducing expensive downstream model retraining.
- Contribute to the CosmicAI research initiative on scientific data quality, supported by the National Science Foundation (NSF) and the Simons Foundation, in collaboration with the National Radio Astronomy Observatory (NRAO).

Work Experience

United International University — Dhaka, Bangladesh
Lecturer, Department of Computer Science and Engineering — *Jul. 2024 – Jul. 2025*

- Taught undergraduate courses including Data Structures and Algorithms, Computer Architecture, and Software Engineering.

Technical Skills

Languages: Python, C, C++, Java, SQL, Bash
Systems & Tools: Linux, Git, SLURM, HPC
Development: React, Node.js, JavaFX, OpenGL

Honors & Awards

- **5th Place**, International Collegiate Programming Contest(ICPC) Asia Dhaka Regional, 2023.
- Participated in International Collegiate Programming Contest(ICPC) Asia West Continent Final, 2023.

- **Champion**, Bangladesh National Girls' Programming Contest, (2022, 2023).
- **7th Place**, Shahjalal University of Science and Technology(SUST) Inter-University Programming Contest, 2022.
- **8th Place**, Bangladesh University of Engineering and Technology Inter-University Programming Contest, 2022.
- Ranked among the **top 150** in Google Code Jam to I/O for Women, 2022; stipend recipient.
- Dean's List Scholarship, Bangladesh University of Engineering and Technology.

Additional Experience

- Problem setter for multiple university-level competetive programming contests.
- Member of the organizing team for the BUET Inter-University Programming Contest.