Jaiaid Mobin

Graduate Research Assistant

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https://scholar.google.com/citations?user=ifmzYdsAAAAJ

Research Interest

ML in HPC, Data Management in Cluster, GPU Computing

Education

Rochester Institute of Technology — *Rochester, NY, USA*

Ph.D. in Computer Science — *August, 2022 - Present*

- **Research Topic** — *Data Management for DDL, GPU Computing, Workload Distribution in ML Surrogate System*

Bangladesh University of Engineering and Technology — *Dhaka, Bangladesh*

M.Sc. in Computer Science — *August, 2022*

- **Thesis Title** — *Transit Network Design For Evacuation Modeling Using Heuristic and Multi-Objective Optimization Based Approaches*

Bangladesh University of Engineering and Technology — *Dhaka, Bangladesh*

B.Sc. in Computer Science — *September, 2017*

Selected Publications (First Author/Collaborations)

1. Li, Yuze, Shunyu Yao, **Jaiaid Mobin**, Tianyu Zhan, M. Mustafa Rafique, Dimitrios Nikolopoulos, Kirshanthan Sundararajah, and Ali R. Butt. "Memory Tiering in Python Virtual Machine." (2025).
2. Li, Yuze, Shunyu Yao, **Jaiaid Mobin**, M. Mustafa Rafique, Dimitrios Nikolopoulos, Kirshanthan Sundararajah, Huaicheng Li, and Ali R. Butt. "Towards Efficient Python Interpreter for Tiered Memory Systems." In Poster and Work-in-Progress in Proceedings of the 21st USENIX Conference on File and Storage Technologies (FAST). USENIX, 2024
3. **Mobin, Jaiaid**, Avinash Maurya, and M. Mustafa Rafique. "COLTI: Towards Concurrent and Co-located DNN Training and Inference." In Proceedings of the 32nd International Symposium on High-Performance Parallel and Distributed Computing, pp. 309-310. 2023.
4. Maurya, Avinash, **Jaiaid Mobin**, and M. Mustafa Rafique. "Towards Data Gravity and Compliance Aware Distributed Deep Learning on Hybrid Clouds." In 2022 IEEE 29th International Conference on High Performance Computing, Data and Analytics Workshop (HiPCW), pp. 53-58. IEEE, 2022.
5. Maurya, Avinash, **Jaiaid Mobin**, and M. Mustafa Rafique. "Towards data gravity and compliance aware distributed deep learning on hybrid clouds." In 2022 IEEE 29th International Conference on High Performance Computing, Data and Analytics Workshop (HiPCW), pp. 53-58. IEEE, 2022.

Ongoing Research Works

1. **Minimizing Slowdown for Sequential Offloading in Neural Network Inference**: In this project, we investigate minimizing slowdown for neural network execution in a sequentially offloaded manner while also achieving significant memory savings.
2. **Performance Model Based Work Distribution to ML Surrogate in Ptychographic Restoration**: Here we are investigating idea of shared context to improve throughput in continual learning scenarios.
3. **Access Distributed and Deduplicated In-Memory Cache Locally for Distributed Deep Learning Workloads:** In this project, we are investigating an idea to reuse same sized caches across all participating trainers in distributed deep learning

Professional Experience

Rochester Institute of Technology — *Rochester, NY, USA*

Graduate Research Assistant — *January 2024 - Current*

- Investigate Research Problem
- Study and review research paper

Rochester Institute of Technology — *Rochester, NY, USA*

Graduate Teaching Assistant — *August 2023 - December 2023*

- Solving students' queries about homework during office hours or in Discord

Rochester Institute of Technology — *Rochester, NY, USA*

Graduate Research Assistant — *August 2022 - May 2023*

- Investigate Research Problem
- Study and review research paper

BJIT Ltd - Offshore Software Development Company — *Baridhara, Dhaka*

Software Engineer — *July 2018 - April 2022*

- Provide initial system design based on client requirement as a representative of small team
- Reviewed client expectations and project parameters and suggested software packages that met requirements.

Skill Set

Programming Languages: C++, Python3, C, Bash, x86 Assembly; **GPU Runtime:** CUDA; **ML, CV SDK/Framework:** OpenCV, Scikit-learn, Keras, PyTorch, Hugging Face; **Build system**: Make, CMake, Bazel; **Environment Deployment Tool:** Virtualenv, VirtualBox, Docker; **DBMS:** MySQL, SQLite, PostgreSQL; **H/W Development Platform:** Arduino, Raspberry PI

Achievements and Activities

ALCF Intro to AI-Driven Science on Supercomputers Digital Badge *December, 2024*

- Workshop on AI in ALCF

Review Work *October, 2023 - Present*

- Conference paper review, CCGRID'24
- Artifact review, ICPE'24, EuroSys'25, EuroSys'26

ACM HPDC'23 Best Poster Award *June, 2023*

- `https://twitter.com/ACM_HPDC/status/1671990446174642177/photo/1`

Part of BrickHack 9 Best Health Hack Winner Team *February, 2023*

- RIT's premiere collegiate hackathon

ITEE Certification *March, 2018*

- ITEE Level 2, FE Exam
- Organized by IPA, Japan