

# Md Ashfaqur Rahaman

## Research Interests

Kernel bypass, disaggregated memory, network interconnects, hardware offloading and systems for machine learning

## Publications

### Efficient Remote Memory Ordering for Non-Coherent Interconnects

Wei Siew Liew\*, Md Ashfaqur Rahaman\*, Adarsh Patil, Ryan Stutsman, and Vijay Nagarajan. ASPLOS, 2026. <https://users.cs.utah.edu/~vijay/papers/asplos26.pdf>

\*Equal contribution

### Network-accelerated Active Messages

Md Ashfaqur Rahaman, Alireza Sanaee, Todd Thornley, Sebastiano Miano, Gianni Antichi, Brent E Stephens, and Ryan Stutsman.

arXiv, 2025. <https://arxiv.org/pdf/2509.07431>

### Stop Taking the Scenic Route: the Shortest Distance Between the CPU and the NIC is MMIO

Wei Siew Liew, Md Ashfaqur Rahaman, James McMahon, Ryan Stutsman, and Vijay Nagarajan. HotOS, 2025. <https://dl.acm.org/doi/pdf/10.1145/3713082.3730389>

## Experience

### Research

2021-Present **Graduate Research Assistant**, *Utah Scalable Computer Systems Lab*, University of Utah, Utah

- Exploring new Host-NIC interface designs and building systems to enable high-bandwidth and low-latency data movement in modern data center networks.
- A new efficient, secure, and scalable framework for remote memory access and function offloading exploiting the programmability and offloading capability of smartNICs.
- SmartNIC offloaded distributed key-value stores.

**Skills:** eBPF, RDMA, DPDK, SmartNICs, PCIe

Summer 2024 **Research Intern**, *Hewlett Packard Labs*, Milpitas, California

Optimizing the communication infrastructure to support low-latency high-throughput LLM inference

**Skills:** CUDA, PyTorch, NVLink

2019-2021 **Research Assistant**, *Prof. Baris Kasikci's Lab*, University of Michigan, Ann Arbor

*Mentor: Tanvir Ahmed Khan*

Load-time code layout optimization of large application binaries in warehouse scale computers

**Skills:** LLVM, x86 Assembly, Linux

2018-2019 **Research Assistant**, *Climate Modeling and Simulation Lab*, IWFM, BUET

*Advisor: A.K.M. Saiful Islam*

I worked as a system developer in real-time Flash Flood Early Warning System (FFEWS) project

### Professional

2018-2019 **Software Engineer**, *NextGen DigiTech*, Dhaka

I worked on NextGen Tower, a desktop application for designing wind turbines. I contributed in the core software architecture and developed the GUI.

2017-2018 **Firmware Engineer**, *2RA Technology Limited*, Dhaka

I worked on various embedded systems projects based on Raspberry Pi and AVR Microcontrollers.

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## Education

Aug. 2021-Present **Ph.D. in Computer Science**, *University of Utah*, Salt Lake City, Utah, USA

*Advisor: Ryan Stutsman*

2012-2019 **B.Sc. in Naval Architecture and Marine Engineering**, *Bangladesh University of Engineering and Technology (BUET)*, Dhaka, Bangladesh

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## Selected Courses

Fall 2024 Advanced Compilers, University of Utah

Spring 2024 Advanced Computer Architecture, University of Utah

Fall 2023 Advanced Networking, University of Utah

Spring 2022 Software Security, University of Utah

Fall 2021 Advanced Operating Systems, University Of Utah

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## Teaching Assistantship

Fall 2022 Distributed Systems, University Of Utah

Spring 2022 Operating Systems, University Of Utah

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## Services

2022 Artifact Evaluation Committee Member, OSDI'22

2021 Artifact Evaluation Committee Member, SOSP'21

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## Skills

Languages C, C++, Rust, Python, CUDA, Go, Assembly(ARM, X86)

Tools RDMA, CXL, DPDK, eBPF, NVIDIA DOCA, PyTorch

Platforms NVIDIA BlueField, AVR Microcontrollers, Raspberry Pi, Arduino

Text Editing Vim, L<sup>A</sup>T<sub>E</sub>X