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Md Ashfaqur Rahaman

Research Interests

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

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

Publications

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

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

Teaching Assistantship

Fall 2022 Distributed Systems, University Of Utah
Spring 2022 Operating Systems, University Of Utah

Services

2022 Artifact Evaluation Committee Member, OSDI'22
2021 Artifact Evaluation Committee Member, SOSP'21

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, LaTeX