

Faculty Name:

Tanvir Ahmed Khan

Faculty Email:

tk3070@columbia.edu

Lab:

ICE Lab

Project Title:

A Data Center Simulator Enabling Large Design Space Exploration of Distributed Accelerators

Description:

The end-to-end performance acceleration of data center applications requires a large number of distributed accelerators as these applications exhibit wide diversity and operational complexity. Unfortunately, today's systems community lacks the infrastructure needed to explore the large design space of distributed accelerators. To close this gap, in this project, we aim to build an accelerator-centric data center simulator. Our simulator will take dependency graphs of distributed applications and high-level descriptions of accelerator algorithms as inputs and investigate the design trade-offs of distributed accelerators. We will validate the effectiveness of our simulator with a key case study of where to place any given accelerator for data center applications, on a die, on a chiplet, on a CXL-attached device, or on a network interface card. We will release our research artifacts with flexible open-source licenses to better facilitate academic and industry research on accelerators for data center applications.

Location of Research:

Hybrid (both Remote and On Site)

of hrs/week:

20

Department/Program:

Electrical Engineering

Eligibility:

BS, Second Year, BS, Third Year, BS, Fourth Year, MS

To apply, please contact:

Tanvir Ahmed Khan (tk3070@columbia.edu)