Juechu Dong

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EDUCATION

University of Michigan – Ann Arbor **Sept. 2022 - (exp.) Apr. 2027**

Doctoral program in Computer Science and Engineering

Topics: Computer Architecture, Computer Systems and Confidential Computing

Advisor: Prof. Satish Narayanasamy

University of Michigan-Shanghai Jiao Tong University Joint Institute **Aug. 2022**

Electrical and Computer Engineering, Bachelor of Science

University of Michigan – Ann Arbor **Apr. 2022**

Computer Engineering, Bachelor of Science in Engineering, Summa Cum Lauda

Dean's List, James B. Angell Scholar, University Honors

RESEARCH PROJECTS

VNServer: Scaling Memory Freshness Protection to the Whole System Memory via CXL **on-going**

Juechu Dong, Jonah Rosenblum, Satish Narayanasamy

Develop a platform-level memory protection solution to provide low overhead memory freshness for the whole system memory, including CXL memory expanders, by offloading version number tracking to the VNServer, a smart memory CXL addon card. One VNServer card can serve multiple host processors through the CXL network, mitigating the cost of adding a smart memory device.

Accelerating Accurate Long Genome Sequence Alignment on GPU **on-going**

Juechu Dong, Xueshen Liu, Chen Huang, Gina Sitaraman, Harisankar Sadasivan, Satish Narayanasamy

Move the computationally intensive chaining step of minimap2 to GPU to accelerate long sequence alignment for the latest long read sequencing technology. We extract better intra-read parallelism and workload balance on GPU without losing accuracy by eliminating false dependencies between anchors in state-of-art forward chaining algorithm in minimap2-accelerated.

A Federated Genome Association Analysis System Based on Enclave & Intel SGX **under submission**

Jonah Rosenblum, Juechu Dong, Satish Narayanasamy

Build a secure, scalable and low-overhead federated genome association analysis platform based on Trusted Execution Environment (Intel GSX). Our work challenges the idea that federated GWAS analysis takes hours and days, by performing logistic regression on 4 million SNPs within 1 minute without compromising patient privacy.

INTERNSHIP

GPU Deep Learning Architect Intern

NVIDIA **May 2022 - Aug. 2022**

- analyze and debug GPU cluster communication and synchronization.
- analyze and optimize multi-GPU data movement for deep learning workloads using TMA.

TEACHING

Instructional Aid for EECS470 Computer Architecture

University of Michigan **Sept. 2021 - May 2022**

- Hold lab sessions and facilitate project on Out-of-Order processor design using System Verilog

SKILLS

- Computer Architecture, Confidential Computing, Parallel Computing, Microarchitecture, OS, Compiler
- **Proficient in**: C/C++, CUDA, (System)Verilog, python/bash