

JUECHU DONG

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EDUCATION

Univeristy of Michigan - Ann Arbor

(exp.) 2027

Computer Science and Engineering, PhD

Topics: Computer System & Architecture, Trusted Hardware / Confidential Computing

Advisor: Prof. Satish Narayanasamy

GPA: 4.00/4.00

University of Michigan-Shanghai Jiao Tong University Joint Institute

Aug 2022

Computer Engineering, Bachelor of Science

John Wu & Jane Sun Outstanding Scholarship 2018-2022

Outstanding Academic Performance Scholarship 2018-2020

Univeristy of Michigan - Ann Arbor

Apr 2022

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

Selected Coursework: Comp. Architecture A, Compiler A+, Operating System A

GPA: 3.99/4.00

Dean's List 2020-2022

James B. Angell Scholar 2022-2023

University Honors 2020-2022

PUBLICATION

VersionVault: Towards Large Capacity Trusted Memory with HW Protection

ISCA 2024

J. Dong, J. Rosenblum, S. Narayanasamy

under preparation

- Scale trusted memory size from hundreds of MB to tens of TB by expanding the span of trusted from a single trusted processor to an entire platform including intelligent memories.
- Design a new scheme of freshness protection that reduces the space requirement by 50x.
- Reduce deployment cost by spacing sharing one intelligent memory device among multiple CPUs.

mm2-long: Accelerating Accurate Ultra Long Genome Sequence Mapping on AMD GPU

J. Dong, X. Liu, H. Sadasivan, G. Sitaraman, S. Narayanasamy

on-going

- Accelerate computational intensive chaining step in the state-of-art long sequence mapping tool minimap2 using AMD GPU by 5x.
- Optimize towards ultra long reads of 100k+ to accommodate genome sequencing technology trend.
- Develop adaptive GPU scheduling algorithm to balance highly heterogeneous workload.

SECRET-GWAS: A Platform for Online Million-Patient Multi-institutional GWAS based on TEE

Nature Methods

J. Rosenblum, J. Dong, S. Narayanasamy

under submission

- Develop a thousand-core platform on Azure Confidential Computing to conduct multi-institutional GWAS on millions of patients in less than a minute.
- Adapt Spark-based Hail genomic analysis framework to run on TEE under obliviousness requirement.
- Parallelize GWAS computation on 1k cores to achieve near linear speedup.

INDUSTRY EXPERIENCE

NVIDIA

May 2022 - Aug. 2022

GPU Deep Learning Architect Intern

- Model and analyze new memory features on next-gen GPUs such as distributed shared memory, asynchronous transaction barrier, etc.
- Analyze and optimize multi-GPU data movement for deep learning workloads using Tensor Memory Accelerator (TMA).

TEACHING

Intrustional Aide at University of Michigan

2021FA, 2022WN

EECS470 Computer Architecture

- Primary Instructor: Prof. Ron Dreslinski / Prof. Mark Brehob

Graduate Student Instructor

2023FA

EECS471 Applied Parallel Programming with GPUs

- Primary Instructor: Dr. Valeriy Tenishev

SERVICE

Computer Engineering Lab Reading Group

2022 - present

Coordinator

- Organize weekly paper reading presentations and discussions.
- Host talks from visiting researchers and professors.

UM-SJTU Joint Institute Alumni Association

2022 - present

Founder & Vice President

- **Alumni Engagement:** organize alumni and student gatherings.
- **Relationship Building:** involve in expanding SJTU - UM collaborations, connecting to JI sponsors, and building industry relationships.
- **Career Advising:** organize students career development workshops.
- **Welcoming:** host new students orientation events, organize airport pickups, and offer settle down help.

SKILLS

Programming Languages: C/C++, CUDA, HIP, SIMD, (system) verilog, bash, Makefile

Technologies/Frameworks:

GPU Tuning: nsight-compute/nsight-sys, omniperf/omnitrace/rocprof

Formal Verification: Murphi,

SIMD: avx512, avx2 on Xeon Phi

Simulation: SniperSim, DRAMSim, pinplay

Confidential Computing: Open Enclave SDK

Architectures: AMD CDNA2 Instinct GPU, NVIDIA Hopper GPU, Intel Xeon Phi, Out-of-order CPU