

YUQI XUE

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xzman.github.io/yuqixue

RESEARCH INTERESTS

Computer Architecture and Systems. Accelerator Design. Hardware Security.

EDUCATION

University of Illinois at Urbana-Champaign

Aug 2021 – Present

Ph.D. in Electrical and Computer Engineering

Advised by Prof. Jian Huang

University of Illinois at Urbana-Champaign

Aug 2017 – May 2021

Bachelor of Science in Computer Engineering with High Honors

Bachelor of Science in Mathematics with Highest Distinction

PUBLICATION

IceClave: A Trusted Execution Environment for In-Storage Computing. Luyi Kang*, Yuqi Xue*, Weiwei Jia*, Xiaohao Wang, Jongryool Kim, Changhwan Youn, Myeong Joon Kang, Hyung Jin Lim, Bruce Jacob, and Jian Huang. In *Proceedings of the 54th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO'21)*. 2021.

*Co-primary authors.

V10: Hardware-Assisted NPU Multi-tenancy for Improved Resource Utilization and Fairness. Yuqi Xue, Yiqi Liu, Lifeng Nai, and Jian Huang. In *Proceedings of the 50th International Symposium on Computer Architecture (ISCA'23)*. 2023.

RESEARCH PROJECTS

Hardware-assisted Multi-tenant Neural Processing Unit (NPU)

2022

Paper accepted to ISCA'23

UIUC

- Conducts a thorough study of the resource utilization of modern NPUs with real hardware devices.
- Proposes a multi-tenant NPU design for improving resource utilization and fairness.
- Designs a tensor operator scheduler that improves the fairness and throughput for collocated ML workloads.
- Develops a clustering scheme to identify pairs of collocatable DNN workloads.

Trusted Execution Environment for In-Storage Computing

2021

Paper accepted to MICRO'21

UIUC

- Develops *IceClave*, a trusted execution environment for in-storage computing in modern solid-state drives.
- Enables security isolation between in-storage apps and the flash translation layer with ARM TrustZone.
- Proposes efficient memory encryption and verification method to protect user data against physical attacks.

WORK EXPERIENCE

Systems Platform Research Group, UIUC
Graduate Research Assistant

May 2021 - Present
Urbana, IL

ECE 522: Emerging Memory and Storage Systems, UIUC
Graduate Teaching Assistant

Spring 2023
Urbana, IL

ECE 511: Computer Architecture, UIUC
Graduate Teaching Assistant

Fall 2022
Urbana, IL

ECE 310: Digital Signal Processing, UIUC
Undergraduate Grader

Jan 2020 - Jul 2020
Urbana, IL

TALKS

IceClave: A Trusted Execution Environment for In-Storage Computing

- *54th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO'21)*. Virtual. Oct 19, 2021.
- *13th Annual Non-Volatile Memories Workshop (NVMW'22)*. San Diego, CA, United States. May 10, 2022.
- *17th Coordinated Science Lab Student Conference (CSLSC'22)*. Urbana, IL, United States. Feb 24, 2022.

SERVICES

Artifact Evaluation Committee

- IEEE/ACM International Symposium on Microarchitecture (MICRO), 2022
- USENIX Symposium on Operating Systems Design and Implementation (OSDI), 2022
- USENIX Annual Technical Conference (ATC), 2022
- IEEE International Symposium on High-Performance Computer Architecture (HPCA), 2023

Reviewer

- IEEE Computer Architecture Letters, 2022