You Wu

University of Southern California, Los Angeles, CA 90089, USA
Phone: (213)713-5454 Email: youwu@usc.edu

RESEARCH INTERESTS

Computer Architecture, Hardware Security, Side Channel Defense.

EDUCATION

Ph. D. in Computer Engineering at **University of Southern California** Aug. 2017 - present
Ming Hsieh Department of Electrical Engineering GPA:3.60 Supervisor: Xuehai Qian

M. S. in Computer Science at **University of Southern California** Aug. 2017 – Dec. 2020
Department of Computer Science

B. E. in Microelectronic Science and Engineering at **Tsinghua University**, China Aug. 2013 - Jul. 2017
Department of Microelectronics and Nanoelectronics Overall GPA: 89.2/100 Rank: 5/26
Thesis: The VLSI implementation of Binarized Neural Networks

RESEARCH EXPERIENCE

Defense for the Frontend Attack | University of Southern California Oct. 2021 – present
Advisor: Prof. Xuehai Qian, University of Southern California
- Frontend paths including LSD, DSB and MITE have the vulnerability to side channels
- Trying to enhance the gem5 simulator to simulate the Frontend behaviors
- Plan to use partition techniques with delaying update in the Frontend to eliminate speculative effects

Rowhammer Attack Project | University of Southern California Apr. 2021 – present
Advisor: Prof. Xuehai Qian, University of Southern California
- Focus on counter-based mitigation protecting the DRAM from rowhammer attack
- Investigated the state-of-art rowhammer mitigation strategies
- Reproducing the existing work using different rowhammer simulators

The Reversible Coherence Protocol | University of Southern California Sep. 2018 – Nov. 2021
Advisor: Prof. Xuehai Qian, University of Southern California
- Analyzed resent defense strategy like InvisiSpec and CleanupSpec.
- Designed a buffer-based Undo approach to mitigate the transient speculation flaw.
- Extended the current memory coherence protocol to support the merging and purging requests in our design
- Added processor support which help securely issue speculative instructions instead of blocking them
- Proposed a comprehensive mitigation which could eliminate the current speculation related attacks and interferences

GPU Power Virus Project | University of Southern California Apr. 2018 - Nov. 2018
Advisor: Prof. Xuehai Qian, University of Southern California
- Used genetic algorithm to automatically generate extremely high power consumption.
- Modified gpgpusim simulator to trace the access pattern for gpgpu simulations.

Design of a Specialization BNN Accelerator | Tsinghua University | Research Assistant Sep. 2016 - Jul. 2017
Advisor: Prof. Shouyi Yin, Institute of Microelectronics
- Designed an architecture which can efficiently execute the binarized neural computation.
- Investigated its application in different neural networks to accelerate computation.

Implementation of BNN on different platforms | Cornell University | Research Assistant. Jun. 2016 - Sep. 2016
Advisor: Prof. Zhiru Zhang, Dept. of Electrical and Computer Engineering
- Implemented both the hardcore and softcore of the BNN network on an FPGA hardware.
- Coded for the interface to connect the Rocket chip softcore with the BNN accelerator.
- Used High Level Synthesis tool Stratus to utilize limited resources to implement the project.

Vehicular behavior algorithm analysis | Tsinghua University | Research Assistant. Sep. 2015 - Jun. 2016
Advisor: Prof. Shouyi Yin, Institute of Microelectronics
- Used deep learning algorithms to analyze human behavior while driving a vehicle.
- Used the deep learning platform “tensorflow” to solve traditional problems, e.g. MNIST classification.
- Investigated the mechanism behind deep learning algorithms.

Pilot Assignment Algorithms for Wireless Networks | Tsinghua University | SRT Project. Mar. 2015 – May. 2016
Advisor: Prof. Wei Feng, Dept. of Electronic Engineering

- Investigated pilot assignment algorithms to achieve better performance in cellular MIMO systems.
- Performed simulation in cellular Gaussian networks to verify the theoretical results.

AWARDS

Recipient of School Scholarship for Outstanding Academic Award, 2014
Two-time recipient of School Scholarship for Literary Award of Excellence, 2014, 2016

PUBLICATIONS

[ISCA'19] A Time-Space Sharing Selected Scheduling Abstraction for Next Generation of Shared Cloud via Vertical Labels
Yuzhao Wang, Lele Li, **You Wu**, Junqing Yu, Zhibin Yu, Xuehai Qian
The 46th International Symposium on Computer Architecture (ISCA 2019)

[arXiv] A Case for Reversible Coherence Protocol
You Wu, Xuehai Qian
preprint arXiv: 2006.16535

OTHER EXPERIENCE

Fall 2021	Teaching Assistant: EE557 Computer Systems Architecture
Summer 2020	Teaching Assistant: EE559 Mathematical Pattern Recognition
Summer 2018	Student Volunteer at ISCA'18