Еx	PERIENCE	
Soft Clou	ware Engineer dOS	Apple Sep. 2024 – Present
Ph.l Advi	D, STABLE Lab sor: Jishen Zhao, Steven Swanson	UC San Diego Sep. 2018 – Aug. 2024
Soft Enha	ware Engineering Intern anced cloud user data confidentiality with emerging AMD SEV-SNP SVSM.	Confidential VM, Google Cloud Jun. 2023 – Sep. 2023
Part Dep	-Time Student Researcher loyed the confidential VM platform at scale.	Network Infra, Meta Sep. 2022 – Jan. 2023
Software Engineering Intern Initiated and developed Meta's first confidential VM platform.		Network Infra, Meta Jun. 2022 – Sep. 2022
Software Engineering Intern Modernizing Linux KVM testing with UEFI and AMD SEV confidential VM supports.		Confidential VM, Google Cloud Jun. 2021 - Sep. 2021
Res Men	earch Intern, SOLAB tors: Joonseop Sim, Euicheol Lim	SK Hynix USA Jun. 2019 – Sep. 2019
Und Advi Fг	ergraduate Research Assistant, Computer Architecture Lab sors: Qingsong Shi, Wenzhi Chen	Zhejiang University Sep. 2015 – Jun. 2018
Univ Ph.L	versity of California, San Diego D. in Computer Science.	San Diego, CA, US Sep. 2018 – Aug. 2024
Zhejiang University BS in Computer Science.		Hangzhou, China Sep. 2014 – July. 2018
Ρι	JBLICATIONS	
[1]	The Hitchhiker's Guide to Programming and Optimizing CXL-Based Heterogeneous Zixuan Wang, Suyash Mahar, Luyi Li, Jangseon Park, Jinpyo Kim, Theodore Michailidis, Yue Pan, Tajana Rosing, Dean Tullsen, Steven Swanson, Kyung Chang Ryoo, Sungjoo Park, Jishen Zhao HybridTier: An Adaptive and Lightweight CXL-Memory Tiering System Kevin Song, Jiacheng Yang, Zixuan Wang, Jishen Zhao, Sihang Liu, Gennady Pekhimenko	Systems ArXiV, 2024 ASPLOS, 2025
[0]	COLA: Characterizing and Optimizing the Tail Latency for Safe Level-4 Autonomous	s Vehicle Systems
႞ၖ႞	Haolan Liu, <u>Zixuan Wang</u> , Jishen Zhao	ICRA, 2025
[4]	CXLeak: Architectural Attacks via Practical CXL Systems <u>Zixuan Wang*</u> , Zheng Zhang*, Daniel Moghimi, Jishen Zhao, Mohammadkazem Taram Fork in All You Needed in the Free of Listers represedence Commuting	Work in progress
[5]	Zixuan Wang, Jishen Zhao	WCDS@ASPLOS, 2024
[6]	Towards LLM-Powered Verilog RTL Assistant: Self-Verification and Self-Correction Hanxian Huang, Zhenghan Lin, Zixuan Wang, Xin Chen, Ke Ding, Jishen Zhao	ArXiV, 2024
[7]	NVLeak: Off-Chip Side-Channel Attacks via Non-Volatile Memory Systems Zixuan Wang, Mohammadkazem Taram, Daniel Moghimi, Steven Swanson, Dean Tullsen, Jishen Z	hao USENIX Security, 2023
[8]	Enabling Efficient Large-Scale Deep Learning Training with Cache Coherent Disage Zixuan Wang, Joonseop Sim, Euicheol Lim, Jishen Zhao	pregated Memory Systems HPCA, 2022
[9]	Characterizing and Modeling Non-Volatile Memory Systems Zixuan Wang, Xiao Liu, Jian Yang, Theodore Michailidis, Steven Swanson, Jishen Zhao	IEEE Micro Top Picks, 2021
[10]	Ayudante: A Deep Reinforcement Learning Approach to Assist Persistent Memory Hanxian Huang, <u>Zixuan Wang</u> , Juno Kim, Steven Swanson, Jishen Zhao	Programming USENIX ATC, 2021
[11]	Characterizing and Modeling Non-Volatile Memory Systems Zixuan Wang, Xiao Liu, Jian Yang, Theodore Michailidis, Steven Swanson, Jishen Zhao	MICRO, 2020
[12]	Characterizing WebAssembly Performance in the Era of Serverless Computing Jamshed Ashurov, Zixuan Wang, Jishen Zhao	ISSTA SRC, 2023

Enabling Fast Recovery for Autonomous Vehicle Systems with Linux Container Checkpointing
Maximilian Apodaca, Shengye Wang, Zixuan Wang, Jishen ZhaoSOSP SRC, 2021Basic Performance Measurements of the Intel Optane DC Persistent Memory ModuleSOSP SRC, 2021

[14] Joseph Izraelevitz, Jian Yang, Lu Zhang, Juno Kim, Xiao Liu, Amirsaman Memaripour, Yun Joon Soh, Zixuan Wang, Yi Xu, Subramanya R. Dulloor, Jishen Zhao, Steven Swanson

ArXiv, 2019

Trusted Execution of Hypervisor Code within Guest Virtual Machine June, 2023 Initiated the AMD SEV-SNP SVSM support to enhance Google Cloud's confidential virtual machines. I built the initial SVSM support in Google Cloud's Linux kernel, hypervisor, guest firmware, and guest kernel. **Confidential Virtual Machine Platform** June, 2022 Initiated and developed the first confidential VM platform at Meta, highlighted at Meta's Annual Security Summit. I built and deployed the software and operating system support for the first CVM platform at Meta. The project is highlighted at Meta's Annual Security Summit. Modernizing Linux KVM Testing Infrastructure with Confidential VM June, 2021 Implement the first UEFI and AMD SEV/SEV-ES support in KVM-Unit-Tests, patches merged to upstream Linux KVM. • It serves as a solid foundation for the future development of trusted execution in KVM. 19 patches have been merged in upstream Linux KVM, now used by all cloud companies. Generic Programming Model in Heterogeneous Systems In Progress Designing a new language runtime that programs multi-accelerator system using multi-threading model. Leveraging WebAssembly System Interface (WASI) threads to program multi-accelerator systems. Abstract accelerator operations as WASI threads. High-level program (C/C++/Rust) written in conventional multi-threading model and complex to WASI. · High-level program does not need to call accelerator-specific APIs or library functions. WASI just-in-time compiles thread code to underlying accelerator's architecture. Reverse Engineering and Attacking Main Memory Systems. June, 2023 Side-channel attacks in non-volatile main memory systems. Accepted by USENIX Security 2023. · Reverse engineering the micro-architecture of non-volatile main memory. Side-channel attacks that leaks sensative information (database tables, private encryption keys). Accelerating Distributed Training of Large Language Models. Oct, 2021 Memory-centric distributed ML training. Accepted by HPCA 2022. • Accelerate distributed ML training with emerging cache-coherent interconnection. · GPU direct access to memory devices over serial buses. Profiling and Modeling Non-Volatile Memory. July, 2020 Reverse engineering and simulating non-volatile main memory. Accepted by MICRO 2020 and IEEE Micro TopPicks 2021. Develop LENS, a reverse engineering framework for main memory. LENS is a Linux kernel module written in C and x86 assembly. Reverse engineer the first NVRAM product, Intel Optane Persistent Memory. • Develop a cycle-accurate performance model for NVRAM, written in C++ 17. github.com/TheNetAdmin/LENS-VANS **QEMU** micro:bit May. 2018 A micro:bit emulator based on QEMU. Outstanding graduation thesis of the computer science department, 2018 Zhejiang University Emulator of an Arduino-like board. Implemented ARM Cortex-M0, virtual memory, interrupts, exceptions and peripherals. Capable of running unmodified ARM-Mbed OS and micro:bit Bootloader. github.com/TheNetAdmin/gemu-microbit ZJUNIX Operating System Apr. 2017 Self-designed OS running on self-designed SoC. Buddy and Slub memory management, multi-process, file system, device drivers, etc. github.com/zjunix ZJUNIX SoC Dec, 2016 Self-designed SOC on FPGA Self-implemented MIPS32 CPU with DDR3, VGA, PS2, SD controller on FPGA. Capable of running ZJUNIX Operating System. github.com/zjunix/zjunix-soc

NVMW, 2019

SKILLS

Technologies: CXL, AMD SEV/SEV-ES/SEV-SNP, Linux KVM, Linux kernel, UEFI, QEMU, WebAssembly System Interface, CUDA, TensorFlow, FPGA, MongoDB

Skills: Performance profiling, confidential virtual machine, x86 bootstrapping, Linux upstream contributions, microarchitecture reverse engineering, side/covert channel attacks, programming language runtime system

Languages: C/C++, x86/ARM Assembly, Python, Rust, Shell, R, Verilog, Java, JavaScript

Reliable and Flexible Large Scale Memory Network

Zixuan Wang, Xiao Liu, Jongryool Kim, Hokyoon Lee, Jishen Zhao

[15]

PROJECTS

INVITED TALKS

NVLeak: Off-Chip Side-Channel Attacks via Non-Volatile Memory Systems

NVMW'23, PRISM Center at Semiconductor Research Corporation

Enabling Efficient Large-Scale Deep Learning Training with Cache Coherent Disaggregated Memory Systems

Intel Co., IBM Research, SK hynix Inc., Micron Inc., Alibaba Cloud USA Inc., Foundational Microarchitecture Research (FoMR), CRISP Center at Semiconductor Research Corporation

Characterizing and Modeling Non-Volatile Memory Systems TECHCON'20, NVMW'21, Foundational Microarchitecture Research (FoMR), CRISP Center at Semiconductor Research Corporation Trust but Verify: Co-Locating Hypervisor Services with User Code via AMD SEV-SNP SVSM Google Cloud'23

Securing User Data with Confidential Virtual Machine

Meta Annual Security Summit'22

Modernizing KVM-Unit-Tests with UEFI and AMD Confidential Virtual Machine

Google Cloud'21, AMD'21

HONORS & AWARDS

MICRO PhD Forum Attendee: Selected as one of the presenters on the PhD Forum, 2023 MICRO Google Peer Bonus: Awarded one peer bonuse recognizing the impact of my project, 2023 Google NVMW Memorable Paper Finalist: Awarded to one of the most impactful paper in persistent memory research, 2023 NVMW Meta Security Highlight: Highlight presentation on Meta's annual security summit, 2022 Meta Google Peer Bonus: Awarded two peer bonuses recognizing the impact of my project, 2021 Google IEEE Micro TopPicks: Annually awarded to 12 best papers in computer architecture area, 2021 IEEE NVMW Memorable Paper Finalist: Awarded to one of the most impactful paper in persistent memory research, 2021 NVMW Outstanding Dissertation: Outstanding undergraduate dissertation, 2018 Zhejiang University He-Zhi-Jun Scholarship: Top 10 outstanding students of the computer science department, 2017 Zheijang University Outstanding Prize: Challenge Cup, National Undergraduate Academic Science and Technology Works Competition, 2017 China Rising Star in Academic: Top 1% of computer science students in academic achievements, 2017 Zhejiang University Academic Scholarship: Top 10% students of the computer science department Second Prize: Digilent Design Contest, 2017 China Third Prize: Advanced Computer Architecture Undergraduate Innovation Competition, 2016 CCF China

OPEN SOURCE PROJECTS

MiahtvPC Jul 2021 Mighty toolkit for conference Program Chairs. · A toolkit for conference program chairs to manage submissions, assign reviewers, and organize TPC meetings. Initially developed for the MICRO 2021 conference, then used in other conferences, including HPCA 2022 and MICRO 2022. github.com/TheNetAdmin/MightyPC VS Code LinkerScript Aug 2018 The first linker script language extension on VS Code. github.com/TheNetAdmin/vscode-linkerscript (196K Installations) **ZJU Thesis** May 2018 LaTeX template for Zhejiang University graduation thesis. Thesis template in LaTeX, widely used by students at Zhejiang University. github.com/TheNetAdmin/zjuthesis (2,000 * 27K Downloads) Makefile Templates Julv 2017 Makefile templates for C/C++ projects.

github.com/TheNetAdmin/Makefile-Templates (500*)