Yiwei Yang

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Education

UC Santa Cruz, Ph.D. Student 08/2022 – 06/2028

- Major: Computer Science, advised by Andrew Quinn. 22 Fall TA of Computer Architecture

ShanghaiTech University, Undergraduate 09/2018 – 06/2022

- Major: Computer Science, finished Compiler, Network, Database, OS, CA, Convex, RL, Parallel Computing. 21& 22 Spring TA of Compiler

Work Experience

Jump Trading, Shanghai, China 07/2020 – 09/2020

(Linux Team) Production Engineer Intern

- High Frequency Trade Order Book simulation applying Linear.Regression Method.
- Designed a user interface to automate the core affinity of jobs.
- Designed an eBPF exporter of GPFS full OSS lifetime traces for better reporting the bottleneck.

Research Experience

Storage Systems Research Center, UC Santa Cruz 08/2022 – Present

(Graduate Research) Assistant

- Data-driven CXL.mem allocation, prefetching, and replacement policies.
- Make Hardware Software Co-design for on CXL.cache data movement
- Make Virtual Machine migration based on WebAssembly and WASI
- Make cross kernel-userspace eBPF observation for distributed system

Publications

"Transparent and Efficient Live Migration across Heterogeneous Hosts with Wharf" Preprint **Yiwei Yang**, Aibo Hu, Yusheng Zheng, Brian Zhao, Xinqi Zhang, Andrew Quinn

"wasm-bpf: Streamlining eBPF Deployment in Cloud Environments with WebAssembly" Preprint Yusheng Zheng, Tong Yu, **Yiwei Yang**, Andrew Quinn.

"KEN: Kernel Extensions using Natural Language" eBPF24 Yusheng Zheng, **Yiwei Yang**, Maolin Chen, Andrew Quinn.

"bpftime: userspace eBPF Runtime for Uprobe, Syscall and Kernel-User Interactions" Preprint Yusheng Zheng, Tong Yu, **Yiwei Yang**, Yanpeng Hu, Xiaozheng Lai, Andrew Quinn.

"CXLMemSim: A pure software simulated CXL.mem for performance characterization." Yarch23 **Yiwei Yang** Pooneh Safayenikoo, Jiacheng Ma, Tanvir Ahmad Khan, Andrew Quinn.

"Attack as Defense: Characterizing Adversarial Examples using Robustness." ISSTA21 Zhao, Zhe, Guangke Chen, Jingyi Wang, **Yiwei Yang**, Fu Song, and Jun Sun.

Selected Portfolios

bpftimehttps://github.com/eunomia-bpf/bpftime/ Make cross boundary observation for the kernel

MVVMhttps://github.com/Multi-V-VM/MVVM Live migration over WebAssembly with WASI support

Bede-linuxhttps://github.com/SlugLab/Bede-linux Per Process RSS Node Limit Linux kernel for CXL

Skills

- **Programming Languages**: not limited to any specific language, and experienced in Python/C++/Rust, comfortable with Golang/C/Java/Scala/TypeScript (in random order).
- **System**: Specialist in Compiler & Performance Analysis, familiar with `LLVM`, `MLIR`, `Gem5`, `WASM`, `gdb`, `eBPF`, `qemu`, `chisel`, `Linux mm & observability subsystem`.
- **Machine Learning**: familiar with general knowledge of machine & reinforce learning, interested of RL for Sys.

Miscellaneous

- Interests: Computer Architecture, Storage System, Formal Methods, etc.
- Advise Kiki Zhang to be HCI Ph.D. student at SCU.
- Lead GeekPie_HPC *Ranked 2*, SC-SCC21. *Ranked 4*, ISC22. Advise Not-Slow-Slug *Ranked 2*, ISC23.

- Google Summer of Code Mentor for BPFTime