Hsuan-Chi (Austin) Kuo

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Education

2017 – curr **Ph.D. (expected 2022 May)**, *University of Illinois at Urbana-Champaign*, USA, *GPA: 3.96/4.*
System and Networking track
Advisor: Sibin Mohan
Relevant Coursework: Operating System Design, Realtime Systems, Computer Security, Advanced Operating Systems, Distributed Systems

2012 – 2016 **Bachelor**, *National Tsing-Hua University, Computer Science*, Taiwan, *GPA: 4.06/4.3.*
Relevant Coursework: Parallel Computer Architecture, Functional Programming, Operating Systems

Publications/Talks

2020 **Container Isolation via Virtualization: Don't Forget to Shrink the Guest**.
Hsuan-Chi Kuo, Dan Williams **(KubeCon Europe 2020)**

2020 **A Linux in Unikernel Clothing**.
Hsuan-Chi Kuo, Dan Williams, Ricardo Koller, Sibin Mohan **(EuroSys 2020)**

2020 **Set the Configuration for the Heart of the OS: On the Practicality of Operating System Kernel Debloating**.
Hsuan-Chi Kuo, Jianyan Chen, Sibin Mohan, Tianyin Xu **(SIGMETRICS 2020) (Selected to be published at CACM-RH)**

2019 **MultiK: A Framework for Orchestrating Multiple Specialized Kernels**.
Hsuan-Chi Kuo, Akshith Gunasekaran, Yeongjin Jang, Sibin Mohan, Rakesh B. Bobba, David Lie, Jesse Walker **(CoRR, abs/1903.06889)**

2017 **Live Room Merger: A Real-Time Augmented Reality System for Merging Two Room Scenes**.
Chu I Chao, Chien-Min Wang, **Hsuan-Chi Kuo**, Liang-Chi Tseng, Shih-Kai Lin, Yu-Ju Tsai, Ching-Chi Lin, Da-Fang Chang **(VRIC 2017 Workshop)**

2017 **Scalable and Efficient Construction of Suffix Array with MapReduce and In-Memory Data Store System**.
Hsiang-Huang Wu, Chien-Min Wang, **Hsuan-Chi Kuo**, Wei-Chun Chung, Jan-Ming Ho **(CoRR abs/1705.04789)**

Experiences

2017 – curr **University of Illinois at Illinois Champaign**, *Research Assistant*.
Advisor: Sibin Mohan
- **Operating System Debloating/Specialization**: Debloating kernels for applications to reduce the attack surface for more secure computer systems.

Fall 2021 **CS 461 Computer Security**, *Teaching Assistant*.

Jan 2021– Aug 2021 **Microsoft Research**, *Researcher Intern*.
Mentors: Weidong Cui and Xinyang Ge

Spring 2021 **CS 538 Advanced Networking**, *Teaching Assistant*.

Summer 2020 **Microsoft Research**, *Researcher Intern*.
Mentors: Weidong Cui and Xinyang Ge

Summer 2019 **IBM Research**, *Research Summer Intern-Graduate*.
Mentors: Daniel Williams and Ricardo Koller
- Working on a Lupine Linux kernel which has unikernel properties such as small attack surfaces, fast boot time, security and compiler optimization.
- Investigated the host attack surface and semantic gaps of different deprivileged approaches, e.g., VM, Container, User-Mode Linux(UML), Kernel-Mode Linux(KML) and Linux Kernel Library(LKL).

Sep 2016– Jul 2017 **Academia Sinica**, *Research Assistant*.
- **MR-Redis**: a framework exploiting in-memory storage (e.g., Redis) to reduce the disk I/O to speed up normal MapReduce tasks. Implemented additional Redis commands to mget and mgetrange.
- **Live Room Merger**: a real-time augmented reality system for merging two room scenes. Designed an image processing pipeline which can boost 2x frame per second rate.

Summer 2016 **Google Summer of Code**, *Student Project*.
- **Hawkular Inventory Reporter**: Designed and implemented Hawkular Inventory Reporter, which is an agent provides inventory information for Hawkular from JBoss.

Summer 2015 **VMFive**, *Software Engineer Intern*.
- **Software QA**: Built the test suite for game streaming iOS SDK framework from scratch.
- **Toolchain**: Designed and constructed the continuous integration system and dockerized the development environment.

Software Projects

2016 **Fast Query**: a distributed parallel indexing and querying system for accelerating analysis and visualization of scientific data with MPI. It partitions and indexes huge scientific data into a cluster to answer the query speedily.

2015 **Flora**: an application to gamify smart phone locking, used to make people focused together.

Awards

201{2,5,6} Academic Achievement Award — *Awarded to top 5% students*

2015 Outstanding Student of EECS Award — *Awarded to outstanding students in college of Electrical Engineering and Computer Science*

Computer Skills

Languages C/C++, Bash, Java, Go, Python Technologies AWS, MPI, LINUX, OpenStack