Yiming Qiu

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RESEARCH INTERESTS

I am broadly interested in systems, networking, and security, with a particular focus on the intersection of **low level systems** with **performance analysis**, **formal reasoning**, and **machine learning**.

EDUCATION

University of Michigan   Aug. 2023 - July. 2024 (expected)
Ph.D. Student, Computer Science
Advisor: Ang Chen

Rice University   Jun. 2020 - Aug. 2023 (transferred)
Ph.D. Student, Computer Science   GPA: 3.92/4.00
Advisor: Ang Chen

Beijing University of Posts and Telecommunications   Aug. 2015 - May 2019
B.S., Telecommunication Engineering (top 3%)   GPA: 3.81/4.00

PUBLICATIONS

Unearthing Semantic Checks for Cloud Infrastructure-as-Code Programs
Yiming Qiu, Patrick Tser Jern Kon, Ryan Beckett, Ang Chen
SOSP 2024

Unleashing SmartNIC Packet Processing Performance in P4
Jiarong Xing, **Yiming Qiu**, Kuo-Feng Hsu, Songyuan Sui, Khalid Manaa, Omer Shabtai, Yonatan Piasetzky, Matty Kadosh
SIGCOMM 2023

Synthesizing Runtime Programmable Switch Updates
Yiming Qiu, Ryan Beckett, and Ang Chen
NSDI 2023

Simplifying Cloud Management with Cloudless Computing
Yiming Qiu, Patrick Tser Jern Kon, Jiarong Xing, Yibo Huang, Hongyi Liu, Xinyu Wang, Peng Huang, Mosharaf Chowdhury, Ang Chen
HotNets 2023

Bedrock: Programmable Network Support for Secure RDMA Systems
Jiarong Xing, Kuo-Feng Hsu, **Yiming Qiu**, Ziyang Yang, Hongyi Liu, and Ang Chen
USENIX Security 2022

Automated SmartNIC Offloading Insights for Network Functions
Yiming Qiu, Jiarong Xing, Kuo-Feng Hsu, Qiao Kang, Ming Liu, Srinivas Narayana, and Ang Chen
SOSP 2021

A Vision for Runtime Programmable Networks
Jiarong Xing, **Yiming Qiu**, Kuo-Feng Hsu, Hongyi Liu, Matty Kadosh, Alan Lo, Aditya Akella, Thomas Anderson, Arvind Krishnamurthy, T. S. Eugene Ng, and Ang Chen
HotNets 2021

Toward Reconfigurable Kernel Datapaths with Learned Optimizations
Yiming Qiu, Hongyi Liu, Thomas E.Anderson, Yingyan Lin, Ang Chen
HotOS 2021

Probabilistic Profiling of Stateful Data Planes for Adversarial Testing
Qiao Kang, Jiarong Xing, **Yiming Qiu**, and Ang Chen
ASPLOS 2021

Clara: Performance Clarity for SmartNIC Offloading
Yiming Qiu, Qiao Kang, Ming Liu, and Ang Chen
HotNets 2020

A Feasibility Study on Time-aware Monitoring with Commodity Switches
Yiming Qiu, Kuo-Feng Hsu, Jiarong Xing, and Ang Chen
SPIN 2020

RESEARCH EXPERIENCE

University of Michigan   Aug. 2023 -
Research Assistant (Mentor: Ang Chen)

- Research on cloud automation, including the vision of cloudless computing (HotNets'23), mining, validating, and checking against cloud resource requirements (submitted to SOSP'24), disaggregated eBPF architecture via RDMA (submitted to SOSP'24).

Rice University   Jan. 2020 - Aug. 2023
Research Assistant (Mentor: Ang Chen)

- Research on program analysis and formal reasoning support for complex systems, including runtime programmable switch update synthesis (NSDI'23), automated SmartNIC offloading insights for network functions (SOSP'21, HotNets'20), infrastructure for in-kernel machine learning (HotOS'21). programmable network support for secure RDMA systems (USENIX Security'22) and network monitoring (SPIN'20), programmable data plane profiling (ASPLOS'21), runtime programmable network (SIGCOMM'23, HotNets'21).

Microsoft AFO OCTO   May. 2022 - Present
Research Intern (Mentor: Ryan Beckett)

- Research on multi-WAN (5G operators and Azure) traffic forwarding and optimization systems.

OPEN SOURCE PROJECTS

Clara: https://github.com/824728350/Clara
FlexPlan: https://github.com/824728350/FlexPlan
Bedrock: https://github.com/alex1230608/Bedrock
P4wn: https://github.com/qiaokang92/P4wn
Otter: https://github.com/OTTER-5GWAN/topology

TEACHING EXPERIENCE

Rice University
Teaching Assistant
COMP536: Secure and Cloud Computing   Fall 2021, Fall 2020