✉ yiranlei@andrew.cmu.edu
🌐 https://www.yiranlei.com/
⌗ A-Dying-Pig

Yiran Lei

Education

2023 – Present	🔖	**Carnegie Mellon University**, Computer Science Department Ph.D. in Computer Science (Computer Networking & Systems) Advisor: *Prof. Justine Sherry*
2020 – 2023	🔖	**Tsinghua University**, Department of Computer Science and Technology M.E. in Computer Science, GPA 3.76 / 4.0 Advisor: *Prof. Mingwei Xu.*
2016 – 2020	🔖	**Tsinghua University**, School of Software B.E. in Software Engineering, GPA 3.65 / 4.0 Thesis title: *Track Multiple Objects across Different Points of Views.*

Research Experience

2022.9 – Present	🔖	**University of Washington**, Paul G. Allen School of Computer Science Visiting student researcher, advisor: *Prof. Arvind Krishnamurthy* Smart systems with programmable switch and SmartNIC.
2020.9 – 2023.6	🔖	**Tsinghua University**, Routing Group Master student, advisor: *Prof. Mingwei Xu.* Network measurement, programmable data planes, diagnosis systems.
2021.9 – 2022.8	🔖	**University of Pennsylvania**, Distributed Systems Lab Remote intern, advisor: *Prof. Vincent Liu* Queue measurement in the data plane.
2019.6 – 2019.8	🔖	**UCLA**, Internet Research Lab Visiting student, advisor: *Prof. Lixia Zhang* NDN home IoT system.

Research Publications

1   **Yiran Lei**, Liangcheng Yu, Vincent Liu, and Mingwei Xu. 2022. Printqueue: performance diagnosis via queue measurement in the data plane. In *ACM SIGCOMM 2022 Conference (SIGCOMM '22), August 22–26, 2022, Amsterdam, Netherlands*, ACM, New York, NY, USA, 14 pages. 🔗 DOI: `10.1145/3544216.3544257`.

2   **Yiran Lei**, Yu Zhou, Yunsenxiao Lin, Mingwei Xu, and Yangyang Wang. 2021. Dove: diagnosis-driven slo violation detection. In *2021 IEEE 29th International Conference on Network Protocols (ICNP)*, 1–11. 🔗 DOI: `10.1109/ICNP52444.2021.9651986`.

Teaching Assistant

2021.9 – 2022.1	🔖	*The Principle of Computer Network* (40240513), Mingwei Xu, Tsinghua University. Assignments, lectures on IPv6, seminars, and exams.

Skills

Math	▌	Stochastic Process, Combinatorics, Calculus, Linear Algebra, Algorithms
Languages	▌	English: TOEFL iBT 112 (30L, 29R, 25S, 28W), Chinese
Coding	▌	P4, Python, C/C++, Javascript, Java, Assembly Language, SQL
System	▌	Tofino, Stingray, DPDK, Mininet, Linux Kernel, Raspberry PI, Arduino, TinyOS
Web Dev	▌	Django, Vue.js, HTML5, Flask

Awards

2022	▌	China National Scholarship
2021	▌	Fellowship for Comprehensive Excellence (Second Class), Tsinghua University
2018	▌	Second Award in Contemporary Undergraduate Mathematical Contest in Modeling, China
	▌	Honorable Mention in Mathematical Contest in Modeling, USA
2017	▌	Scholarship for Excellence in Study, Tsinghua University

Projects

2021	▌	**System Calls**, implementing fork, exec, spawn, link, user shell on *ucore* OS C based. Grasp linux kernel and user space, file system, trap, system calls.
2019	▌	Reproduce the result of "*Deferred Neural Rendering: Image Synthesis using Neural Textures*" OpenGL and UNet based. Implement multiple lighting models, e.g., Blinn-Phong and physical lighting model.
	▌	**LowSQL Database**, a high performance SQL database Java based. Use B+ tree indexing, block storage, and LRU caching for acceleration.
2018	▌	**MASM Assembler**, translating assembly language into machine code MASM based. Practice knowledge of compiler and linker.
	▌	**Run-Catch Game**, a light-weighted 3D real-time battle game on *WeChat* *Layabox* as game engine. Construct 3D models and scenes. Support online real-time playing.
	▌	**Contest Platform**, an online system to hold contests for college students Django and Vue.js based. Design user-friendly interface, mechanisms to support high concurrency.
	▌	**FTP server and client**, implementing File Transfer Protocol Socket based. Implement RFC standards, and the programs interact well with commercial FTP server and client.
2017	▌	**Object Classification** Tensorflow based.
	▌	**XV6 GUI**, adding graphical interfaces to XV6 OS Understand the principles of modern OS and details of pixel rendering.
	▌	**Gwent: The Witcher Card Game**, a self-made version of the *game* QT based. Complicated game logic, program design, and graphical interfaces.
	▌	**Memory Leak Detector**, a C++ library to discover memory leak Check whether a *new* expression is followed by corresponding *delete*.
2016	▌	**My War Game**, a self-made version of the 2D game *worms reloaded* C based. Double buffer rendering and intricate game logics.