Zikai Liu

✉ zikai.liu@inf.ethz.ch   📞 +41 76 546 78 72
🌐 zikailiu.com/about   💼 zikai-liu
🏠 STF H 326, Stampfenbachstrasse 114, 8006 Zürich, Switzerland

Education

2023–Present   **ETH Zurich,** PhD Student in Computer Science
- Supervised by Prof. Timothy Roscoe. Systems Group.

2021–2023   **ETH Zurich,** MSc in Computer Science
- Major in Data Management Systems. GPA 5.67/6.00.
- Thesis: Generating Trustworthy I^{2}C Stacks Across Software and Hardware.

2017–2021   **University of Illinois at Urbana-Champaign,** BSc in Computer Engineering

Zhejiang University, BEng in Electronics and Computer Engineering
- Dual Bachelor's degrees. GPA 3.93/4.00. Highest Honor.
- Thesis: Using Concolic Execution to Provide Automatic Feedback on LC-3 Programs.

Selected Courses   Operating Systems, Computer architecture, Compiler, Software Testing, Cloud Computing.

Experience

Spring 2024–Present   **ETH Zurich,** Teaching Assistant
- Head TA for Big Data. Coordinate the teaching team.

2018–2021   **ZJU-UIUC Robotics Team,** Control/Vision Group Lead and Project Manager
- Led the development of embedded control programs and a vision system for robots.
- Managed the development process for 30+ team members as the Project Manager.

Fall 2020   **ZJU-UIUC Joint Institute**, Teaching Assistant
- Organized lab sessions and assignments. Deployed an automatic feedback system (KLC3 below) for 120+ sophomore students.

Summer 2020   **NetEase Games,** Platform Engineer Intern
- Developed a driver module with GUI to manage various joysticks through a unified interface, providing plug-and-play user experience on the NetEase android emulator.

Projects

Summer 2022–Present   **The Enzian Project and Trustworthy Board Management Controllers**
- Enzian: a research server-class CPU/FPGA computer developed at the ETH Systems Group.
- Worked on securing board management controllers by adopting a secured operating system kernel and generating verified hybrid software/hardware drivers.

Fall 2022   **In-Hand 3D Scanning System on a Mixed Reality Headset**
- Developed a system for near-real-time 3D scanning and reconstruction of irregular geometries, using the depth camera on Microsoft HoloLens 2.

2018–2021	**KLC3 Symbolic Execution Engine**
	• A symbolic execution engine for LC-3 (an educational assembly) based on KLEE for automatic bug detection and test case generation, written in C/C++.
	• Used to provide automatic end-to-end feedback to 100+ sophomore students for their LC-3 assignments in Fall 2020. Got uniformly positive survey responses.
Spring 2021	**Wireless Charging Desk with Vision-Assisted Automatic Alignment**
	• Designed and implemented a desk that automatically aligns wireless charging coils with devices using a mechanical system and computer vision.
	• Senior design team project. We got the Most Interdisciplinary Project Award.
Fall 2020	**Pipelined RISC-V Processor Design Project**
	• Designed and simulated a 5-stage pipelined RV32I processor with parameterized caches, tournament branch predictions, and a prefetcher, written in SystemVerilog.

More on my website ⊕ zikailiu.com/projects

Publications

*Equal contributors	Daniel Schwyn*, **Zikai Liu***, Timothy Roscoe, Efeu: generating efficient, verified, hybrid hardware/software drivers for I2C devices," *20th European Conference on Computer Systems*, March–April 2025.
	Ben Fiedler, **Zikai Liu**, David Cock, Timothy Roscoe, "Verified fault handling for modern board management controllers," *20th Formal Aspects of Component Software*, September 2024.
	Zikai Liu, Tingkai Liu, Qi Li, Wenqing Luo, Steven S. Lumetta, "End-to-End Automation of Feedback on Student Assembly Programs," *36th ACM/IEEE International Conference on Automated Software Engineering,* November 2021.

Talks

Presenters	Daniel Schwyn, **Zikai Liu**, Timothy Roscoe, "Generating Trustworthy Hardware/Software I2C Drivers for Board Management Controllers," *seL4 Summit 2024*, October 2024.
	Roman Meier, **Zikai Liu**, Ben Fiedler, Timothy Roscoe, "seL4 as a CPU Driver in an OS for Real Computers," *seL4 Summit 2024*, October 2024.
	Zikai Liu, Steven S. Lumetta, "Caching Results from KLEE's Independent Solver," *2nd KLEE Workshop*, June 2021.
	Zikai Liu, Tingkai Liu, Qi Li, Wenqing Luo, Steven S. Lumetta, "Timely Feedback on Assembly Assignments Using KLEE," *2nd KLEE Workshop*, June 2021.