

## Education

- 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.
- 2021–Present **ETH Zurich**, [MSc in Computer Science](#)  
• Major in Data Management Systems. Current GPA 5.61/6.00.
- Selected Courses Computer System Engineering, Microarchitecture, Operating Systems, Compiler, Automated Software Testing, Machine Learning, Cloud Computing Architecture.

## Experience

- 2018–2021 **ZJU-UIUC Robotics Team**, Control Group Lead & Project Manager/Vision Group Lead  
• Led the development of embedded control programs, parameter tuning utilities, and a vision-assisted automatic aiming system for combat robots, in C/C++ and Python.  
• Scheduled development timeline and arranged meetings as the project manager.
- Fall 2020 **ZJU-UIUC Joint Institute**, Teaching Assistant  
• Organized lab sessions and assignments, and deployed an automatic feedback system (KLC3 below) for sophomore students of the ECE220 Fall 2020 ZJUI session.
- 2020.6–2020.8 **NetEase Games**, Platform Engineer Intern  
• Developed a driver module and GUI to manage various joysticks through a unified interface, providing plug-and-play user experience on the NetEase android emulator.

## Projects

- Fall 2022 **End-to-End In-Hand 3D Scanning System on Mixed Reality Headsets**  
• Developed a system for near-real-time 3D scanning and reconstruction for irregular geometries, using the depth camera on Microsoft HoloLens 2.
- Summer 2022 **Virtualize Linux on seL4 for Enzian System**  
• Developed Linux VM on seL4 (a formally verified microkernel) for Enzian, a research server-class CPU/FPGA computer developed at the ETH Systems Group.
- 2020–2021 **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.

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| Fall 2020   | <b>Pipelined RISC-V Processor Design Project</b> <ul style="list-style-type: none"> <li>Designed and simulated a 5-stage pipelined RV32I processor with parameterized caches, tournament branch predictions, and a prefetcher, written in SystemVerilog.</li> </ul>   |
| Spring 2020 | <b>BoxHead Video Game on FPGA</b> <ul style="list-style-type: none"> <li>Developed a game on FPGA combining hardware and software. Wrote VGA driver, SRAM controller, hardware graphic engine in SystemVerilog, and game logic in C.</li> </ul>   |
| Fall 2019   | <b>x86 Operating System Development Project</b> <ul style="list-style-type: none"> <li>Designed and simulated an i386 OS with kernel functions, a scheduler with waitlists, SVGA driver with hardware acceleration, and GUI, written in C and assembly.</li> <li>Our team got a prize at the UIUC ECE391 design competition :)</li> </ul> |
| Fall 2019   | <b>UWB Indoor Positioning System Project</b> <ul style="list-style-type: none"> <li>Designed and analyzed a high-accuracy (~20cm) indoor positioning system using Decawave UWB development boards. CS498IoT team project.</li> </ul>  |

## Publications

**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 (ASE)*, November 2021.

**Zikai Liu**, “Using Concolic Execution to Provide Automatic Feedback on LC-3 Programs,” Senior Thesis, University of Illinois at Urbana-Champaign, June 2021.

## Presentations

**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.

## Activities

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| 2018–2019 | <b>Campus New Media Center</b> , Vice Minister of Vision Department <ul style="list-style-type: none"> <li>Organized department recruitment, training and photography activities.</li> </ul> |
| 2019–2020 | <b>Campus Art and Creative Studio</b> , Founding Member <ul style="list-style-type: none"> <li>Participated in designing, manufacturing and selling of art products.</li> </ul>              |