

# Yi-Chi Lee

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## Education

### The University of Texas at Austin

Master of Science in Computer Science

Austin, TX, USA

May 2026 (Expected)

- Contributed patches to LLVM upstream, improving **instruction selection** for multiple architectures.
- Relevant Coursework: Advanced Operating Systems, Advanced Systems and Generative AI, Compilers, Algorithms

### National Yang Ming Chiao Tung University (National Chiao Tung University)

Bachelor of Science in Computer Science

Hsinchu, Taiwan

Jun 2023

- GPA: 4.1/4.3 (Dean's List x2)

- Relevant Coursework: Compiler Design, Operating Systems Design and Implementation

## Experience

### Advanced Micro Devices, Inc. (AMD)

Austin, TX, USA

*GPU Compiler Engineer Intern*

May 2025 - Aug 2025

- Designed a custom **instruction scheduling** strategy in LLVM AMDGPU backend to integrate ML-based decision-making.
- Developed a reinforcement learning training pipeline, enabling models to learn compiler heuristics and outperform them.

### SiFive Inc.

Hsinchu, Taiwan

*Software Engineering Intern at Compiler Team*

Sep 2022 - Sep 2023

- Utilized **llvm-profiler** to extract hot paths from broad benchmarks, accelerating compiler optimization development.
- Designed micro-benchmarks for evaluating the profitability of **vectorization** across diverse compiler versions and options.
- Created a workflow for benchmarking on FPGA and RTL simulator for precise performance comparison.

### Kapito Inc.

Hsinchu, Taiwan

*Software Engineering Intern*

Jul 2022 - Aug 2022

- Built a CI/CD workflow and **Kubernetes** clusters, effectively processing real-time object detection inference requests.
- Designed an AI training and inference pipeline, pioneering a shift from TensorFlow Serving to Triton Inference Server.

### National Yang Ming Chiao Tung University

Hsinchu, Taiwan

*Research Assistant*

Jul 2021 - May 2024

- Developed an intelligent notification system on **Android** and researched how AI affects user interaction with notifications.
- Publications:** 5 papers published at the top conferences in Human-Computer Interaction. [Google Scholar]

## Projects

### Rowhammer-Sim || C, Linux Kernel, QEMU

Fall 2024

- Developed a **Linux kernel module** that registers a character device, simulating bit-flips in physical memory.
- Exploited bit-flips in page tables to trigger the Rowhammer attack, leading to arbitrary memory access.

### RPI-OS || C, Arm Assembly, CMake

Spring 2023

- Implemented an operating system with features such as interrupts, context-switching, virtual memory, and process fork.
- Utilized **QEMU** and **GDB/LLDB** for efficient pre-deployment debugging, ensuring smooth operation on Raspberry Pi 3b.

### FFrusT || Rust

Fall 2022

- Implemented Cooley-Tukey algorithm using diverse parallel strategies, including **multi-threading** and **SIMD**.
- Analyzed assembly code and utilized performance tools to identify efficiency determinants in various implementations.

### PLang Compiler || C++, Lex, Yacc

Spring 2022

- Designed a compiler for **RISC-V architectures**, handling lexical/syntax parsing, semantic analysis, and code generation.
- Applied Visitor Design Pattern for structured code traversal and integrated unit testing for enhanced reliability.

## Skills

**Programming Languages:** C, C++, Python, Rust, Shell Script, JavaScript, Go, Kotlin, OCaml

**Tools & Frameworks:** LLVM, Linux, PyTorch, QEMU, GDB, Docker, MongoDB, CUDA, OpenCL, MLIR

## Leadership & Extracurricular Activities

- President** of HSNU & ZSGH Alumni Association at NYCU
- Senior Member & Podcaster** of Late Night Film Festival & Free Screening Room Podcast