[redacted]
sun1011jacobi@gmail.com | Github

Education

Kyoto University 2021/04 – 2025/03
Bachelor In Informatics and Mathematical Science | GPA: 3.89/4.3 (Rank: 3/40) Kyoto
- **Math Courses**: Logic, Graph Theory, Abstract Algebra, Numerical Analysis, Statistics, Optimization
- **CS Courses**: Software Foundations, Functional Programming, Compiler, Architecture, Theory of computation, Artificial Intelligence, Network, Algorithms and Data Structures
- Bachelor Thesis: *Improving the Conditional Semantic Textual Similarity through Cross-Attention*

Research

Student Summer Research Fellowship @ PLF Lab, ETH Zurich 2024/07 – 2024/08
Rust, Operational Semantics, Memory Model | Supervisor: [redacted] | **Project Details** Zurich
Project: *Tree Borrows in MiniRust*
- Integrated and translated a new aliasing model, *Tree Borrows*, into *Mini Rust*, a specification for Rust.
- *Tree Borrows* reduces the complexity for alias analysis and enables more compiler optimizations for **Unsafe Rust**.
- Specifically, the project was focused on creating a **readable** and **precise** specification for *Tree Borrows*.

Google Summer of Code Student @ SoSy-Lab, LMU Munich 2023/05 – 2023/09
Java, Model Checking | Mentor: [redacted] | **Project Details** Remote
Project: *Reverse Program Synthesis for Backward Reachability Analysis in CPAchecker*
- Contributed to the *CPAchecker*, a software verification platform
- Designed and implemented a transform pass for the Control Flow Automata (CFA).
- The pass create a reverse CFA for each CFA so that existing analysis can be applied to verify the reverse CFA.

Industry

Software Engineer @ pony.ai 2025/02 –
C++, CUDA, Performance Optimization Beijing
- Profiled performance bottlenecks in the End-to-end autonomous driving onboard system.
- Optimized the onboard latency via CPU concurrency and GPU acceleration.

LLVM Compiler Engineer Intern @ PLCT Lab, ISCAS 2023/12 – 2024/02
C++, Compiler Optimization/Construction, RISC-V, SIMD Remote
- Backend support and optimization for **RISC-V** Architecture, especially on its **Vector Extension**.
- **Peephole Optimization** on **LLVM IR**.
- Bug Fixing for Clang Frontend for **OpenMP**.
- Reviewing other contributors' patches.

Software Engineer Internship/Part-time @ Fixstars Corporation 2023/10 – 2024/06
Modern C++, LLVM, Compiler, Linux Kernel, Performance Optimization, GPU Remote/Tokyo
- Developed a LLVM-based toolchain for developing **SYCL** on **ARM** processors and **OpenCL** devices.
- Investigated the memory access performance model of a **NUMA** architecture processor.
- Optimized the sequential access performance of a software Distributed Shared Memory system

Student Engineer @ TIER IV 2022/12 – 2024/3
Rust, Operating System Remote
- Worked on **Awkernel**, a Real-time OS written in Rust designed for autonomous driving.
- Implemented the **virtual memory system**, **PCIe driver**, **network driver**, and **UDP**.
- Investigated several **Dynamic Memory Allocation Algorithms**.

Awards & Honors

- **Student Summer Research Fellowship** *ETH Zurich*, 4000 CHF 2024
- **General Scholarship** *Hirose International Scholarship Foundation*, 180K JPY/month 2020 – 2024

Skills

- **LLVM**, **Compiler Optimization/Construction**, Performance Optimization, Program Analysis
- Programming Languages: **Rust**, **Modern C++**, C, CUDA, SYCL, Python (Pytorch), OCaml/Coq, Java