Roife

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Education

Nanjing University   2023.09 - 2026.06 (expected)
Master of Computer Science and Technology
- Member of Pascal Research Group, focus on PL and program analysis.
- Teaching Assistant: *Principles and Techniques of Compilers* (Spring 2024)

Beihang University   2019.09 - 2023.06
Bachelor of Computer Science and Technology
- GPA 3.84/4.00. Awarded the **National Scholarship** 2022. **Outstanding Graduate** of BUAA.
- Won **the First Price** of NSCSCC Compilation System Design Competition 2021, ranking 2nd overall.
- Teaching Assistant: *Programming in Practice* (Fall 2020), *Object-oriented Design and Construction* (Fall 2021, Spring 2022).

Research

A lightweight edge-side compiler for neural network operators   ⎇ roife/llvm-lite
Personal project for undergraduate thesis at BUAA. Funded by Huawei.   2022.06 - 2023.05
- Developed an lightweight compiler for LLVM-IR on edge devices, with trimming works to the LLVM codegen module.
- Utilizing shape information on edge device to perform secondary optimizations on offline-compiled LLVM IR format neural network operators, to reduce the temporal and spatial overhead during operator runtime.

Projects

Vizsla   (In developing, currently private)
Lab Project. An **incremental-computing** IDE for (System)Verilog.   #Rust #Verilog #IDE
- **Primary Developer.** Designed the architecture of IDE and implemented most of features.
- Aimed at equiping hardware development with modern IDE features, enhancing the both productivity and code quality.
- Based on LSP, enabling real-time and low-latency parsing and semantic analysis with incremental computation.

Ayame   ⎇ No-SF-Work/ayame
Collaborative Project on a SSA-based compiler from C to LLVM-IR/ARMv7.   #Java #ARM #Compiler
- **Collaborator**. Implemented register allocation via graph coloring and machine-dependent optimizations.
- Project for NSCSCC Compilation System Design Competition, ranking 1st on nearly 1/2 of testcases in the competition.

Hanggai   ⎇ Caniformia
Collaborative Project on an educational app for the course *Introduction to Aeronautics and Astronautics.*   #Swift #Ruby
- **Collaborator.** Participated in iOS app and web backend development.

Open-source contributions
rust-lang/rust-analyzer (active), rust-lang/rust-clippy, yuin/goldmark, doomemacs/doomemacs and more on GitHub

Skills

- **Programming Languages**: Not limited to specific language. Especially proficient in C, C++, Java, Rust, Swift, Python, Javascript, Ruby, (System)Verilog.
- **PL Theory**: Familiar with type systems, formal semantics and formal verification.
- **Compiler**: Proficient in compilation optimizations and various program representations such as SSA. Familiar with parsers and interpreters development; knowledgeable about LLVM.
- **IDE**: Knowledgeable in IDE architecture based on incremental computation, especially familiar with rust-analyzer; proficient in language server protocol.
- **Program Analysis**: Familiar with static analysis algorithm such as pointer analysis, IDFS, etc; proficient in analysis on Java.
- **Web & Mobile**: Full-stack. Skilled in Vue, Rails, Docker, PostgreSQL, Redis; familiar with SwiftUI.
- **Tools**: Proficient in Emacs; comfortable working in macOS and Linux; skilled in leveraging AI.

Misc

- **Languages**: Chinese (native), English (fluent)