

# Roife

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## Education

### Nanjing University

2023.09 - 2026.06 (expected)

Master's Degree in Computer Science and Technology

- Member of Pascal Research Group, focus on PL and program analysis.
- Teaching Assistant for *Principles and Techniques of Compilers* (Spring 2024)

### Beihang University

2019.09 - 2023.06

Bachelor's Degree in Computer Science and Technology

- GPA 3.84/4.00. Awarded the **National Scholarship** 2022 (top 0.2% national-wide) and **Outstanding Graduate of BUAA**.
  - Won the **First Prize** in the NSCSCC Compilation System Design Competition 2021, ranking 2nd overall.
  - Teaching Assistant for *Programming in Practice* (Fall 2020), *Object-oriented Design and Construction* (Fall 2021, Spring 2022).
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## Projects

**Vizsla**, a modern Verilog/SV IDE for hardware development.

(In development)

- (*Lab Project*) **Project Leader** and **Primary Developer**, designed the architecture and IRs, and implemented most of features.
- Enabling real-time parsing and program analysis through **incremental computation** to provide features like code navigation, refactoring, code completion, etc..

**LLVM-Lite**, a lightweight edge-side LLVM IR compiler for neural network operators.

🐙 roife/llvm-lite

- (*Lab project*, funded by Huawei) **Independently Designed and Developed** for my undergraduate thesis.
- Utilizing shape information of neural network operators to perform secondary optimizations on offline-compiled LLVM IR, to reduce the temporal and spatial overhead during operator runtime.

**Hanggai**, an educational app for the course *Introduction to Aeronautics and Astronautics*.

🐙 Caniformia

- (*Collaborative Project*) **Collaborator**, participated in the development of iOS app using SwiftUI and web backend using RoR.

## Open-source contributions

- Rust-lang: 🐙 rust-lang/rust-analyzer, 🐙 rust-lang/rust-clippy, 🐙 rust-lang/rustup
  - LLVM Foundation: 🐙 llvm/llvm-project, 🐙 clangd/vscode-clangd, 🐙 llvm/clangd-www
  - 🐙 moonbitlang/tree-sitter-moonbit, 🐙 yuin/goldmark, 🐙 doomemacs/doomemacs and more on my GitHub.
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## Skills

- **Programming Languages:** Not limited to specific language. Especially proficient in C, C++, Java, Rust, Python, Verilog/SystemVerilog. Comfortable with Ruby, Swift, JavaScript, OCaml, Coq, Haskell, etc.
  - **PL Theory:** Familiar with type system, formal semantics and formal verification.
  - **Compiler:** Proficient in compilation optimizations and various program representations such as SSA, etc. Familiar with parsers and interpreters development; knowledgeable about LLVM.
  - **IDE:** Knowledgeable in IDE based on LSP and incremental computation, especially familiar with rust-analyzer and clangd.
  - **Program Analysis:** Familiar with static analysis algorithm such as pointer analysis, IFDS, etc; proficient in analysis on Java.
  - **Web & Mobile:** Full-stack. Skilled in Vue, RoR, Docker, PostgreSQL, Redis; familiar with SwiftUI.
  - **Tools:** Proficient in Emacs; comfortable working in macOS and Linux; skilled in leveraging AI.
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## Misc

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