

KIVA Z.

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EDUCATION

Southwest Jiaotong University, Chengdu, China 2019/09 - present
Major in Physics, Undergraduate 1, GPA: 3.83/4.00

WORK EXPERIENCE

Covariant Innovation, Remote 2020/02 - present
Co-founder Technical Leader

CovScript Compiler

<https://github.com/imkiva/covscript-rs>

- CovScript compiler, which targets CovScript VM.
- Implemented gradual typing system with static type inference.
- Implemented an analyzer which checks possible runtime errors.
- Implemented a REPL with smart tab-completion.
- Written in Rust, but can be called from C/C++.
- Learned a lot about type theory, type system and compile-time optimization.

Mozart++ Template Library

<https://github.com/libmozart/mozart>

- Implemented components, such as EventEmitter, String Formatter, Process, etc.
- Helped to separate modules and make framework highly decoupled.
- Learned a lot about C++ template metaprogramming and cross platform API design.

PERSONAL PROJECTS

fluorine

<https://github.com/imkiva/fluorine-rs>

A functional programming language with various modern features that encourage safety and speed.

- Trait-based object-oriented programming
- Generic types with generic constraints
- Rust-like enum data declration and pattern matching.
- Optional type hints and global type inference and type checker.
- Operators overloading via traits.
- Easy-to-use ffi macros.

KiVM

<https://github.com/imkiva/KiVM>

Simple Java Virtual Machine designed for embedded platforms, following JVM specification 8ed

- Support standard JNI interfaces, and can be expanded by porting the underlying library of HotSpot VM
- Support most of Java 8's new features, such as lambda expressions and Stream operations
- Garbage Collector using self-designed G1-Copying algorithm
- Successfully run PaperSpigot-MC server on KiVM
- Compatible with OpenJDK/OracleJDK
- Support template interpreter (experimental) and bytecode control flow analysis
- Learned a lot about runtime optimization

NeoTerm

<https://github.com/NeoTerm/NeoTerm>

A modern-designed terminal emulator for Android

- Powerful, use apt/dpkg to manage over 1200 packages
- User friendly, Support multi-session, X11 (experimental), and allow external programs to call programs in the terminal
- Flexible, support third-party extensions/plugins
- Customizable, support color scheme and shortcut key settings and hot-update
- Learned a lot about UI design, custom view drawing, etc.

SKILLS

- **Programming Languages: multilingual** (not limited to any specific language), and especially experienced in Java/C/C++/Rust/Haskell/CovScript, comfortable with Kotlin/JavaScript/Swift (in ranom order).
- **Rust: 1 years** of experience, familiar with Rust language features and implementations, especially its LLVM backend.
- **Modern C++ (>= C++11): 3 years** of experience, especially experienced in templates and template metaprogramming, and understand the C++ implementation mechanism in LLVM.

- **Kotlin/Java:** **6 years** of experience, Implemented a subset of Java Virtual Machine, familiar with HotSpot VM, gc algorithms and JIT compiler.
- **Haskell/Arend:** Implemented a subset of Java Virtual Machine in Haskell, and have a little experience in Haskell/Arend for simple formal verification.
- **Compilers:** Familiar with compiler systems, static analysis and optimization.
Source code I've ever read: Javac, Hotspot VM, libtcc
- **Development tools:** Comfortable with any OS/editors, usually use JetBrains IDE, Vim under macOS and WSL, experienced in Git and GitHub.

MISCELLANEOUS

- Bintray: <https://bintray.com/imkiva>, Android development utilities.
- Language: English - CET-4, Chinese - native
- Open Source Contribution: <https://github.com/imkiva>
- **1 kyu** on CodeWars, primarily in Haskell
- Programming for interest, powered by love.
- Love music, free and sharing, prefer remote work