KIRA PROKOPENKO

she/her

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Compiler Engineer

WHO AM I?

Curious compiler and runtime engineer experienced in exploring large code bases and brainstorming ways of integrating new features into them
I am interested in writing idiomatic stable high-performance code, developing tools for other programmers and look forward to continuing working with bleeding edge technologies

LANGUAGES&TECHNOLOGIES THAT I KNOW

Native	C, C++, Haskell
Fluent	Java, Zig, CMake, Go, Rust
Professional	Idirs, Kotlin, Ruby, Python, TypeScript, C#, GDScript
Basic	Bash, Coq, Arend, SQL, Prolog, ECMAScript, Elixir, x86 assembly, LaTeX, Solidity
Beginner	Pearl, Clojure, Lua
Techs	git, ANTLR4, Happy, tsc, OpenJDK, Z3, …

EXPERIENCE

2024 — current
Compiler Engineer — **GenLayer Labs**
Created wasm-based virtual machine[P]

1. Modified Wasmtime for project needs
2. Implemented "wasm os kernel" for blockchain specific functionality
3. Created blockchain storage DB
4. Proposed consensus algorithm rework

`WASM / Rust / Blockchain`

2022 — 2024
Compiler and Runtime Engineer — **Huawei R&D**
Worked on standard libraries development, and implemented following from scratch:

1. Interoperability between statically and dynamically typed languages, including effective JIT compilation and working with common GC[P][P] Got 2x performance increase
2. Type Creation API in reflections library
3. Documentation generator from source code[P]
4. Bytecode files linker[P]
5. Language generation into unmatching VM bytecode, including Type API

`C++ / Go / x86_64 asm / TypeScript / Ruby / Private languages / ANTLR4`

2020
intern
Junior C++Developer — **vasexpets**
Worked on system intrusion monitor, which supervised usb devices and services

`C++ / GNU/Linux`

EDUCATION

2023 — **discontinued**
Master's Degree
Tools for Developing and Analyzing Programs — **ITMO University**
Implemented intrinsic in OpenJDK for RISC-V, built Sea of Nodes for TS, implemented DPLL SAT solver

`tsc / OpenJDK / Z3`

2019 — 2023
Bachelor's Degree
Applied Math and CS — **ITMO University**
Among other subjects, I studied type theory, logics in category theory and semantics of programming languages. Implemented following projects:

1. Lama language compiler to x86_32 assembly, including precise mark-and-copy GC[P]
2. LL(1) parser generator (Haskell → Haskell[P] | Idris[P])
3. Copy-on-write fork in xv6[P]
4. Few proofs in Coq in big and small step semantics, as well as in Hoare triples[P]
5. Toy language interpreter in Haskell[P]

2015 — 2019
School, Computer Graphics Support Group — **Physics and Mathematics Lyceum #30, St. Petersburg**
Gave talks at 9 scientific conferences. Personal projects include:

1. Realtime 3D rendering engine with OpenGL/DirectX & WinAPI
2. Ray tracing engine on CPU
3. Ray marching framework using SDF on GPU

`C / C++ / OpenGL / DirectX / GLSL / HLSL`