

KIRA PROKOPENKO

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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 programming languages design, implementation, tooling and everything related for over seven years and look forward to continuing working on bleeding edge technologies.

LANGUAGES&TECHNOLOGIES THAT I KNOW

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

EXPERIENCE

2024 — current	Compiler Engineer Created wasm-based virtual machine ^p <ol style="list-style-type: none">Modified Wasmtime for project needsImplemented "wasm os kernel" for blockchain specific functionalityCreated blockchain storage DBProposed consensus algorithm rework WASM / Rust / Blockchain	GenLayer Labs
2022 — 2024	Compiler and Runtime Engineer Worked on standard libraries development, and implemented following from scratch: <ol style="list-style-type: none">Interoperability between statically and dynamically typed languages, including effective JIT compilation and working with common GC^{pp}. Got 2x performance increaseType Creation API in reflections libraryDocumentation generator from source code^pBytecode files linker^pLanguage generation into unmatching VM bytecode, including Type API C++ / Go / x86_64 asm / TypeScript / Ruby / Private languages / ANTLR4	Huawei R&D
2020 intern	Junior C++ Developer Worked on system intrusion monitor, which supervised usb devices and services C++ / GNU/Linux	vasexpets
2023 — discontinued Master's Degree	Tools for Developing and Analyzing Programs Implemented intrinsic in OpenJDK for RISC-V, built Sea of Nodes for TS, implemented DPLL SAT solver tsc / OpenJDK / Z3	ITMO University
2019 — 2023 Bachelor's Degree	Applied Math and CS Among other subjects, I studied type theory, logics in category theory and semantics of programming languages. Implemented following projects: <ol style="list-style-type: none">Lama language compiler to x86_32 assembly, including precise mark-and-copy GC^pLL(1) parser generator (Haskell \rightarrow Haskell^p Idris^p)Copy-on-write fork in xv6^pFew proofs in Coq in big and small step semantics, as well as in Hoare triples^pToy language interpreter in Haskell^p	ITMO University
2015 — 2019	School, Computer Graphics Support Group Gave talks at 9 scientific conferences. Personal projects include: <ol style="list-style-type: none">Realtime 3D rendering engine with OpenGL/DirectX & WinAPIRay tracing engine on CPURay marching framework using SDF on GPU C / C++ / OpenGL / DirectX / GLSL / HLSL	Physics and Mathematics Lyceum #30, St. Petersburg