Denis Krylov

Senior Software Engeneer

C++

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d-krylov

Yerevan (GMT + 4)

SUMMARY

Experienced C++ engineer with over 10 years of expertise in systems programming, compiler and language runtime development. Worked at Samsung on a neural network compiler and at Huawei on a language virtual machine and an AOT compilator. Background in computer graphics, computational geometry, and applied mathematics.

EDUCATION

2004 - 2009

Ivanovo State Power Engineering University

Specialist Degree in Industrial Electronics

LANGUAGES

English - Professional working proficiency

Russian - Native proficiency

SKILLS

Languages: C++ 23, C, Assembler x86-64, GLSL, Python, TeX

GPU API: Vulkan, OpenGL, CUDA

Miscellaneous: Computer graphics, PBR, Linear Algebra

EXPERIENCE

2022 - now **Professional development break**

Dedicated time to deepening expertise in computer graphics, computational geometry, and mathematics. Studying formal methods and theorem proving using Lean and Coq. Developing personal projects in rendering, geometry processing, and formal verification. Project descriptions are available on my GitHub.

2020 – 2022 **Huawei Russian Research Institute**

Contributed to the development of the Ark Compiler Runtime, the core of the multi-platform runtime for OpenHarmony. It provides execution support for Ark bytecode and infrastructure for languages such as Java and JavaScript. Key contributions:

- Enhanced the bytecode assembler for more efficient code generation and a user-friendly API.
- Added support for Java language features in the bytecode converter.
- Implemented JavaScript support in the bytecode interpreter and AOT compiler.
- Developed tools for performance testing of the bytecode verifier and integrated them into CI pipelines.
- Optimized calls from the interpreter to AOT-compiled functions.

2018 – 2020 **Samsung R&D Institute Russia**

Contributed to the development of ONE, a frontend compiler and IR framework designed to optimize neural networks for efficient execution on various hardware accelerators. It is part of Samsung's AI compilation toolchain. Key contributions:

- Developed a testing framework for the compiler.
- Added support for TensorFlow operators in the IR generator and backend.

2015 – 2018 **MCST (Microprocessor Company)**

Participated in a project focused on autonomous verification of an RTL processor model. Key responsibilities included:

- Writing SPARC assembler tests to verify the L2 cache RTL model.
- Creating SPARC assembler tests for verifying arithmetic instructions.
- Developing a test generator for verifying ALU arithmetic instructions in RTL.