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+7 (965) 342 - 14 - 11

Moscow

nniikon

| | |
|---|---|
| Russian | Native |
| English | B2-C1 |

## Skills

### Languages:

**Experienced:**
C, C++, SystemVerilog, CUDA
**Familiar with:**
x86-64, RISC-V asm, Python

### Tools

perf, git, make, cmake, LaTeX, bash, Doxygen, Graphviz, GitLab+GitHub CI/CD, Docker, Vivado, Verilator

## Area of interest

Modern CPU and GPU microarchitecture, compilers, performance optimizations, high performance libraries

# Kasparov Nikolay

*Second year MIPT student*

## Projects

### Mandelbrot Set — March 2024

*Mandelbrot fractal renderer with various optimizations*

Toolset: C/C++, OpenMP, Cuda, perf, gdb, python, make

- **Article on Habr** (in Russian)
- SIMD optimizations
- Multi-threading
- Thread pool library
- OpenMP
- Cuda

### Cman language — June 2024

*Compiler to x86_64*

Toolset: C/C++, x86_64 assembly, Graphviz, Make

- Hand-written recursive descent parser
- Intermediate representations (e.g., AST, IR) for scalability and code optimization
- Both assembly code and binary executables are being generated
- Powerful logging and dumping systems to simplify debugging
- Developed (but not yet deployed) Yacc-like parser generator

### Real Gas Simulation — June 2024

*Highly optimized gas simulation for a physics project*

Toolset: C++, perf, make

- GLM for computations
- OpenGL for rendering
- Spatial partitioning optimization
- Tons of various optimizations resulting in ~20x performance boost

### KolyaGPTv2 — In Development

*Header-only C++ library mimicking PyTorch*

Toolset: C++, GTest, Docker + DockerHub, GitHub CI, CUDA

- Modular architecture
- Uses best practices in unit testing with Google Test and CI/CD
- GPU acceleration using CUDA

# Education

### Moscow Institute of Physics and Technology (MIPT) — 2023 - 2027

*Dolgoprudny, Russia*

Second-year student at the Department of Radio Engineering and Computer Science.

**GPA**: 8.1/10.0

### System programming and compiler technology course (MIPT) — 2023 - 2024

*Dolgoprudny, Russia*

Graduated with a GPA of 10/10.

# Achievements

### Winner of the Phystech Olympiad in Physics. — February 2023

*Scored 41/50*

### Winner of the MSU Olympiad in Physics. — March 2023

*Scored 85/100*

### Second Place Winner – Sber Verilog Hackathon. — November 2024

*Depeloped an FPGA video game using SystemVerilog, synthesized with Vivado, and verified with Verilator. Github:* 🔗