

EDUCATION

- **Moscow Institute of Physics and Technology** Dolgoprudny, Russia
Bachelor of Applied Mathematics and Physics; GPA: 8.52/10 *September, 2021 – Present*
- **Compiler technology and professional programming** Dolgoprudny, Russia
Course by Ilya Dedinsky *Autumn semester, 2021*
- **Introduction to computer architecture and assembler** Dolgoprudny, Russia
Course by Ilya Dedinsky *Spring semester, 2022*
- **Uses and applications of C++** Dolgoprudny, Russia
Course by Konstantin Vladimirov *September, 2022 – May, 2023*
- **Graph algorithms course** Moscow, Russia
Course conducted by Huawei *Spring semester, 2024*

EXPERIENCE

- **ISP RAS** Moscow, Russia
Intern *July – August, 2022*
 - **Task:** Port of an algorithm of fast conversion from floating-point numbers to strings to the standard C library of RTOS.
- **Huawei Russian Research Institute** Moscow, Russia
Assistant engineer *August 2023 – Present*
 - **KCacheGrind:** implemented visualization of control flow graph based on the profile data.
 - **Internal projects:** architecture description and simulation, execution trace analysis

PROJECTS

C++

- **Triangles:** program that intersects triangles in 3D using octree.
- **Threaded splay tree:** implementation of threaded binary search tree and of splay tree as its inheritor. Two types of nodes are provided: regular, containing keys, and augmented, also containing subtree sizes for answering range-based queries in $O(\log n)$ time. Said range-based queries are finding k -th lowest element and giving the number of elements less than the given one.
- **Red-black tree:** implementation of red-black tree which nodes are augmented with subtree sizes for the purpose described above
- **Matrix:** implementation of a class representing matrix with two algorithms for computing determinant: Gaussian elimination (for a matrix of floating-point values) and Bareiss algorithms (for a matrix of integer values)
- **Graphs:** implementation of a graph represented by an adjacency list. Some algorithms are also implemented: BFS, DFS, Dijkstra's algorithm, Bellman-Ford algorithm, Johnson's algorithm.

C

- **Processor emulator:** project consisting of 3 parts: 1) small proprietary assembly language and the corresponding assembler, 2) disassembler, 3) emulator.
- **Binary translator:** the program that translates binary code generated by the proprietary assembler into x86-64 machine code and executes it just after translation without making any executable.
- **Hash table:** implementation of a separate chaining hash table. The quality of 7 hash functions was examined and the performance of search operation was boosted by using SIMD and x86-64 assembly (inline assembly and the one written in a separate file).

PROGRAMMING SKILLS

- **Languages:** C++, C; Python (for code generation or simple data analysis); x86-64 assembly, ARM assembly.
- **Tools:** bash, make, CMake, git, valgrind, gdb, Graphviz, KCacheGrind.
- **Other skills:** LaTeX, Markdown.