

Kirill Grinko

Personal

Hard skills C++, Algorithms & data structures, Concurrency, C, Assembly x86-64, Python, LaTeX, Git, CMake, Gitlab CI/CD, GoogleTest, Bash, Docker, Qt, SFML.

Soft skills Hard-working, Quick-learning, Organised, Outgoing and collaborative.

Languages English (B2), Chinese (A1), Russian (native speaker).

Hobbies Calisthenics, skiing, cycling, piano.

Projects

- Summer 2025 **Metrics lib**, *Github page (clickable)*, Used tools: C++, CMake, Bash
A high-performance C++ library for collecting, aggregating, and writing metrics to a file. Uses lock-free containers implemented with a hazard pointer scheme for safe memory reclamation. Features an extensible architecture based on templates and interfaces, allowing users to easily define custom metrics. Includes a modular codebase with CI powered by GitHub Actions for automated building, formatting, and testing.
- Spring 2025 **Concurrency course homework**, Used tools: C++
Implemented various synchronization primitives using atomic operations only. Built a thread pool and stackful coroutines. Combined them to create fibers (user-space cooperative threads) and implemented synchronization primitives for them. Developed functional combinators for working with futures (representing values computed by asynchronous operations). Implemented a lock-free data structures (atomic shared_ptr, stack, queue) using the hazard pointers scheme.
- Fall 2024 – **C++ course homework**, *Github page (clickable)*, Used tools: C++
Spring 2025 Implemented template allocator-aware data structures (unordered_map, list, smart pointers, strategy-based array, matrix), type-erased configuration system with vtable, compile-time 8-puzzle solver, JSON converter, geometry primitives, big_integer.
- Fall 2024 **Graphing Calculator**, *Github page (clickable)*, Used tools: C++, SFML, CMake
A graphing calculator and plotter application. The Bridge pattern is used to separate math logic from rendering.
- Fall 2024 – **Algorithms course homework**, *Github page (clickable)*, Used tools: C++
Spring 2025 Implemented solutions to competitive programming problems covering fundamental algorithms and data structures, dynamic programming techniques, graph algorithms, algorithms on strings, and number theory algorithms.
- Spring 2024 **Box with molecules**, *Github page (clickable)*, Used tools: C++, Qt, CMake, Python (with numpy, scipy, matplotlib)
A simulation of an ideal gas in an enclosed space, including a small research component to test the validity of the Maxwell distribution.
- Fall 2023 – **Physics Laboratory Works**, *Github page (clickable)*, Used tools: LaTeX, Python
Spring 2024 (with numpy, matplotlib)
A collection of completed laboratory works in physics, including theoretical calculations, experimental data analysis, and visualizations using Python.
- Fall 2023 **MBTI test**, *Github page (clickable)*, Used tools: Python, Qt, SQL
A program for taking the Myers–Briggs Type Indicator (MBTI) personality test.
- Fall 2023 **Text editor**, *Github page (clickable)*, Used tools: Python
A simple text editor designed for use in an internet browser.

Education

- 2023 – present **Moscow Institute of Physics and Technology**, *finished 4th semester bachelor*, Overall GPA 4.70/5, Programming courses GPA 4.81/5
Phystech School of applied Mathematics and Informatics.
- 2019 – 2023 **Moscow State School 57**, *8-11 grade*, GPA 5/5
Focus on physics and math. Graduated with federal and Moscow gold medals.

Achievements

- 2022 – 2023 All-Russian Olympiad for schoolchildren in physics (Final stage participant, top 80 in country); Phystech (MIPT) Olympiad in physics (Gold); Rosatom Olympiad in physics (Silver); Moscow Olympiad for schoolchildren in physics (Silver).
- 2021 – 2022 Rosatom Olympiad in physics and maths (Gold, Silver); All-Russian Olympiad for schoolchildren in physics (Regional stage prize winner); Phystech (MIPT) Olympiad in physics and maths (Silver, Silver).
- 2020 – 2021 All-Russian Olympiad for schoolchildren in physics (Regional stage prize winner); Moscow Olympiad for schoolchildren in physics (Silver).
- 2019 – 2020 International Experimental Physics Olympiad (Bronze); Moscow Olympiad for schoolchildren in physics (Silver).

Extracurricular activities

- 2019 – 2023 **Olympiad Physics Classes**
Theoretical and experimental training for All-Russian Olympiad for schoolchildren in physics, organized by the Moscow City Department of Education.
- 2020 – 2022 **Yandex Lyceum**
Python programming classes for high school students. [More info \(clickable\).](#)
- 2021 **QuSoft Quantum Quest**
An online course on quantum computing for high school students, developed by Michael Walter and Māris Ozols. [More info \(clickable\).](#)

Courses taken

- MIPT Analytical Geometry; Introduction to Mathematical Analysis; General Physics: Mechanics; Algebra of Logic, Combinatorics, Graph Theory; Python Practicum; Linear Algebra; Multivariate Analysis, Integrals, and Sequences; General Physics: Thermodynamics and Molecular Physics; General Physics: Laboratory Practicum 1 – 2; Fundamentals of Higher Algebra and Coding Theory; Programming Technologies; Multiple Integrals and Field Theory; Fundamentals of Theory of Measure and Probability; Computer Architecture and Operating Systems; Harmonic Analysis; Probability Theory; Computing Architecture and Assembly Languages; Concurrency; Discrete Structures 1 – 2; Differential Equations 1 – 2; Algorithms and Data Structures 1 – 3; Programming in C++ 1 – 2.