EN | RU

Egor Makarenko

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C++ / Python software developer

with an experience in robotics, computer vision and web services.
Looking for interesting algorithmic and infrastructure challenges.

Work experience

2024–2026 **Software developer**, *Yandex Self-Driving Group LLC*

- Developed and supported ROS nodes (C++, OpenCV) for calibrating intrinsic parameters of cameras and lidars on robotaxi and delivery robots.
- Applied Go for pipeline configuration using Protobuf messages.
- Developed Python tools for debugging, data visualization and analysis using Boost.Python for generating bindings to C++ code.
- Wrote unit tests with Google Test, Pytest and Hypothesis.
- Performed experiments to develop a calibration method for lidars.
- Redesigned the service architecture and set up automatic data collection, simplifying quality analysis and making the process reproducible.

2022–2024 **Software developer**, *Sudo LLC*

- Developed web-services using Python (FastAPI, Jupyter Widgets) and TypeScript (React, Redux, Next.js) for performing scientific data analysis in geophysics.
- Accelerated calculations with NumPy, Numba and Dask.
- Used OpenCL to transfer some computations to the GPU.
- Set up CI/CD pipelines (build, tests, deploy) with GitLab CI, Docker Compose and Nginx-Proxy.
- Provided technical consultations for students taking internships and completing their thesis at the company.

2019–2020 **Researcher Intern**, *ITMO University, International Laboratory "Computer Technologies"*

- Developed tools in Java used for data analysis and visualization in bioinformatics.
- Researched solutions to the flux variance analysis problem using IBM CPLEX.

Education

ITMO University, Information Technologies and Programming Faculty

2019–2022 **MSc, Applied Mathematics and Computer Science**

Programming and Artificial Intelligence
Thesis: Accelerating calculations of first-order reversal curves using GPU computing.

2015–2019 **BSc, Applied Mathematics and Computer Science**

Mathematical Models and Algorithms in Software Development
Thesis: Solver for the FVA problem based on the reduction to mixed integer linear programming.

Extra courses

YSDA: Courses «**C++ Language**», «**Parallel and Concurrent Programming**» (2025) — Yandex
Coursera: Specialization "**The Art of Modern C++ Development**" (2021) — Yandex, MIPT
SPTDC: Summer school on practice and theory of distributed computing (2019) — JUG Ru

Professional skills

Main development stack: **C++** (STL, Boost, OpenCV, OpenCL, GTest, CMake, vcpkg, ROS, Arduino), **Python** (NumPy, Numba, Dask, Cython, FastAPI, Pydantic, SQLAlchemy, Poetry, Matplotlib, Plotly).

Additional expertise in web development with **TypeScript** (React, Redux, Next.js, NestJS), **HTML**, **CSS**; had some experience with **Go**, **Java**, **Bash**, **SQL**, **x86 Assembly** for work and study projects.

I am familiar with basic **algorithms and data structures**, methods of **machine learning**, have experience preparing datasets and training neural networks with **PyTorch** and **TensorFlow**.

I use **Linux**, **Git**, **Docker**, **VSCode**, and I am learning to use AI agents for development.

English – C1, **Russian** – native.