

Piotr Rybicki

Software Architect · High-Performance & Real-Time Systems

Warsaw / remote

LANGUAGES Polish (native) · English (C1)

PROFESSIONAL EXPERIENCE

Career break

05.2026 – present

- See Personal Projects section

Tenstorrent, Remote — Staff Software Engineer

09.2025 – 04.2026

- Implemented & validated low-level features of a next-generation AI accelerator in the pre-silicon phase, e.g. L1/L2 cache intrinsics
- Integrated AI-assisted development (Claude Code) into low-level C++ workflows

C++ Claude Code

Robotec.AI, Warsaw — Mid → Senior Software Engineer, Tech Lead

07.2021 – 07.2025

- Tech lead and product owner of ray-tracing-based LiDAR simulation libraries:
 - RobotecGPULidar (open source)
 - RobotecGPUSensors (proprietary)
- Owned the public API adopted by third-party integrators — AWSIM, O3DE
- Designed the internal architecture, CPU/GPU execution model, sensor modeling and performance
- Performance: 500M rays/s sustained, 1900M rays/s peak
 - 237 large LiDARs (VLS-128) simulated in real time (sustained)
 - 913 medium LiDARs (VLP-32C) simulated in real time (sustained)

C++ CUDA OptiX ROS2 C# Unity

Master thesis NoMagic, Warsaw — Robotics Software Engineer

11.2020 – 06.2021

- Developed and maintained a robotic pick & place system, deployed to production at warehouses in France and Switzerland
- Optimized per-camera CPU usage from 111% to 13% (~8×) in the Intel RealSense depth stack
 - Enabled running 16 cameras on one PC at ~150 ms capture latency
 - Open-sourced as a realsense-ros fork
- Master thesis based on this work: on-demand image fetching from one of over a dozen depth cameras

C++ Python ROS2

Master thesis Nencki Institute of Experimental Biology, Warsaw — Laboratory of Emotions Neurobiology

06.2020 – 10.2020 · part-time

- Cooperated with neuroscientists, collected requirements
- Built Python/Qt tooling for annotating and analyzing two-photon microscopy data

Python Qt Numpy Scikit

Internship NVIDIA, Santa Clara — CUDA Performance Team

02.2019 – 07.2019

- Returned to the team after the 2018 internship
- Developed an internal tool for collecting and visualizing CUDA memcopy performance
- Achieved up to 4× memcopy speedup in certain cases

C C++ Python

B2B customer Multi-GPU Computational Fluid Dynamics

12.2018 – 04.2019 · part-time

- Implemented a multi-GPU Lattice Boltzmann simulation
- Designed a networking protocol and implemented a real-time data visualization client

C++ CUDA Python

Internship **NVIDIA**, Santa Clara — CUDA Performance Team

07.2018 – 09.2018

- Worked on CUDA driver internals:
 - Captured baseline performance for a variety of GPU / CPU combinations
 - Experimental reimplementation of CUDA context switching
 - Optimized memory ordering of key atomic operations

C C++

Internship **NoMagic**, Warsaw — Robotics Software Engineer

07.2017 – 09.2017

- Developed and maintained Gazebo simulations
- Integrated neural networks with perception stacks of simulated and real robots
- Coauthored “Improved GQ-CNN: Deep Learning Model for Planning Robust Grasps” ([arXiv:1802.05992](https://arxiv.org/abs/1802.05992))

C++ Python ROS1

Internship **ICM + 7bulls**, Warsaw — CUDA GPU Programmer

07.2016 – 09.2016

- Implemented a parallel algorithm of protein chain evolution on GPU
 - ~100× speedup over the CPU version

C C++ CUDA

PERSONAL PROJECTS

Out-of-core Streaming Point Cloud Visualizer

Demo video ↗

- Renders an entire 15×15 km San Francisco point cloud (180 GiB) at 120 FPS on 4 GB of VRAM
- Key optimizations:
 - GPU software rasterization of points using compute shaders
 - Screen-space-based density prioritization
 - Asynchronous, chunked data loading

C++ Vulkan

EDUCATION

University of Warsaw — Computer Science, Master’s Degree

10.2019 – 07.2021

Thesis: On-demand image fetching from one of over a dozen Intel RealSense depth cameras (carried out at NoMagic)

University of Warsaw, Faculty of Mathematics, Informatics and Mechanics — Computer Science, Bachelor’s Degree

10.2014 – 07.2018

Thesis: Software for a Mars rover analogue for the University Rover Challenge 2018 (ROS/Python)

OTHER ACTIVITY

University of Warsaw Rover Team — Programmers’ Leader

11.2016 – 05.2017 · 11.2017 – 06.2018

- Led a 3–4 person team responsible for teleoperation, machine vision and rover autonomy for the University Rover Challenge

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