FEDERICO PIZZOLATO

HIGH PERFORMANCE COMPUTING ENGINEERING STUDENT



CONTACT

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pizz.dev

PROFILE

Master's student in HPC Engineering at Politecnico di Milano, with a background in AI, parallel computing and telecommunications. I deploy models on constrained hardware, write HPC software in C++/CUDA, and run my own Proxmox cluster serving public web services. Interested in neuromorphic, quantum and photonic computing.

SKILLS

Languages
Proficient: Python (PyTorch, TensorFlow), C/C++, OpenMP
Intermediate: Rust, MPI, CUDA, MATLAB, Bash, Java
Learning: Qiskit, PostgreSQL, Assembly (RISC-V, x86)

Infrastructure
Linux administration, Docker, LXC, Proxmox (cluster), CI/CD (GitHub Actions), monitoring

Networking
TCP/IP, VLANs and firewalls (OPNsense), VPNs (Tailscale), DNS/TLS, Cloudflare Tunnels, signal processing

HPC & Tools
Slurm, Git, ParaView, 3D Design, 3D Printing. Learning KiCad and Gmsh

Spoken Languages
Italian (Native) · English (C1) · German (A2)

EDUCATION

MSc High Performance Computing Engineering — 2025 - 2027 (expected)

Politecnico di Milano

Coursework in Parallel Computing, Quantum Computing, Scientific Computing, and Numerical Methods.

Neuromorphic computing projects: a Spiking Neural Network engine in C++/CUDA.

BSc Information Engineering — 2022 - 2025

Università degli Studi di Padova · Final grade: 98/110 · Avg: 25.0/30

ML focus, with foundations in Telecommunications, Control Systems, Electronics.

Thesis: *"Nano-U: Efficient Semantic Segmentation for Autonomous Navigation in Outdoor Environments"*

PUBLICATIONS

Nano-U: Efficient Terrain Segmentation for Tiny Robot Navigation

F. Pizzolato, F. Pasti, N. Bellotto.
Towards Autonomous Robotic Systems (TAROS) 2026, accepted.
33 KB INT8 terrain segmentation network (3,357 parameters) running bare-metal on an ESP32-S3: 89% mIoU at ~1.7 FPS within 281 KB of RAM. Wrote the full codebase: the Python/TensorFlow pipeline (teacher training, Quantization-Aware Distillation, INT8 export, sweeps) and the pure-Rust firmware, and built the TinyAgri dataset.

PROJECTS

Homelab: Proxmox cluster running public services — 2025 - present

Proxmox VE cluster at home hosting four public services, including pizz.dev, each in its own LXC container or VM. Public traffic arrives only through Cloudflare Tunnels (no open ports); servers sit behind an OPNsense firewall on separate VLANs and are administered only over Tailscale. CI deploys, uptime checks and heartbeats with email alerts, a watchdog for frozen nodes, four weeks of backups.

MicroFlow Extension

Added resize and max-pooling operators to the MicroFlow TinyML engine (Rust, no_std); now adding concatenation, channel split and ONNX model support.

LBM Fluid Dynamics Solver — GROUP PROJECT · HPC SOFTWARE ENGINEERING

Parallel C++ Lattice Boltzmann solver for 2D/3D flows with OpenMP and cache-optimized data structures, validated on standard benchmarks on the MOX cluster.

FSI Solver — GROUP PROJECT · NUMERICAL METHODS FOR PDE

Stationary Stokes–linear elasticity coupling with Taylor-Hood elements, preconditioned GMRES, adaptive mesh refinement and MPI/OpenMP parallelism.

Biblio-Bot

Books university library seats the moment reservations open. Python, Playwright and a Telegram interface, with concurrent browser sessions and partial-booking fallback.

EXPERIENCE

Freelance Private Tutor — 2023 - present

- Lessons in Mathematics, Physics, Chemistry, Computer Science and English.
- 500+ hours with Italian and US students, including SAT and AP Precalculus prep.