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Giacomo Guidotto

Software Engineer

About

Software Engineer building end-to-end systems for large IoT platforms (30+ services, 3M+ real/virtual devices, 400+ users). Worked across React/Next.js micro-frontends, Go microservices on Kubernetes, Kafka/MQTT integrations, and Python data pipelines feeding ML for predictive energy control.
Known for pragmatic, high-leverage improvements (Next.js adoption, Biome rollout) and fast ramp-up (learned Go and shipped production PRs in <1 week).

Experience

Software Developer, Danfoss, Venice, Italy *(Part-time)* Sep 2022 – Present

Frontend / Micro-frontends (TypeScript, React, Next.js)

- Drove adoption of Next.js on top of React in an incubator (PoC/MVP) setting, enabling a more scalable foundation for production features.
- Shipped a new micro-frontend from baseline to production, collaborating across teams on APIs, routing, and shared UI patterns in a micro-frontend architecture.

Backend / Microservices (Go, SQL, Kafka, MQTT)

- Owned a graph-representation microservice end-to-end: researched requirements, designed the data model and APIs, and implemented a sync engine to keep graph/business entities consistent with the database.
- Built MQTT client certificate renewal functionality, improving operational reliability for device connectivity.
- Optimized Kafka producer path for large payloads via chunking + streaming to reduce memory pressure and improve throughput for big messages.

Data / ML Pipelines (Python, MageAI)

- Contributed to Python data processing pipelines (MageAI) interfacing with a data lake and training ML models used for predictive control of energy consumption across business entities.

Promoted from Junior to Mid-level Engineer in 2 years, leading to increased responsibility and impact.

Scientific Researcher, Ca' Foscari University of Venice, Venice, Italy *(Part-time)* Oct 2025 – Present

- Leading development of a Python library for Physics-Informed Neural Networks (PINNs), focusing on modular architecture and strong developer experience.
- Reduced training time by ∼30% via novel stopping criteria and training workflow improvements.

Tech: Python, PyTorch, PyTorch Lightning, uv, Docker, CI/CD.

Education

Ca' Foscari University of Venice, *BSc in Computer Science*, Venice, Italy *(While working)* Sep 2022 – Jul 2025

- **GPA: 29.0/30**. Research thesis on Physics-Informed Neural Networks for epidemiological modeling.

University of Gothenburg, *Erasmus Exchange*, Gothenburg, Sweden *(While working)* Sep 2024 – Jan 2025

- Relevant coursework: Data Science & AI, Functional Programming.

Projects

PINN: Modular Physics-Informed Neural Networks framework (Python, PyTorch Lightning)

- Framework to solve ODEs and inverse problems by composing physics constraints with configurable weights; supports learnable fields and parameters with reusable components.
- Repo: https://github.com/giacomoguidotto/pinn

Workspace: Reproducible dev environment + dotfiles (Nix flakes, home-manager, Dotbot)

- Declarative, XDG-compliant development environment using Nix for reproducible, sandboxed setups.
- Repo: https://github.com/giacomoguidotto/workspace

Achievements

- Selected among top 15% of STEM mentees (2,000+ applicants), LeadTheFuture, 2025.
- Selected for summer school on cutting-edge CS research, BOOST '25, 2025.
- Cambridge Advanced English (C2), Grade: 203, 2025.