Gioele Botta

gioelebotta00@gmail.com • linkedin.com/in/gioele-botta • github.com/GioeleB00

Summary

Software Engineer with a background in theoretical physics (100+ citations), focused on backend systems, distributed simulations, and AI engineering. Experienced in building FastAPI microservices, event-loop–aware simulators, and data-driven capacity planning tools. Strong emphasis on schema validation, testing, CI/CD, and reproducible development.

Featured Project — AsyncFlow

Open-source simulator for data-driven capacity planning of async distributed systems.
Repository (**main**): github.com/AsyncFlow-Sim/AsyncFlow PyPI: asyncflow-sim

- Featured in **Python Weekly** (Issue 711, Aug 2025), one of the most recognized newsletters in the Python ecosystem, and highlighted on **PythonHub** (150k followers on X).
- Models full request lifecycles across configurable topologies (clients, servers, load balancers, network links).
- Provides ready-made KPIs and plots: p50/p95/p99 latency, throughput (RPS), server metrics (queue length, RAM, I/O wait).
- Validated inputs with strict Pydantic schema (YAML/Python builder), reducing errors and ensuring reproducibility.
- Engineering quality: OOP design, 95% test coverage, fully typed (**MyPy**), linted (**Ruff**), CI with GitHub Actions, reproducible dev via Poetry.
- Used for pre-deployment "what-if" capacity planning, SLA/SLO analysis, and bottleneck detection.

Technical Skills

Languages: Python, SQL
Backend: FastAPI, System Design, SimPy, Pydantic
Data/ML: NumPy, Pandas; LLM tooling (LangChain/LangGraph, RAG prototypes)
Infra/DevOps: Docker, Git/GitHub, GitHub Actions (CI/CD), Poetry, Ruff, MyPy, Pytest
Foundations: Linear Algebra, Differential Geometry, Supervised Learning, Physics Modeling

Professional Experience

Software Engineer *Genoa, Italy*
Colouree *Apr 2025 – Present*

- Built *Facile Balneari*, a SaaS analytics platform for public tenders, using FastAPI, Redis, PostgreSQL, Stripe, Docker.
- Analyzed 30+ public tenders with NLP techniques for automated categorization and structured insights.
- Implemented JWT authentication and role-based access control (RBAC) improving platform security.
- Integrated OpenAI APIs (function calling) to generate structured analytical reports.

Data & AI Consultant *Genoa, Italy*
TeMA srl *Feb 2024 – Mar 2025*

- Developed regression models (Python, scikit-learn) for transport-demand forecasting (achieved MAPE $\approx 7\%$).
- Designed and deployed a near real-time population estimation tool (Flask, React, PostgreSQL), achieving $\approx 5\%$ error rate.

Data & Analytics Consultant (Self-Employed) *Poland*
Independent *Oct 2022 – Nov 2023*

- Delivered numerical analyses and Python-based data processing tools for consulting clients.
- Authored concise technical reports for decision-making in applied research projects.

Education & Research

Ph.D. Studies in Theoretical Physics (Quantum Gravity) *Warsaw, Poland*
University of Warsaw *Oct 2017 – Jul 2022*

- Conducted advanced research on mathematical modeling of quantum systems.
- Co-authored 4 peer-reviewed papers (100+ citations). Google Scholar
- Completed coursework and publications; program ended prior to thesis defense.

M.Sc. in Theoretical Physics (110/110 with Honours) *Pavia, Italy*
University of Pavia *Oct 2014 – Dec 2016*