Aliaksei Pilko

Data Scientist & Simulation Engineer

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Professional Experience

Jul. 2024 – Present — **Senior Data Scientist**, *AiQ Consulting*, London, UK (hybrid)

- Replaced unstable legacy airport simulation code with a full stack platform (Python, Django, React/TypeScript, GCP) with CI/CD, Grafana/Prometheus and Sentry. Delivered internally in 1 year, eliminating key person risk on CTO and uncertain project delays.
- Mentored junior engineers from data backgrounds to autonomously contribute to full-stack projects, reducing key-person risk.
- Introduced company-wide data platform based on Dagster, integrating SharePoint data and eliminated 2–3 days of duplicated cleaning per project.
- Technical lead on £180k Heathrow optimisation study; created novel what-if algorithms (Polars, Dagster, DuckDB), presenting and delivering executive-level technical reports.

May 2020 – Jun. 2024 — **Doctoral Researcher**, *University of Southampton*, Southampton, UK (remote)

- Architected 100 k-records/day sensor pipeline (cameras, radars, passive RF) with 99 % uptime (Kafka, Docker, Go, TimescaleDB, Grafana) for DfT Innovation project contributing to airspace safety.
- Led development of multi-objective logistics optimization system combining research from multiple universities into deployed web app (Flask, React, Gurobi, ipopt)
- Automated classification of 60 k medical drug datasheets PDFs through web-scraping and Gemini/Vertex AI structured tool calling. Results lead to follow on grant funding.
- Designed and field-tested novel UAS strategic deconfliction system (C++ custom libraries, Django, React). Successfully validated concept in live trials, enabling safer integration of drones in shared airspace.

May 2019 – Sep. 2019 — **Machine-Learning Intern**, *Tekever*, Southampton, UK

Implemented C# anomaly detection & trajectory prediction for maritime UAS tracking; expanded coverage 10x and integrated onto forward-deployed UAVs with intermittent connectivity.

Education

Feb. 2021 – Jun. 2024 — **PhD in Computational Engineering**, *University of Southampton*

Developed novel risk-analysis models for Uncrewed Aerial Systems (UAS) using probabilistic simulations and optimisation. Prototyped in Python and written as parallelized C++ library with Python bindings for 230x faster computation.

Sep. 2017 – Jun. 2020 — **BEng in Aerospace Engineering**, *University of Southampton*

Designed UAV control systems (Simulink) and autonomous robots (C++), plus agent-based airspace traffic models (Java).

Technical Skills

Languages	Python, C++, TypeScript, SQL
Data & ML	Pandas, Polars, PyTorch, Scikit-learn, Dagster, DuckDB
Back-end	Django, FastAPI, Flask, LLM APIs
DevOps	Docker, AWS (EC2, S3, Lambda), GCP (Compute, Cloud Run), GitHub Actions, Grafana/Prometheus
Web	React, Svelte, Cesium, deckgl