Aliaksei **Pilko**

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Education

PhD Aerospace Engineering
UNIVERSITY OF SOUTHAMPTON *Feb 2021 – Jun 2024*

- Developed probabilistic risk analysis methodologies for Uncrewed Aircraft
- Designed and implemented HPC C++ library and Python bindings

- Architected and implemented ETL pipeline for novel air traffic sensor data.
  Used Kafka, Docker, Go, TimescaleDB, Nginx, Grafana
- Developed Quasi Monte Carlo Airborne Collision risk model using gathered data in Go

- Developed Value at Risk methods for Uncrewed Aircraft cost benefit analysis
- Designed SOTA land-air logistics optimisation package and integrated flight risk minimisation

- Ability to engage with diverse range of stakeholders and extract technical requirements
- Commercialisation and IP process initiated as result of research

BEng Aeronautics and Astronautics
UNIVERSITY OF SOUTHAMPTON *Sep 2017 – Jun 2020*

- Research Project: Monte Carlo Agent Based Model for estimation of airspace capacity in Java

Professional Experience

Consultant
HAMPSHIRE AEROSPACE CONSULTANCY *Jan 2023 - Jun 2023*

- Consulted on cutting edge research project for multinational defence company

Research Assistant
UNIVERSITY OF SOUTHAMPTON *Jun 2020 - Feb 2021*

- Scale up undergraduate research project as distributed HPC simulation using C++ and HLA NATO standard

Software Engineer
TEKEVER *May 2019 - Sep 2019*

- Fused multiple Big Data marine surveillance sources
- Implemented research-leading Anomaly Detection algorithms for marine behaviour from ground up in C#
- Integration of ML models into UAV ground control station

Skills

Languages	Python, C++, Go, Typescript, Basic CUDA
Technologies	Pandas, Numpy, Scikit-learn, Dask, Django, React, Docker, Kafka, SQL, Linux

Relevant Publications

[1] Aliaksei Pilko, Alexander Blakesley, Jakub Krol, Mario Ferraro, and James Scanlan. ``Adaptive Path Planning for Drones in Realistic Wind Environments: Addressing Energy, Risk, and Battery Constraints''. In: *Transportation Research: Part B* (Under Review).

[2] Aliaksei Pilko, Mario Ferraro, and James Scanlan. ``Quantifying Specific Operation Airborne Collision Risk through Monte Carlo Simulation''. In: *Aerospace* 10.7 (7 July 2023), p. 593. ISSN: 2226-4310. DOI: 10.3390/aerospace10070593.

[3] Aliaksei Pilko, András Sóbester, James P. Scanlan, and Mario Ferraro. ``Spatiotemporal Ground Risk Mapping for Uncrewed Aircraft Systems Operations''. In: *Journal of Aerospace Information Systems* 20.3 (Mar. 2023), pp. 126–139. ISSN: 1940-3151. DOI: 10.2514/1.I011113.

[4] Andy Oakey, Aliaksei Pilko, Tom Cherrett, and James Scanlan. ``Are Drones Safer Than Vans?: A Comparison of Routing Risk in Logistics''. In: *Future Transportation* 2.4 (4 Dec. 2022), pp. 923–938. DOI: 10.3390/futuretransp2040051.

Presentations

IEEE ICUAS, Conference Presentation: Quantifying Ground Risk Factors: A Global Sensitivity Approach — *June 2024 (Under Review)*

IEEE ICRA, Conference Presentation: The Price of a Safe Flight: Risk Cost Based Path Planning — *May 2024 (Accepted Paper)*

CORMSIS, Conference Presentation: Objetive Safety Assurance for Medical UAS Logistics — *February 2023*

Shared Airspace Council, Invited Speaker: Quantifying Flight Risk — *January 2023*

Royal Aeronautical Society, Invited Speaker: 4D Airspace Booking: A Risk Perspective — *October 2022*

AIAA SciTech, Conference Presentation: Spatiotemporal Ground Risk Mapping for Uncrewed Aerial Systems Operations — *January 2022*

Personal Interests

Gliding, Field Hockey, Running, Hiking, Skiing, 3D printing