# Alexander Quessy

London – United Kingdom

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## Summary

Machine learning researcher specializing in deep Reinforcement Learning (RL) and robotics. PhD research focused on developing scalable simulation environments and safe learning methods for autonomous systems. Experience in training large-scale models, computer vision, and real-world robotics deployment.

## Education

**PhD** **University of Bristol**

*Learning to Land: An Unsupervised approach towards Generalization in Reinforcement Learning* *2020-2024*

- Built AI system for autonomous aircraft landing without GPS, using machine learning and computer vision.
- Created fast, efficient flight simulator (FlyerEnv) to train RL agents using parallel computing.
- Received funding and hardware support from BAE Systems, NVIDIA, and AWS.
- Published research covering autonomous systems and robotics.

**MEng Aerospace Engineering** **University of Bristol**

*First Class Honors* *2015-2019*

- Led group design project in collaboration with Airbus on commercial aircraft design.
- Thesis focused on the development of nonlinear flight mechanics and novel control algorithms for asymmetric aircraft approach and landing.

## Work Experience

**DeepWell** **London, UK**

*Research Scientist* *2025-Present*

- Developed advanced time-series analysis models for financial and economic data, implementing both classical statistical methods and machine learning approaches.
- Designed and deployed a financial derivative portfolio optimization system.

**University of Bristol** **Bristol, UK**

*Postgraduate Teaching Assistant* *2020-2024*

- **Aerial Robotics**: Designed and delivered advanced robotics curriculum covering control systems, autonomous navigation, multi-agent coordination, and sensor integration for UAV applications to 30+ graduate students.
- **Bristol mini-RL Conference**: Co-organized Conference (100+ attendees): presented research on safe-RL, secured funding from industry sponsors.
- **Machine Learning**: Taught advanced courses (200+ students) covering deep learning, probabilistic inference, and dimensionality reduction techniques.

**Aeros Flight Training/Self-Employed** **London, UK**

*Flying Instructor & Business Owner* *2017-Present*

- Instructed students across range of ratings, pilot licenses, including commercial, multi-engine instrument and aerobatic.
- Achieved 100% pass rate for all my students flight tests, successfully enabling them to obtain licenses and ratings.

## Technical Experience and Projects

- **Aircraft Landing Site Identification**: Deep CNN-based semantic segmentation for autonomous landing, trained purely in AirSim and validated on real aircraft. Published in AIAA SciTech 2022.
- **FlyerEnv**: Open-source flight dynamics simulator with Gymnasium API for RL research. Implemented model-free and offline model-based RL algorithms with efficient GPU acceleration. Published in IMAV 2023.
- **Safe RL with Minimal Supervision**: Developed safe model based RL algorithm that automatically learns to complete tasks while strictly following safety rules, reducing required training data by 60%.
- **Rewardless Open-Ended Learning**: Developed AI system that automatically discovers and masters diverse skills without pre-defined rewards, combining POET algorithm with mutual information maximization.

## Languages and Technologies

- **Programming Languages:** Experienced: Python and Rust. Competent: C, C++ and MATLAB.
- **Machine Learning Frameworks:** PyTorch (primary), TensorFlow, JAX.
- **Development and Deployment:** HPC experience with CUDA, Slurm clusters, and AWS cloud computing. Proficient in Docker, Bash, Git, and GitHub Actions.