JAN-HENDRIK EWERS

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RESEARCH EXPERIENCE

University of Glasgow

Machine Learning Drive Path Planning for Search and Rescue

2021 – Ongoing

- PhD research project with support from Police Scotland Air Support Unit
- Created a deep reinforcement learning algorithm using PyTorch and C++ to outperform optimisation-based methods from the literature
- Developing recurrent path encoding methods resulting in $100,000$ times reduction in model size and reducing training time to 1%
- Successfully collaborated with various members of the Space Exploration Technologies research group
- Presented at IFAC 2023 World Congress and IROS 2024

University of Glasgow

Optimal Path Planning for Search and Rescue

2020 – 2021

- MEng dissertation project in collaboration with Police Scotland Air Support Unit
- Implementing probability map based search path algorithms using python and MATLAB which outperformed trained search pilots
- Created a novel technique for polynomial spline trajectory generation along a path
- Resulted in peer-reviewed journal publication in *Advanced Control for Applications*

EDUCATION

PhD Aerospace Systems

University Of Glasgow

October 2021 – Ongoing (March 2025)

- Researching "Machine Learning Driven Path Planning For Search and Rescue"
- Supported by full EPSRC Scholarship
- Received both IEEE RAS and IMechE mobility scholarships for attendance at international conferences

MEng Aerospace Systems

University Of Glasgow

September 2016 – June 2021

- Graduated with Honours of the First Class.
- Awarded the British Aerospace Engineering Systems Prize 2021 for the best industrially relevant final year project
- Selected for University of Glasgow's 2017 – 2021 Engineering Excellence Lists

EXPERIENCE

Gibson Robotics

Systems Engineer (hybrid)

June 2020 – Ongoing

- Development of ROS2-based distributed architecture for counter-UAV and surveillance flight control software for fixed-wing and multicopter unmanned aerial vehicle
- Successful implementation of flight control system on physical early TRL counter-UAV prototype resulting in DASA funding and further private investment

Leonardo Electronics

Systems Engineer (full-time contract)

October 2024 – December 2024

- Implemented a novel radar search and track algorithm using reinforcement learning
- Created a full synthetic radar simulation using Python, PyTorch, and StoneSoup
- Developed the businesses understanding of MATLAB and Python for applied machine learning for complex control and autonomy problems

University of Glasgow

Graduate Teaching Assistant (part-time)

September 2019 - Ongoing

- Principal GTA for masters-level course where students developed custom UAVs for novel applications
- Second supervisor for various masters-level thesis projects

BAE Systems

Intern (full-time)

June 2019 – September 2019

- Developed tools to assist in complex version change requests for the Eurofighter Typhoon
- Implemented custom tooling to streamline interdepartmental work packages

University of Glasgow Sports Association Club

Executive Committee Member (part-time)

2017 – 2020

- Shinty President 2020/2021, Shinty Treasurer 2018/2020
- Organised and hosted one of Scotland's largest sixes Shinty tournament

SOFTWARE

Python | PyTorch | C/C++ | Linux | PX4 | Git | Github Actions | ROS(2) | ONNX | Docker