



# Fahmy Adan

 [github.com/fahmyadan](https://github.com/fahmyadan)

 [fahmy.adan14@imperial.ac.uk](mailto:fahmy.adan14@imperial.ac.uk)

 (+44) 7869 585222

## Education

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**Imperial College London**

**Oct 2020 – March 2025**

### Ph.D. in Robotics

Research: Safe coordination and control of multi-agent robotic systems under uncertainty.

Relevant Coursework: Deep Learning, Deep Reinforcement Learning, Mathematics for Machine Learning.

**Imperial College London**

**Oct 2014 – June 2018**

### Masters of Engineering

Coursework: Numerical Optimization, Computational Engineering, Finite Element Analysis, Operations Research.

## Technical Skills

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**Programming Languages:** Python, C/C++, Matlab

**Robotics:** ROS, ROS2, CMake, Setuptools

**ML:** Pytorch, Tensorflow, Numpy, JAX, Slurm

**Miscellaneous:** Linux, Git, Shell, Docker, Apache Spark

## Experience

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**NVIDIA Research**

**Santa Clara, USA**

**April 2025 – Sept 2025**

### *Autonomous Vehicle Research Intern*

- Implemented distributed training pipeline on multi-GPU cluster, including explicit inter-GPU data gathering and broadcasting using PyTorch distributed primitives, to support large-scale training of vision-based foundation models for autonomous driving.
- Leveraged a generative world model to create synthetic data and proposed an information-theoretic learning algorithm to align real world and synthetic representations.
- Demonstrated consistent improvements over baseline mitigation strategies (e.g., data mixing and visual enhancements) in open and closed-loop evaluation.
- The project is under internal review, with additional experiments underway toward external publication.

**Imperial Driverless**

**London, England**

**Nov 2021 – Sept 2024**

### *Perception and Motion Planning Lead, Team Captain*

- Co-founded and led Imperial's autonomous racing team in Europe's largest student engineering competition.
- Designed the perception pipeline using finetuned deep learning models and implemented popular SLAM techniques for autonomous track mapping.
- Secured £5,000 in funding and led the team to a 3rd place finish among international university teams.

**Capita**

**London, England**

**Sept 2022 – Feb 2023**

### *Data Scientist*

- Built scalable Extract, Transform, and Load (ETL) pipelines to monitor live traffic data from Transport for London's CCTV feeds using open source Deep Learning models.
- Implemented MapReduce on Spark to distribute workload across Databricks clusters, improving throughput.
- Automated ingestion of video data from Azure BLOB storage; adapted Fast R-CNN for low-res vehicle detection, reducing false alarms.

**Banco Bilbao Vizcaya Argentaria**

**London, England**

**June 2018 - Sept 2018**

### *eFX Quantitative Analyst Intern*

- Conducted time series analysis on liquidity provider data to approximate non-linear order flow using Taylor Series expansions in MATLAB.
- Delivered insights to senior executives; awarded full-time offer based on research impact.

## Selected Projects and Publications

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### Publications

#### **Decentralised Motion Planning for Autonomous Mining Haulage Trucks using Prioritised Multi-Agent MPPI**

*Kenta Matsui, Fahmy Adan, Panagiotis Angeloudis*

International Federation of Automatic Control: Control in Transportation Systems (2024)

*Proposed prioritised sampling-based planning framework for distributed haulage fleet navigation.*

#### **The Robust Semantic Segmentation UNCV2023 Challenge Results**

*Hanlin Tian, Kenta Matsui, Tianhao Wang, Fahmy Adan*

IEEE International Conference on Computer Vision (2023)

*Ranked top 5 globally in the Uncertainty Estimation for Semantic Segmentation challenge (UNCV2023).*

#### **Constrained Multi-Agent Reinforcement Learning Policies for Cooperative Intersection Navigation and Traffic Compliance**

*Fahmy Adan, Panagiotis Angeloudis, Mohammed Quddus, Washington Ochieng*

IEEE Intelligent Transport Systems Conference (2023)

*Developed policy-constrained MARL algorithm for urban intersection control.*

#### **Driving Style Classification using Deep Temporal Clustering with Enhanced Explainability**

*Yuxiang Feng, Fahmy Adan, Qiming Ye, Panagiotis Angeloudis*

IEEE Intelligent Transport Systems Conference (2023)

*Used deep temporal clustering with explainability layers for driver behaviour analysis.*

### Competitions

#### **Multiple Uncertainties for Autonomous Driving: Uncertainty Estimation for Semantic Segmentation**

5th Place

International Conference on Computer Vision (ICCV, 2023)

### Awards and Teaching

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- **Graduate Teaching Assistant, Imperial College (2020–2022)**  
Courses: Statistics II, Computational Methods I & II, Traffic Engineering.
- **Top student in Kenya – A-Level Physics (2014)**  
Awarded by Cambridge International Examinations for highest global score.
- **A-Level Results:** Mathematics (A\*), Physics (A\*), Economics (A\*), Further Mathematics (A)