Ali Youssef

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Education

University College London London, United Kingdom
Master of Science (MSc) in Robotics and Computation (Artificial Intelligence) *Sep. 2022 – Sep. 2023*
Classification: Distinction.

University of Glasgow Glasgow, United Kingdom
Bachelor of Engineering (BEng) in Mechanical Engineering *Sep. 2016 – June 2020*
Classification: First-Class Honours.

Experience

Research Intern – Computer Vision May. 2025 –
Spatial Intelligence *London, United Kingdom*

- Jointly supervised four postgraduate research projects through an academic-industry collaboration with the University of Bristol.
- Led research on self-supervised Scene Coordinate Regression using multi-modal feature representation learning for robust and generalisable 3D scene reconstruction in real-world settings.
- Investigated temporally consistent object detection novel architectures and learning paradigms for reliable video-based perception and object tracking in complex, dynamic and unstructured environments.
- Contributed to defining short-, medium-, and long-term research directions and assessing their potential benefits and commercial impact for Spatial Intelligence.

Independent Researcher Nov. 2023 – Sep. 2024
University College London *London, United Kingdom*

In collaboration with MSc supervisor:

- Developed feature detection and description models alongside 3D projection algorithms.
- Optimised hyperparameters and conducted thorough experimental evaluations to benchmark performance.
- Enhanced computational efficiency using high-performance computing frameworks for accelerated training.
- Published research paper at ECCV 2024 (Map-free Visual Relocalization workshop).

Mechanical Engineer Intern June 2019 – July 2019
Porsche Middle East *Cairo, Egypt*

- Conducted comprehensive vehicle diagnostics and initial inspections across a wide range of vehicles.
- Performed maintenance and repair tasks in coordination with workshop teams to ensure timely repairs.
- Verified all serviced vehicles met strict quality and safety compliance standards.

Publications

VMatcher: State-Space Semi-Dense Local Feature Matching July. 2025
Preprint

NeRF-Supervised Feature Point Detection and Description Sep. 2024
European Conference on Computer Vision (ECCV 2024), Map-free Visual Relocalization Workshop.

Projects

Optimising Feature Point Detection and Description Using Novel View Synthesis Mar. 2023 – Sep. 2023
University College London *London, United Kingdom*

- Developed synthetic multi-view datasets using Neural Radiance Fields (NeRFs) to simulate realistic camera movements and viewpoints for training feature point detection models.
- Employed perspective projection supervision to adapt models to NeRF-synthesised data, improving generalisability and reducing convergence time by 50%.
- Achieved superior performance on computer vision tasks (pose estimation, point cloud registration, homography estimation) while requiring 97% less training data.

Data-Centric Wind Power Forecasting via Recurrent Neural Networks Oct. 2019 – Apr. 2020
University of Glasgow *Glasgow, United Kingdom*

- Applied recurrent neural networks (RNNs) for wind turbine power prediction.
- Evaluated anomaly detection algorithms (Isolation Forest, Elliptic Envelope, and DBSCAN), demonstrating the impact of data preprocessing on regression accuracy and robustness.
- Benchmarked Long Short-Term Memory (LSTM) and Gated Recurrent Unit (GRU) architectures, with GRU maintaining high accuracy while improving computational efficiency by 25%.

Skills

Programming Languages: Python, C++, MATLAB
Deep Learning Frameworks: PyTorch, Triton, JAX
Robotics: Robot Operating System (ROS)
Cloud Computing: Amazon Web Services (AWS)

Certifications

AWS Solution Architect - Associate (SAA-C02) Aug. 2022 - Aug. 2025