Ali Youssef

ali_m_youssef@outlook.com London, United Kingdom
ayoussf.github.io linkedin.com/in/ali-youssef1 github.com/ayoussf

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 – Jun. 2020*
Classification: First-Class Honours, accredited by the UK Institution of Mechanical Engineers (IMechE).

Experience

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

- Mentored three postgraduate students in collaboration with the University of Bristol during joint academic-industry dissertations, providing both theoretical and technical guidance.
- Developed a self-supervised monocular depth estimation framework using a multi-modal Joint Embedding Predictive Architecture (JEPA) for metric depth prediction across diverse settings.
- Employed state-of-the-art object detection and tracking methods for temporally consistent multi-object tracking in dynamic environments.
- Analysed emerging research trends, assessing their applications and alignment with short- and medium-term objectives.

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

In collaboration with MSc supervisor post-graduation:

- Extended thesis scope by integrating additional baselines and model configurations to further validate the proposed research methodology.
- Refined evaluation protocols and conducted comprehensive analysis across multiple benchmarks, ensuring reliable and accurate model assessment.
- Enhanced models' performance and computational efficiency through extensive hyperparameter optimisations, algorithm vectorisation, and high-performance computing frameworks (JAX).
- Research culminated in a paper published at the ECCV 2024 Map-free Visual Relocalization Workshop.

Mechanical Engineer Intern Jun. 2019 – Jul. 2019
Porsche Middle East *Cairo, Egypt*

- Performed comprehensive vehicle diagnostics and initial inspections under senior engineers' supervision.
- Executed routine maintenance and service tasks in coordination with workshop teams to resolve vehicle faults.
- Verified and documented that all serviced vehicles met strict quality and safety compliance standards.

Publications

Conference Proceedings

A. Youssef and F. Vasconcelos. *NeRF-Supervised Feature Point Detection and Description.* In: European Conference on Computer Vision (ECCV) 2024 Workshops, Springer, pp. 103−119, 2025.

Preprints

A. Youssef. *VMatcher: State-Space Semi-Dense Local Feature Matching.* ArXiv preprint arXiv:2507.23371, 2025.

Academic Projects

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

- Leveraged Neural Radiance Fields (NeRFs) to synthesise realistic multi-view training datasets containing both indoor and outdoor scenes with known camera parameters and depth maps.
- Adapted feature point detectors and descriptors to train on NeRF-synthesised data using perspective projection geometry for supervision, improving generalisability and reducing convergence time by 44%.
- Achieved competitive performance on geometric vision tasks (pose estimation, point cloud registration, and 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 forecasting.
- Evaluated outlier detection algorithms (Isolation Forest, Elliptic Envelope, and DBSCAN) to demonstrate the impact of data preprocessing on regression performance, with Isolation Forest proving most effective.
- Benchmarked Long Short-Term Memory (LSTM) and Gated Recurrent Unit (GRU) architectures, with GRU maintaining high accuracy while reducing computational overhead 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

Languages

English | Arabic

Extra-Curricular Activities

Volunteer, IEEE International Conference on Robotics and Automation (ICRA) 2023 May 2023 – June 2023