

# 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 – 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. [🔗](#)

## 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

University of Glasgow

Oct. 2019 – Apr. 2020

*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