Muhammad Abban Fahim

Dubai, United Arab Emirates | m.abbanfahim@gmail.com | +97155596441 | abban-fahim.github.io
linkedin.com/in/abban-fahim | github.com/abban-fahim

About me

I am a third year undergraduate student of robotics engineering, with research interests in machine vision and reinforcement learning and their applications to autonomous systems. With multiple years of software engineering experience, strong theoretical knowledge, and a constant drive to learn and try new things, I am an aspiring researcher and engineer, looking to apply robotics to real-life problems and products.

Education

Heriot-Watt University, BEng - Robotics, Autonomous and Interactive Systems — Sept 2022 – June 2026

- GPA: 3.9

Skills

Languages: C++, C, Python, Javscript, C#, Rust, Lua, Java

Technologies

ROS	Unity	MATLAB	PyTorch	OpenCV	PlatformIO
Linux	Web development	Svelte	ReactJS	Flask	NodeJS
		Love2D	OpenGL		

Experience

Researcher, Heriot-Watt University – Dubai, UAE — July 2024 – Present

- Developing a surface-water cleaning USV, focusing on vision-aided autonomous navigation and localisation.
- Administering the software engineering aspects of the USV, and developed a photorealistic hardware-in-the-loop simulation with Unity and ROS to enable testing without deployment.
- Drafted design and budget proposals and secured funding to prototype.

President, E4L Society, Heriot-Watt University – Dubai, UAE — Sept 2024 – Jan 2025

- Organised the university's engineering society, from managing events, educational workshops and competitions for students to learn and demosntrate engineering skills, to leading these workshops.
- Recruited and led a team to manage the society's finances, planning, and outreach.

Simulation engineer intern, Alp Autonomy – Remote — June 2024 – Sept 2024

- Developed a hardware-in-the-loop simulator for UAVs, to test flight planning, and generate synthetic data for training deep-learning image segmentation models.
- Demonstrated knowledge of and utilised the Unity game engine, OpenCV, PyTorch and ROS.

Projects

Tic-tac-toe robot — GitHub link

- Dveloped programs with ROS2 and Moveit2 to interface with a manipulator, and V-REP (CoppeliaSim) for simulating a test scene.
- Implemented low-level tasks from scratch with IK and FK.
- Integrated computer vision to allow multiple agents to play tic-tac-toe against the manipulator.

A2RL STEM Competition 2024 — LinkedIn link

- Participated in the competition to develop autonomous racing software for miniature RC cars.
- Secured first place in the competition.
- Implemented theory of PID control, dynamic models, using Python and ROS, to optimise offline trajectories, and mathemtical techniques to learn and improve control parameters.

CIE MCQ Website GitHub link

- Developed a responsive web app for solving CAIE IGCSE and A-level MCQ questions for multiple subjects.
- Implemented real-time feedback, time-tracking and PDF processing.
- Improved results for over a 1000 students, and used feedback to improve and prioritise new app features.

Awards

Curtin University Dubai Hackathon 2022, Second place

- Winner in one-day hackathon with a series of challenges involving Python and web development.

GSMUN 2021, Best Research, DISEC

- Award for best research work done, showcased in an exceptionnal position paper and during debates.