



## Ibrahim Essam

Senior Robotics Engineer

### Senior Robotics Engineer @ Kudan

📅 07/2025 – Ongoing 🗺 Bristol/UK

#### Navigation Technical Lead

📅 07/2025 – Ongoing

- Leading a team of robotics engineers building ROS2-based navigation and SLAM systems.
- Owning all tech-product meetings to align features, feasibility, and timelines.
- Supporting deployments with tuning, sensor setup, and field validation.
- Leading sensor calibration and multi-sensor time synchronization efforts to improve navigation accuracy and system robustness.
- Managing CI/CD for ROS2 packages with DevOps to ensure stability and speed.

➢ Leadership, Architecture, Navigation Systems, ROS2, C++, Python.

#### Senior Robotics Engineer

📅 11/2021 – 07/2025

- Contributed to and maintained Kudan SLAMROS/ROS2 packages, focusing on code quality, maintainability, and performance.
- Developing and maintaining simulation environments using Gazebo, Isaac Sim, and CARLA.
- Developed Python bindings for Kudan's SLAM C++ Libraries, significantly simplifying integration for external developers.
- Architected and developed the KudanStudio application for 3D mapping and digital twins.
- Developed a user-friendly GUI application to manage KudanStudio deployment, packaging applications into Debian packages for streamlined user installation and updates (frequent releases).
- Collaborated closely with the DevOps team to optimize and automate ROS CI processes, substantially reducing build times and enhancing testing reliability, enabling faster feedback loops.
- Performed ongoing evaluations and benchmarking of SLAM algorithms against diverse customer datasets, leading to algorithm enhancements and ensuring robust real-world performance (quality focus).
- Provided expert customer support for ROS package integration and parameter tuning, demonstrating strong communication and problem-solving skills.

➢ ROS/ROS2, C++, Python, WebSockets, CI/CD, Docker

### R&D Software Engineer @ Avelabs

📅 09/2018 - 11/2021 🗺 Cairo/Egypt

#### Autohears

Contributed to the development of Avelab's new Acoustic sensing product (AutoHears) by optimizing and porting existing algorithms to C/C++ for deployment on embedded hardware.

- Optimized and ported existing acoustic sensing algorithms (Beamforming, DOA) to C/C++ for deployment on resource-constrained embedded hardware (TI DSPs), focusing on computational efficiency and performance on target platforms.
- Created comprehensive benchmarks to validate the performance and quality of newly developed embedded algorithms.
- Configured and deployed software on embedded Linux platforms, including Nvidia Jetson AGX Xavier and Raspberry Pi, gaining experience with their specific constraints and environments.
- Developed ROS packages for product integration with broader robotic systems.
- Collected and managed datasets for algorithm validation and testing.

#### Yonohub

Developer Advocate For Yonohub.com (A cloud-based system for Autonomous Vehicles, ADAS, and Robotics).

- Integrated state-of-the-art Deep Learning (DL) models using Python into the Yonohub cloud platform (A cloud-based system for Autonomous Vehicles, ADAS, and Robotics).
- Developed demonstration applications and platform components ('Blocks') showcasing Automotive ADAS (Advanced Driver-Assistance Systems) products and capabilities using these integrated models.
- Created technical content (articles, tutorials) to effectively demonstrate use cases of Yonohub and support platform adoption.



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Senior Robotics Engineer

> Python, C/C++, Embedded Systems, Embedded Linux (Nvidia Jetson, Raspberry Pi), TI DSPs, Efficiency Optimization, Benchmarking, ROS

### Motion Planning and Control Engineer @ AeroVect

📅 11/2020 - 11/2021    📍 Remotely

- Developed and implemented the motion planning and control software stack for The AeroVect Driver.
- Designed and developed safety and emergency stopping algorithms for The AeroVect Driver to ensure safe operation in all scenarios.
- Designed and executed simulations for testing and verification of The AeroVect Driver, ensuring accuracy, robustness and reliability of the system.
- Integrating ROS with the other software components.

> ROS, C++, Control Theory, Autonomous Driving

### Bachelor Thesis and Internship @ Mercedes-Benz R&D

📅 02/2017 - 08/2017    📍 Sindelfingen/Germany

- Developing a Test Robot for Touch Devices Testing.
- Hardware (Robot Construction, Kinematics and Touch Devices)
- Software (CANoe, CAN-bus, Databases and The Test System)
- Making Tests on The Touch Devices with the Robot to analyze the state and develop improvements.
- Implementing new Algorithms and Data structures for the Robot in MATLAB.
- Programming a Graphical User Interface for the System

> Delta Robots, MATLAB, CANoe.

## Projects

- [Edrak. C++ Library for Visual SLAM.](#)
- [Redis-Server. C++ implementation of Redis server.](#)
- [Pure pursuit ROS package for path tracking.](#)
- [binance-dca. Python app to setup DCA orders on Binance.](#)
- [C++ Implementation of a BlockChain.](#)
- [ngrok-ros. ROS package for ngrok.](#)
- [CarSim SFML and ROS based Car Simulator.](#)
- [Concurrent Traffic Simulation.](#)
- [Linux System Monitor C++.](#)
- [Route Planning Project using A\\* C++.](#)
- [Unscented Kalman Filter to estimate the state of multiple cars.](#)
- [Particles Filter C++ Implementation.](#)
- [Time To Collision System \(TTC\) based on Lidar and Camera.](#)
- [PointClouds Obstacles Detection, Segmentation and Clustering](#)
- [Jupyter-ROS \(Contributor\) ROS Support for jupyter notebooks](#)
- [Longitudinal and Lateral Control in CARLA Simulator](#)   [Video](#)
- [Road Semantic Segmentation Using Fully Convolutional Network \(FCN\)](#)