Ali Mohamed Abdelfadil Hassan

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Portfolio: https://alimohamed205.github.io

Professional Summary

Innovative and detail-oriented Embedded & Robotics Engineer with hands-on experience in electronics maintenance, firmware testing, and robotics development. Skilled in C++, Python, ROS, and Embedded Linux, with strong expertise in system integration, hardware–software interfacing, and control systems. Experienced in both simulation and hardware implementation of autonomous robots and industrial embedded applications.

Education

Bachelor of Engineering in Mechatronics Engineering
Assiut University, Egypt | Graduation: **2024**

Skills & Expertise

• Programming Languages: C++ (Modern C++ 11/14/17), Python, C
• Operating Systems: Linux, Embedded Linux, RTOS
• Firmware Testing & Debugging for Embedded Systems
• Electronics Maintenance, Troubleshooting & Hardware Integration
• Video Processing & Perception: OpenCV, TensorFlow, multi-camera systems
• Control & Sensor Fusion: PID, Model Predictive Control, Kalman Filtering
• Simulation & Development Tools: Gazebo, ROS1/ROS2, Docker, Git, Jenkins, CI/CD
• Hardware & Microcontrollers: Jetson Nano, STM32, ARM Cortex, ESP32
• Networking & Communication: TCP/IP, SPI, I2C, UART, MQTT
• Languages: English (B2), German (B1)

Professional Experience

Electronics Maintenance Engineer | Sentafe Technology Company | May 2024 – Oct 2024
• Performed maintenance and troubleshooting for electronic systems and automation equipment.
• Supported testing, repair, and calibration of embedded boards and sensors.
• Gained practical experience with microcontrollers, power circuits, and serial communication.

Firmware Testing Engineer | Sentafe Technology Company | Oct 2024 – Feb 2025
• Perform firmware validation and testing for embedded devices.
• Develop and execute test plans for embedded software reliability and performance.
• Collaborate with hardware and software teams to identify and fix low-level bugs.

Operations and Maintenance Engineer | Dafa Technology | Feb 2025 – Present
• Responsible for maintaining and optimizing industrial automation systems.
• Conducted performance analysis and preventive maintenance to ensure reliability.
• Supported firmware and system updates across embedded hardware platforms.

Freelance Robotics Engineer | Upwork & Independent Projects | Oct 2024 – Present
• Developed simulation and hardware systems for autonomous robots and industrial applications.
• Executed a full robotics project for a Ibn Rushd academy, including both Gazebo simulation and real hardware implementation.
• Designed PID-based steering and computer vision logic using Python and OpenCV.
• Portfolio: github.com/your-username | your-username.github.io/portfolio

Robotics Instructor | EduX Academy, Egypt (Part-time)
• Conducted robotics training (C++, Python, ROS) for engineering students.
• Built practical simulation environments in Gazebo for hands-on workshops.

Projects

Autonomous Self-Driving Robot (Graduation Project)
• Developed a multi-sensor fusion system integrating LIDAR, encoders, and IMU.
• Implemented obstacle avoidance and path planning using ROS and Embedded Linux.
Link: GitHub

WRO Competition Robot (Simulation & Hardware)
• Designed and implemented Ackermann steering system in ROS and Gazebo.
• Developed real hardware version integrating Jetson Nano, ESP32, and BNO055 IMU.
• Implemented color-based navigation and adaptive PID control for smooth turning.
• **Link:** GitHub

Security Identification System
• Developed embedded security protocols using microcontrollers.
• Enhanced reliability through redundant verification and fail-safe logic.

Mecanum Wheels Control Project
• Designed and implemented omnidirectional motion control algorithms.

Certifications

• Advanced Embedded Linux Development Specialization (Coursera)
• C++ for Embedded Systems (Udemy)
• Real-Time Embedded Systems Specialization (Coursera)
• Data Structures and Algorithms (Coursera)
• ROS for Beginners: Basics, Motion, and OpenCV (Udemy)
• Mastering ROS for Robotics Programming (Udemy)