

Mohamed Adam Jemal

✉ mohamed.adam.jemal@gmail.com in Mohamed Adam Jemal @ Adam J. ☎ 99579351

Professional Experience

IoT & Embedded Systems Intern

July 2025 – Present

RoboCare, Sfax, Tunisia

Project: Smart Irrigation System

Contributing to the development of a smart irrigation system leveraging IoT technologies for real-time monitoring and control of agricultural fields.

- **System Architecture:** Designed and implemented transmitter, receiver, and control boards using ESP32 and LoRa for long-range, low-power communication.
- **Technologies Used:** ESP32, LoRa, MQTT, C++, SD card, cloud platform integration.
- **Operation Modes:** Supports both autonomous mode (sensor-driven) and manual mode (triggered via web dashboard button).
- **Data Handling:** The Receiver board transmits sensor data to the cloud for real-time monitoring and simultaneously logs data locally to an SD card in offline mode.
- **Web Integration:** Fully integrated with the RoboCare web application for dashboard-based monitoring, control, and system configuration.
- **Impact:** Enhanced irrigation efficiency, reduced water waste, and provided reliable remote farm management with online and offline capabilities.

Research Assistant

Feb 2025 – June 2025

University of Bristol, Bristol, England, UK

Project: EcoSort | Intelligent Waste Management System

Ecosort is an autonomous waste management system that combines IoT, AI, and cloud computing. It automates waste collection and sorting, improves the cleanliness of urban green spaces, and promotes circular economy practices through data-driven recycling and local waste presorting.

- **Approach:** Implement a Raspberry Pi-based robot named WasteBot for waste detection, classification, and collection alongside a full-stack web application for system monitoring and control.
- **Technologies:**
 - **Computer vision:** YOLO, Inverse Kinematics, Plan to space back-projection.
 - **Edge/Embedded:** Raspberry Pi, Robotic arm.
 - **Cloud platform:** AWS IoT Core
 - **Backend:** Django (DRF), RESTful APIs, JWT tokens, MySQL.
 - **Frontend:** React, Tailwind CSS.
- **Programming Languages:** Python, JavaScript, TypeScript.
- **Libraries and frameworks:** PyTorch, OpenCV, Ultralytics, Paho-mqtt, Django, React, Axios, Wiringpi.
- **Protocols:** HTTP, MQTT, TLS, and Server-Sent Events (SSE).
- **Dashboard Features:** Real-time waste collection and classification logs, WasteBots, and user management.
- **Hardware components:** Raspberry Pi 4B, Seengreat Motor and Servo Driver HAT (PCA9685 + TB6612FNG), Hiwonder robotic arm, camera module, ultrasonic sensor, power supply, and gear motors.

Education

Bachelor's Degree in Computer Engineering

Specialized in Internet of Things and Embedded Systems,
Higher Institute of Computer Science of Mahdia, Tunisia

September 2022–2025

Skills

- **Programming Languages:** Python, C/C++, Java, JavaScript
- **IoT and Embedded Systems:** Edge computing, IoT cloud platforms, IoT sensors, IoT protocols
- **Web Development:** React, Django, RESTful APIs, Web tokens, Tailwind CSS
- **Databases:** MySQL, MongoDB
- **Other:** UI/UX Design, 3D modeling with Blender, Docker, LaTeX
- **Languages:** Arabic (Professional), English (Professional), French (Fluent)

Projects

Smart Lock System

Nov 2024 – Dec 2024

- **Objective:** Developed an RFID-based smart lock using ESP32 and ESP-NOW.
- **Approach:** Implemented a two-node system, one ESP32 for RFID reading and another for access verification, synchronized via a Django server.
- **Technologies:** ESP32, ESP-NOW, Django (DRF), React, Tailwind CSS, REST API, MySQL.
- **Dashboard Features:** Web dashboard for user management, access logs, and RFID credential synchronization.
- **Impact:** Enhanced security, remote access control, and real-time access tracking.

Smart Watering System

April 2024 – June 2024

- **Objective:** Automated irrigation system for efficient water use and plant health.
- **Technologies:** ESP32, Arduino IoT Cloud, C++, REST APIs
- **Approach:** Sensor-driven system with a remote-controlled water valve, monitored and controlled via a web dashboard or mobile application.
- **Key Features:** Automated watering, OLED display, LED indicators, and smart shutdown to prevent overwatering.
- **Impact:** Reduced water waste, improved plant health, and enabled remote irrigation control.

Certifications

Meta Back-End Developer Specialization

October 2, 2024

Provider: Meta – Coursera

Duration: 8 months

Meta Front-End Developer Specialization

August 26, 2024

Provider: Meta – Coursera

Duration: 7 months

Machine Learning with Python

November 4, 2024

Provider: IBM – Coursera

Duration: 13 hours