# Houssem Eddine Sfaxi Ras iebal Bizerte tunisie

# Embedded software developer

Embedded systems and IoT Developer passionate about embedded software development and technological innovation. Experienced in low-level programming (C, C++), Linux development, and network protocol integration for embedded systems (LoRa, MQTT, WebSocket). Proven experience in designing and testing intelligent solutions for IoT and industrial automation.



#### **EDUCATION**

2019 – 2023

Bachelor's Degree in Computer Engineering - Faculty of Science of Bizerte



### **WORK EXPERIENCE**

**Embedded Software Developer (Freelancer)** 

- Developed drivers and low-level software for microcontrollers.
- Implemented real-time communication protocols and optimized system performance.
- Integrated IoT solutions with cloud platforms for data management and analytics.

**Robotics Trainer** 

October 2023 - Present

Creative minds , Ras jebel young science association , Club Smartech

- Conducted robotics and programming workshops for young students.
- Designed interactive projects integrating Arduino, sensors, and motor control.

July2023 - Mars 2024

IoT & Web Developer

TAC-TIC, Technopole Ghazala, Tunisia

- Developed embedded software for IoT solutions and automation projects.
- Designed and implemented low-level drivers and network communication protocols.
- · Created intuitive web applications for IoT monitoring using JavaScript and Node.js.

# **PROJECTS**

Sept. 2024 - Dec. 2024

**Sea Drone Project** 

Developed an autonomous marine drone for navigation and surveillance.

- Designed and implemented an embedded system for real-time data collection and transmission.
- Developed a web interface for remote control and telemetry data display.
- Integrated GPS and IMU sensors for position tracking and navigation stabilization.
- Controlled T200 thrusters using Arduino Mega 2560 and MQTT communication with ESP8266/ESP32-CAM.

Technologies used: Arduino Mega 2560 | ESP8266 | ESP32-CAM | GPS NEO7m | MPU9250 | WebSockets | MQTT | PWM | HTML/CSS/JS

Feb. 2023 - Juin. 2023

**Smart Glasses for Blind Persons** 

Développement de lunettes intelligentes pour l'assistance aux personnes malvoyantes

- Développement d'un modèle de détection d'objets avec TinyML et Edge Impulse sur ESP32-CAM.
- Implémentation d'une synthèse vocale (TTS) sur ESP32 DevKit pour descriptions audio en temps réel.
- Optimisation de la reconnaissance avec FOMO (MobileNet V2) et intégration des résultats via Arduino IDE.
- Conversion et diffusion des fichiers audio via GPIO ESP32 et un haut-parleur.

Technologie used: ESP32-CAM | ESP32 DevKit | TinyML | Edge Impulse | MobileNetV2 | FOMO | Text-to-Speech (TTS) | Python | Audacity

July. 2024 - Sep. 2024

## **WebSocket Server for IoT Communication**

Développement d'un serveur WebSocket pour la gestion en temps réel des appareils IoT

- Gestion des connexions et synchronisation automatique des appareils.
- · Transmission de mises à jour en temps réel aux clients web
- Architecture évolutive et sécurisée pour l'intégration de multiples appareils connectés.

Technologies used: Node.is | Express.is | WebSocket | JavaScript | AWS

Jan. 2024 - Mars. 2023

### IoT-Based Smart Lock and Environmental Monitoring System

Developed an IoT smart lock system with environmental monitoring using ESP32.

- Enabled remote locking/unlocking via WebSocket and real-time sensor data exchange.
- · Integrated sensors for temperature, humidity, dust, and sound detection.
- Utilized FreeRTOS for efficient dual-core task management. • Sent data to a remote server via HTTP API for analysis.
- Technologies used: ESP32, WebSocket, HTTP API, FreeRTOS, Sensor, C/C++

Sept. 2024 - Jan. 2025

Real-Time Object Detection with OpenCV and SFTP Upload

Développement d'une solution de détection d'objets en temps réel avec OpenCV et MobileNet SSD sur NVIDIA Jetson.

- Capture de flux vidéo multi-caméras et détection d'objets en temps réel.
- Annotation des images et stockage local sécurisé.
- · Automatisation du transfert des images via SFTP vers un serveur distant.
- Optimisation des performances avec CUDA et TensorRT sur Jetson

Technologies used: Python, OpenCV, TensorRT, JetPack SDK, CUDA, SFTP, GitHub, Scrum

French: Fluent | Spanish: Basic



### **TECHNICAL SKILLS**

**Programming Languages:** C, C++, Python, JavaScript ,Java

Node.js, Bootstrap, React, Laravel ,STM32CubelDE, PlatformIO

INTERESTS

Frameworks & Tools:

**Embedded Systems:** 

STM32, ESP32,,ESP8266 ,Raspberry Pi, FPGA (VHDL, Quartus), Nvidia jetson, ATtiny85, ARM Cortex-M, Nordic nRF52

**Operating Systems:** Linux (Ubuntu), Windows **Networking & IoT Protocols:** 

LoRa, MQTT, , WebSocket, Modbus, CAN, SPI, I2C, UART, Bluetooth LE, Zigbee, NB-IoT, LTE-M

German: Basic

Gestion de version:

Git, Github, GitLab

### Cloud Computing & Edge Al

AWS, Huawei Cloud, Google Cloud IoT, Edge Impulse, TinyML, TensorFlow Lite ,NVIDIA JetPack SDK

**Testing & Debugging:** 

Oscilloscope, Logic Analyzer, JTAG Debugger

Volontariat :

Club SMARTECH | Ras Jebal Youth Science Association | Club Alchemist



**LANGUAGES** 

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English: Fluent CONTACT

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