Houssem Eddine Sfaxi 📍 Ras jebal 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

March 2023 – Present — **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.

October 2023 – Present
Robotics Trainer
Creative minds , Ras jebal young science association , Club Smartech
- Mentored 100+ students in robotics workshops using Arduino, sensors, and motor control systems.
- Designed a curriculum for IoT projects (e.g., smart home automation) adopted by 3 local science clubs.

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
Developed smart glasses for assisting visually impaired individuals.
- Implemented object detection using TinyML and Edge Impulse on ESP32-CAM.
- Integrated real-time audio descriptions via voice synthesis (TTS) on ESP32 DevKit.
- Optimized recognition using FOMO (MobileNet V2) and Arduino IDE.
- Converted and broadcasted audio files via ESP32 GPIO and a speaker.
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
Development of a WebSocket Server for Real-Time IoT Device Management
- Connection management and automatic device synchronization.
- Transmission of real-time updates to web clients.
- Scalable and secure architecture for integrating multiple connected devices.
Technologies used : Node.js | Express.js | WebSocket | JavaScript | AWS

Jan. 2024 – March. 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 temperature, humidity, dust, and sound detection sensors.
- 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
Developed a real-time object detection solution using OpenCV and MobileNet SSD on NVIDIA Jetson.
- Developed a real-time object detection solution using OpenCV and MobileNet SSD on NVIDIA Jetson.
- Captured multi-camera video streams and performed real-time object detection.
- Annotated images and stored them securely.
- Automated image transfer to a remote server via SFTP.
- Optimized performance with CUDA and TensorRT on Jetson.
Technologies used : Python, OpenCV, TensorRT, JetPack SDK, CUDA, SFTP, GitHub, Scrum

🧩 TECHNICAL SKILLS

Programming Languages :
C/ C++(Expert), Python, JavaScript ,Java

Frameworks & Tools:
Node.js, Bootstrap, React, Laravel ,STM32CubeIDE, PlatformIO

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

Gestion de version :
Git, Github ,GitLab

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

Testing & Debugging:
Oscilloscope, Logic Analyzer, JTAG Debugger

👁 INTERESTS

Volontariat : Club SMARTECH | Ras Jebal Youth Science Association | Club Alchemist

🌐 LANGUAGES

Arabic : Native | **English :** Fluent | **French :** Fluent | **Spanish :** Basic | **German :** Basic

👤 CONTACT

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