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 jebel 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.

July.2023 – March.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 | PCB

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++ , PCB

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 ,STM32Cube, PlatformIO, Altium , EASYEDA

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

Version Control Tools :
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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