

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	Embedded Systems: STM32, ESP32,ESP8266 ,Raspberry Pi, FPGA (VHDL, Quartus) ,Nvidia jetson , ATtiny85, ARM Cortex-M, Nordic nRF52	Networking & IoT Protocols: LoRa, MQTT, , WebSocket, Modbus, CAN, SPI, I2C, UART, Bluetooth LE, Zigbee, NB-IoT, LTE-M	Cloud Computing & Edge AI AWS , Huawei Cloud, Google Cloud IoT, Edge Impulse, TinyML, TensorFlow Lite ,NVIDIA JetPack SDK
Frameworks & Tools: Node.js, Bootstrap, React, Laravel ,STM32Cube, PlatformIO, Altium , EASYEDA	Operating Systems: Linux (Ubuntu), Windows	Version Control Tools : Git, Github ,GitLab	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