

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

Mars 2023 – Present	<div><b>Embedded Software Developer (Freelancer)</b></div> <ul style="list-style-type: none"><li>Developed drivers and low-level software for microcontrollers (STM32, ESP32).</li><li>Implemented real-time communication protocols and optimized system performance.</li><li>Integrated IoT solutions with cloud platforms for data management and analytics.</li></ul>
October 2023 – Present	<div><b>Robotics Trainer</b></div> <div>Creative minds , Ras jebel young science association , Club Smartech</div> <ul style="list-style-type: none"><li>Conducted robotics and programming workshops for young students.</li><li>Designed interactive projects integrating Arduino, sensors, and motor control.</li></ul>
July2023 – Mars 2024	<div><b>IoT &amp; Web Developer</b></div> <div>TAC-TIC, Technopole Ghazala, Tunisia</div> <ul style="list-style-type: none"><li>Developed embedded software for IoT solutions and automation projects.</li><li>Designed and implemented low-level drivers and network communication protocols.</li><li>Created intuitive web applications for IoT monitoring using JavaScript and Node.js.</li></ul>

PROJECTS

Sept. 2024 – Dec. 2024	<div><b>Sea Drone Project</b></div> <div>Developed an autonomous marine drone for navigation and surveillance.</div> <ul style="list-style-type: none"><li>Designed and implemented an embedded system for real-time data collection and transmission.</li><li>Developed a web interface for remote control and telemetry data display.</li><li>Integrated GPS and IMU sensors for position tracking and navigation stabilization.</li><li>Controlled T200 thrusters using Arduino Mega 2560 and MQTT communication with ESP8266/ESP32-CAM.</li></ul> <div><b>Technologies used :</b> Arduino Mega 2560   ESP8266   ESP32-CAM   GPS NEO7m   MPU9250   WebSockets   MQTT   PWM   HTML/CSS/JS</div>
feb. 2023 – Juin. 2023	<div><b>Smart Glasses for Blind Persons</b></div> <div>Développement de lunettes intelligentes pour l'assistance aux personnes malvoyantes</div> <ul style="list-style-type: none"><li>Développement d'un modèle de détection d'objets avec TinyML et Edge Impulse sur ESP32-CAM.</li><li>Implémentation d'une synthèse vocale (TTS) sur ESP32 DevKit pour descriptions audio en temps réel.</li><li>Optimisation de la reconnaissance avec FOMO (MobileNet V2) et intégration des résultats via Arduino IDE.</li><li>Conversion et diffusion des fichiers audio via GPIO ESP32 et un haut-parleur.</li></ul> <div><b>Technologie used :</b> ESP32-CAM   ESP32 DevKit   TinyML   Edge Impulse   MobileNetV2   FOMO   Text-to-Speech (TTS)   Python   Audacity</div>
July. 2024 – Sep. 2024	<div><b>WebSocket Server for IoT Communication</b></div> <div>Développement d'un serveur WebSocket pour la gestion en temps réel des appareils IoT</div> <ul style="list-style-type: none"><li>Gestion des connexions et synchronisation automatique des appareils.</li><li>Transmission de mises à jour en temps réel aux clients web.</li><li>Architecture évolutive et sécurisée pour l'intégration de multiples appareils connectés.</li></ul> <div><b>Technologies used :</b> Node.js   Express.js   WebSocket   JavaScript</div>
Jan. 2024 – Mars. 2023	<div><b>IoT-Based Smart Lock and Environmental Monitoring System</b></div> <div>Developed an IoT smart lock system with environmental monitoring using ESP32.</div> <ul style="list-style-type: none"><li>Enabled remote locking/unlocking via WebSocket and real-time sensor data exchange.</li><li>Integrated sensors for temperature, humidity, dust, and sound detection.</li><li>Utilized FreeRTOS for efficient dual-core task management.</li><li>Sent data to a remote server via HTTP API for analysis.</li></ul> <div><b>Technologies used :</b> ESP32, WebSocket, HTTP API, FreeRTOS, DHT22, Arduino IDE, C/C++</div>
Sept. 2024 – Jan. 2025	<div><b>Real-Time Object Detection with OpenCV and SFTP Upload</b></div> <div>Développement d'une solution de détection d'objets en temps réel avec OpenCV et MobileNet SSD sur NVIDIA Jetson.</div> <ul style="list-style-type: none"><li>Capture de flux vidéo multi-caméras et détection d'objets en temps réel.</li><li>Annotation des images et stockage local sécurisé.</li><li>Automatisation du transfert des images via SFTP vers un serveur distant.</li><li>Optimisation des performances avec CUDA et TensorRT sur Jetson.</li></ul> <div><b>Technologies used :</b> Python, OpenCV, TensorRT, JetPack SDK, CUDA, SFTP, GitHub, Scrum</div>

TECHNICAL SKILLS

<div><b>Programming Languages :</b></div> <div>C, C++, Python, JavaScript ,Java</div> <div><b>Operating Systems:</b></div> <div>Linux (Ubuntu), Windows</div>	<div><b>Embedded Systems:</b></div> <div>STM32, ESP32, Raspberry Pi, FPGA (VHDL, Quartus ),Nvidia jetson</div> <div><b>Cloud Computing:</b></div> <div>AWS (EC2, S3), Huawei Cloud</div>	<div><b>Networking &amp; IoT Protocols:</b></div> <div>MQTT, LoRa, HTTP/HTTPS, SFTP , WebSocket</div> <div><b>Gestion de version :</b></div> <div>Git, Github</div>	<div><b>Frameworks &amp; Tools:</b></div> <div>Node.js, Bootstrap, React, Laravel</div> <div><b>Testing &amp; Debugging:</b></div> <div>Oscilloscope, Logic Analyzer, JTAG Debugger</div>
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INTERESTS

Volontariat :

Club SMARTECH | Ras Jebal Youth Science Association | Club Alchemist

LANGUAGES

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