

Khalil Soumri

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SUMMARY

Recent graduate in Computer Systems Engineering with a specialization in IoT and Embedded Systems, currently pursuing a Master's degree in Networks and Virtualization. Skilled in microcontroller programming (ESP32, Arduino, STM32), sensor integration, embedded C/C++, and Python for AI applications. Experienced in developing and testing IoT solutions, hardware-software co-design, and cloud integration. Passionate about leveraging technical and analytical skills to contribute to innovative projects in embedded systems, IoT, and AI, with a strong foundation in problem-solving and leadership.

EXPERIENCES

Embedded Systems & IoT Developer – Ministry of Agriculture, Tunisia

Feb 2025 – Jun 2025

- Developed monitoring system with real-time sensors and troubleshooting of data transmission issues.
- Designed and implemented an ESP32-based bee flow monitoring system using IR break-beam sensors.
- Integrated DHT11/DHT22 sensors for real-time temperature & humidity monitoring.
- Optimized power consumption by controlling IR sensors with an LDR-based night detection system.
- Programmed a 16x2 LCD for alternating sensor display and used LEDs to indicate bee activity.
- Assisted in web app development for remote monitoring and data visualization.
- Created test procedures, validated accuracy, and documented system performance.
- Validated system accuracy, achieving 95% correct bee flow detection.

Cisco Network Design & Implementation Engineer – Personal Project: Simple Company Networking Project

Dec 2025

- Designed a Cisco branch network with VLAN-based department segmentation
- Implemented IPv4 subnetting (/26) and DHCP for automatic addressing
- Configured Router-on-a-Stick for inter-VLAN routing
- Deployed wired and wireless access per department
- Built and tested the network using Cisco Packet Tracer
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Cisco Network Design & Implementation Engineer – Personal Project: Modern Hotel Enterprise Network Design

- Built a three-floor hotel network with VLAN segmentation across 8 departments.
- Configured inter-VLAN routing, OSPF, and DHCP for full connectivity.
- Deployed Wi-Fi, printers, and end-user devices on each floor.
- Secured the network using SSH and switch port security (sticky MAC).

Embedded AI Developer – Personal Project: Smart Garbage Sorting System

Oct 2024 – Nov 2024

- Built and tested automated classification pipeline, resolving integration issues between hardware and AI software.
- Developed an ESP32-based automatic waste sorting system using servo motors.
- Built an image classification pipeline in Python with a pre-trained VGG16 model for recyclability detection.
- Integrated real-time serial communication between the microcontroller and AI module.
- Conducted tests for servo control, classification accuracy, and logged results.

SKILLS

Programming Languages

C / C++, Python, VHDL

Embedded Systems

ESP32, Arduino, STM32, Circuit Design, Power Management, LCD/LED Displays, Sensor Integration, Debugging & Testing

IoT & AI

Cloud Integration, API Communication, IoT Security Basics, Machine Learning (TensorFlow/Keras), Image Classification, Ubuntu, cloud concepts (AWS), Monitoring & troubleshooting

Soft Skills

Leadership and project ownership, Teamwork and collaboration, Critical thinking and problem solving

EDUCATION

Faculty of Sciences of Bizerte (FSB) – Bachelor of Computer Systems Engineering

Sep 2022 – Jun 2025

- Graduated with Honors (Very Good distinction) – Final Grade: 17/20
- Relevant Coursework: Embedded Systems, Real-Time Systems, Computer Networks, Performance Optimization, Digital Design.

Leadership & Activities

Team Leader – AIESEC Bizerte

- Led a team in the Cnp & Data team in the oGT, coordinating university outreach to engage students in international internships.
- Managed data analysis and reporting using spreadsheets and ERP tools to track participants' progress.
- Oversaw the end-to-end exchange process, from application to internship completion and return.
- Supported and guided team members to ensure successful participation and engagement.

Communication Manager – Microsoft Club (event organization & community engagement)

- Organized and managed events and team-building activities, leading cross-functional groups in logistics, marketing, and finance.
- Monitored and supported member growth and learning, ensuring a positive experience throughout projects and events.
- Acted as a liaison between members and leadership, enhancing community engagement and collaboration.

Languages

- English
- French