

Mouhamed Boughrara

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Education

Faculty of Science Gabes

Bachelor in Electronics and Industrial Computing (3rd Year)

Sep 2022 – Aug 2025

Skills

Technical Skills Eagle, Altium Design, ROS, RTOS, PCB Design, Fusion360, Ladder Logic, Step7 Simatic Manager, PSIM, VHDL, Arduino/ESP32 Programming, Sensor Integration, Hardware Troubleshooting

Soft skills Teamwork, Leadership, Adaptability, and Communication.

Programming Languages C/C++, Python, MATLAB

Languages English, French, Arabic

Experience

Internship at [Boughrara Amor] – Electrical Intern

Jun 2024 – Sep 2024

- Implemented 24 SONOFF DUALR3 modules for automated control of 96 light fixtures, achieving 25% energy savings.
- Assisted in pre-installation of 3000+ meters of wiring and 200+ meters of cable trays, reducing setup time by 30%.
- Assembled 25+ control panels with circuit breakers, achieving a 100% inspection pass rate.
- Programmed staircase controllers and optimized energy-saving timing settings, leading to 30% energy efficiency.

Projects

Digital Twin for Solar Panel Monitoring

[Link](#)

- Engineered a real-time monitoring system for solar panels using ESP32-CAM, integrating live image capture with DHT11 (temperature) and MQ-811 (CO2) sensors to monitor environmental conditions affecting solar panel efficiency.
- Engineered a JSON-based data pipeline for transmitting image and sensor data to a remote server.
- Achieved a 30% improvement in data processing speeds and 99.9% transmission reliability.

Air Quality Monitoring System

[Link](#)

- Constructed an Arduino-based system measuring particulate matter (PMS5003) and gas concentration (MQ-2).
- Integrated real-time server updates using ESP32, automating data uploads every 60 seconds.

PCB Design for Solar-Powered Systems

[Link](#)

- Designed a custom PCB for a **Swimming Robot** equipped with sensors (pH, radiation, GPS, ESP32-CAM) and AI object detection.
- Developed a solar-powered energy management system for sustainable operation.

IoT-Based Environmental Monitoring System

[Link](#)

- Devised a sustainable environmental monitoring system powered by a 3.7V Li-Ion battery and solar panel, integrating sensors like KY-026 Flame Sensor.
- Designed and implemented the central safeguard station using ATmega328P, ESP8266, and WS2812B RGB LEDs for real-time data visualization and alerts.
- Achieved autonomous operation with renewable energy and IoT-based real-time data transmission for remote monitoring.

Achievements

- **1st place** – PES Challenge (PESTGM): Led a team of 13 in developing an innovative project addressing power systems management.
- **1st place** – Eco Guardians Hackathon: Developed environmentally focused technological solutions.
- **1st place** – IoT SPARK Challenge (Esprit): Delivered innovative IoT solutions with a focus on efficiency and teamwork.
- **3rd place** – IAS Challenge (IASTAM): Demonstrated creativity and teamwork in providing advanced technical solutions.
- **Mathematics and Logic Competitions** Earned 22 national medals, including 8 gold and earning **silver medal** in the National Mathematics Olympiad.

Certifications

Certificates

[Link](#)