Mouhamed Boughrara

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Education

Faculty of Science Gabes **Sep 2022 – Aug 2025**
Bachelor in Electronics and Industrial Computing (3rd Year)

Skills

Technical Skills:
- **PCB Design**: Eagle, Altium Design
- **Robotics:** ROS, RTOS, SLAM
- **Software:** Fusion360, Ladder Logic,Step7 Simatic Manager, PSIM, VHDL
- **Hardware:** STM32/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.

Vice Chair in IEEE PES Chapter, ENIG **Jun 2024 – Sep 2024**
- Led the development of smart grid systems in a smart city project, leveraging renewable energy sources such as solar, wind, and hydro.

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.

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.

Achievments

- ***IEEEMember****-Hasactively contributed to technical and leadership matters within the IEEE community, event organization, and fostering innovation.*
- ***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 goldand earning* ***silver medal*** *in the National Mathematics Olympiad.*

Certifications

Certificates **Link**