

Oussama Chaabane

Robotics & Embedded Systems Engineer | IoT | Automotive

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Professional summary:

Enthusiastic and motivated Robotics and Embedded Systems Engineer with a strong background in embedded programming, sensor integration, and prototyping. I hold a diploma in Electromechanical Engineering and a Master's degree in Computer Science, with hands-on experience in robotics projects, real-time data acquisition, and developing intelligent systems.

After gaining international academic and professional experience in Tunisia, Hungary, and Belgium, I moved to Germany with a **Job Seeker Visa** to pursue my career in the embedded systems and electronics field. I am passionate about contributing my skills to innovative industries, particularly in embedded systems, IoT, and automotive applications, and highly motivated to grow within the German engineering sector.

Professional experience

07/2024 Project Engineer

02/2025 at Com&Sens, Ghent, Belgium

- Integrated **fiber optic (FBG)** sensors into **carbon fiber composite structures** to enable real-time **structural health monitoring** and reduce inspection effort during material testing.
- Conducted **sensor calibration and internal testing**, comparing FBG strain measurements with **temperature probes** to validate material behavior under various load conditions.
- Developed an **interactive Dash Plotly GUI** for visualizing and synchronizing multi-source data (FBG, temperature, pressure), significantly improving **accuracy analysis** and facilitating **cross-sensor correlation**.
- Supported the engineering team with **data interpretation**, contributed to **technical reports** for internal reviews and **customer delivery**, and proposed improvements for future testing campaigns.

Technologies: Python, Dash Plotly, FBG Sensors, CSV/Excel Data Handling, Composite Structures, Signal Processing, Data Visualization.

07/2023 Robotics Engineer (Graduation Internship)

06/2024 at Óbuda University, Budapest, Hungary

- Designed, assembled, and validated a **buoyancy control system** for an **Autonomous Underwater Vehicle (AUV)** using an **ESP32 microcontroller**, achieving stable and repeatable depth control through sensor feedback.
- Implemented a **RESTful API** to acquire and transmit real-time data (pressure, depth, motor state) over Wi-Fi, enabling **remote monitoring and control** of the AUV prototype.
- Delivered a **fully functional prototype** with detailed technical documentation, establishing the foundation for future integration with **ROS-based AUV control systems**.
- Conducted systematic **hardware and software testing**, ensuring system reliability and safety for extended underwater operations.

Technologies: ESP32, REST API, C/C++, Python, Sensors (Pressure/IMU), Embedded Systems, Wi-Fi Communication, Control Systems

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- 03/2021** **Robotic engineer (Graduation internship)**
07/2021 **at Robotic manufacturing and training center Think-Tech, Gabes, Tunisia**
- Designed and built a **functional mobile robot with manipulator arm** capable of **autonomous pick-and-place operations** from predefined coordinates.
 - Engineered both the **mechanical design (SolidWorks)** and **electrical system**, including a custom **PCB for motor voltage regulation** (12V DC motors and 6V servos).
 - Developed **path-planning and trajectory optimization algorithms** in **LabVIEW**, improving robot precision and motion efficiency.
 - Integrated the **LabVIEW control interface** with an **Arduino MEGA** via **UART serial communication**, ensuring real-time control and feedback.
 - Delivered a fully assembled and operational prototype that successfully performed all intended tasks under testing conditions.
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Technologies: LabVIEW, Arduino MEGA, SolidWorks, PCB Design (Proteus 8), UART Communication, DC/Servo Motors, Embedded Control Systems

Education

Master Degree in Computer Science

From John von Neumann Faculty of Informatics, Óbuda University- Hungary

Graduated: 06/2024

The National Diploma of Engineering

From the National Engineering School of Gafsa- Tunisia

Graduated: 06/2021

Skills

Programming & Tools	C/C++, Python, PLC, JSON, REST APIs, LabVIEW, Git, Linux, FreeRTOS
Embedded Systems	ESP32, Arduino, Raspberry Pi, Embedded Linux, RTOS, PCB (Proteus 8)
Robotics & Automation	ROS, ROS2 (basic), Sensor Integration, Control Systems, IoT
Communication Protocols	UART, SPI, I2C, CAN, TCP/IP, Bluetooth, Wi-Fi
CAD & Design	SolidWorks, Fusion 360
Languages	English (fluent), French (advanced), Arabic (native),

Certifications

Object-Oriented Data Structures in C++

By University of Illinois at Urbana-Champaign from Coursera

Ordered Data Structures

By University of Illinois at Urbana-Champaign from Coursera

Personal Projects

- **Shape & Color Identification System:** Developed using Raspberry Pi 3B+, Raspberry Camera, and Python (OpenCV) for object detection.
 - **Off-road Robot:** Designed and built an Arduino-based robot controlled via Bluetooth smartphone app.
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