



Amine BEKDOUCHE

Electronics and Embedded Systems Engineer | bekdoucheamine.github.io - Portfolio

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Professional Summary

Electronics and Embedded Systems Engineer specializing in digital design, with solid expertise in VHDL development and FPGA validation. Highly motivated to contribute to innovative, high-tech projects.

Professional Experience

SoC FPGA R&D Engineer

2025 GE Vernova Montpellier, France

- **Context:** Improving FPGA-based protection systems for power transmission line monitoring.
- **VHDL Monitoring System:** Developed a VHDL module to extract data flows from FPGA boards; validated the module using OMICRON to accelerate bug detection.
- **Python Simulation Library:** Created a Python library to bridge the gap between testers and FPGA developers, automating network frame injection (IEC-61850) to reproduce anomalies.
- **Direct FPGA Communication:** Designed a TCL/Python tool for JTAG-based FPGA configuration and developed a GUI for real-time data flow visualization.

Biomedical Instrumentation Engineer

2024 EuroMov DHM, IES Montpellier, France

- **Context:** Prototyping a flexible pressure sensor to objectively evaluate clinical examinations for lower back pain.
- **Research & Design:** Conducted a literature review of digital pressure measurement technologies and collaborated with physiotherapists to define technical specifications.
- **Validation:** Designed the experimental setup and performed metrological validation of the Qvar sensor, identifying environmental noise and proposing improvements.

Education

Master's in Electronics, Sensors, & IoT

From 2023 to 2025 University of Montpellier France

Ranked 1st in Class (1/66)

Bachelor's (Licence) in Electrical Energy, Electronics, & Automation

From 2022 to 2023 University of Montpellier France

Languages

French

Niveau C2

English

Niveau C2

Arabic

Native

Skills

Technical

- **Microcontrollers & FPGA:** Artix 7, Cyclone V GX/SX, Zynq 7000 SoC, STM32, ESP32, Atmega328p, PIC16F.
- **Programming:** VHDL, Python, C/C++, OSVM, TCL, BASH, Assembly.
- **Communication Protocols:** SPI, I2C, UART, CAN, Avalon ST/MM, AXI ST, AXI-4, LoRa, BLE, Ethernet, Modbus, MQTT, HTTP.
- **CAD & Tools:** Vivado, Quartus, ModelSim, KiCad, LT Spice, Blender 3D.
- **Measurement & Software:** Oscilloscope, Multimeter, OMICRON, MATLAB/Simulink, LabVIEW, GIT/SVN, JIRA, Confluence.

Soft

- **Technical communication**
- **Multidisciplinary teamwork**
- **Proactive problem solving**
- **Synthesis of complex architectures**