Najd Elaoud

Electronics Engineering student

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Profile

Final-year Electronics engineering student seeking a final-year internship (PFE) in embedded software. Passionate about embedded systems, robotics, and innovative technologies, with a strong drive to tackle challenges and deliver practical solutions.

Education

Engineering degree in Electronics: Embedded Systems and Microelectronics 09/2023 - 07/2026
Higher Institute of Informatics and Mathematics of Monastir

Licence degree in EEA: Automation and Industrial Computing 09/2020 - 06/2023
Higher Institute of Industrial Management of Sfax

Work Experience

Summer internship - Novel-Ti 07/2025 - 08/2025

Built and validated a low-level motion control system with stable **PWM**-based **H-Bridge** motor control and robust **UART/USB** communication, ensuring reliable real-time operation in field tests.

Final-year internship - Robocare 02/2023 - 06/2023

Built an embedded **yield-monitoring** system for a combine harvester, featuring custom **PCB design**, real-time crop-flow acquisition firmware, and GPS tracking using an **Adafruit GPS** module. Implemented **TFT**-based data visualization and ensured reliable **SPI/UART** communication for field operation.

Summer internship - Novel-Ti 08/2022

Created a **PCB** for a farm animal tracking device prototype using **Altium Designer**, enabling **GPS** and sensor data acquisition for field monitoring tests.

Summer internship - iTEC 08/2021

Wiring and testing of electrical cabinets (Project for SONEDE).

Projects

Robot Motion Control Using an STM32 Microcontroller - Novel-Ti

- Developed a low-level motion control system for a mobile robot using **STM32G0**.
- Analyzed existing schematics and contributed to control board design.
- Engineered **PWM**-based motor control using MOSFET drivers (**XJNG2103**).
- Implemented **UART** communication between **STM32** and **ESP32**.

Keywords: ESP32, STM32G070CBT, STM32CubeIDE, PlatformIO, I2C, UART, ADC, DMA, PWM, C, Altium Designer, PCB Design.

Sensor data logger

Captured ultrasonic sensor measurements on an **STM32F407VG** and logged them to a USB flash drive via **USB OTG**, while simultaneously displaying data on an **LCD** and transmitting it over **UART** to **Hercules** serial software.

Keywords: STM32F407VG, STM32CubeIDE, I2C, UART, USB_OTG, FTDI, C.

DC Motor Monitoring and Control System

Raspberry Pi-based system to control and monitor **DC motor** speed and voltage, featuring a **PyQt** GUI for real-time control and visualization, with integrated sensors for accurate feedback and safe operation.

Keywords: Raspberry Pi 5, PyQt, PWM, DC motor, Python.

Audio playback with hand gesture recognition

An audio playback system on **STM32** uses **USB Host** and **FatFS** for file access, **I2S** with **DMA** for audio output, and **AI**-based hand gesture recognition (via **UART**) for touchless control of playback, volume, and track navigation.

Keywords: STM32F407VG, STM32CubeIDE, I2C, I2S, UART, Python, C, OpenCV.

Accelerometer and LCD display

Read data from the **STM32** Discovery ST **MEMS** accelerometer (**LIS302DL**) and displayed it on an **LCD**, while blinking the built-in LEDs of the board to indicate direction using bare-metal programming.

Keywords: STM32F407VG, STM32CubeIDE, I2C, SPI, C.

Smart home

Received sensor data and displayed it on both mobile and desktop dashboards, while controlling system relays via **Blynk**.

Keywords: ESP32, IoT, Blynk, I2C, UART, PlatformIO, Git, GitHub, C, KiCad.

Technical Skills

Development boards:
ESP32, ESP8266, STM32F4, STM32G0, Raspberry Pi

Programming languages:
C / C++ / Embedded C / Python

Tools and IDEs:
VS Code, PlatformIO, STM32CubeIDE, TouchGFX, Qt Creator, Git, GitHub, KiCad, Altium Designer

Communication protocols:
USART, I²C, I2S, SPI, CAN, USB (OTG)

Languages

Arabic : Native French : Intermediate English : Professional

Social activities

Technical Resources Assistant at CRI 2023 - 2024
Vice President and Arduino trainer at ISGIS Robotics Club 2021 - 2023