Najd Elaoud

Electronics Engineering student

najdelaoud4@gmail.com | +216 92 551 527
github.com/NajElaoud | najd-elaoud-504468204

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

Designed a complete data acquisition system combining PCB and embedded software for crop flow monitoring, with GPS logging, TFT visualization, and reliable SPI/UART communication.

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 H-Bridge drivers.
- Implemented UART/USB communication between STM32 and ESP32.

Keywords: ESP32, STM32G070CBT, STM32CubeIDE, PlatformIO, I2C, UART, ADC, DMA, PWM, C.

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 an LED on the STM32 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

Tools and IDEs:

VS Code, PlatformIO, STM32CubeIDE, Git, GitHub

Programming languages:

C / C++ / Embedded C / Python

Communication protocols:

USART, I^2C, I2S, SPI, USB (OTG)

Languages

Arabic : Native French : Intermediate English : Professional

Social activities

Technical Resources Assistant at CRI — 2023 - 2024

Vice President of ISGIS Robotics Club — 2021 - 2023