Joao Pedro Miranda Marques

Embedded Systems Engineer | Firmware, Hardware, IoT Devices

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Profile

Embedded Systems Engineer with experience building real-world devices from hardware to firmware. Background in embedded C/C++, RTOS, and microcontroller-based systems, with hands-on work in firmware architecture and development, PCB design, and system integration. Experience spans industrial IoT systems and production-grade automotive software, with a focus on real-time performance, reliability, and debugging complex embedded environments. Skilled in taking systems from prototype to deployment, combining firmware, electronics, and mechanical integration.

Skills

Software	C | C++ | Python | Git | Shell / Bash
Embedded	ESP-IDF | AURIX TriCore | FreeRTOS | AUTOSAR | MCU architecture
Hardware	PCB design | Circuit schematics | Sensor integration | 3D modeling & printing
Debug & Validation	Oscilloscope | Signal analyzer | JTAG | Trace32 | Tessy
Protocols	SPI | BLE | CAN | I2C | UART | Wi-Fi | Modbus
Engineering Tools	MATLAB | Simulink | CI/CD | PlatformIO | EasyEDA
Languages	Portuguese (native) | English (professional) | German (beginner) | Chinese (beginner)

Experience

Thyssenkrupp Automotive - Embedded Software Engineer *Apr 2025 - Present / Hungary*

- Develop middleware-layer ECU software for steering systems in a large-scale safety-critical automotive program, contributing to coding, testing, debugging, cross-team software integration, and traceable development workflows.

Hofer Powertrain - Embedded Software Engineer *Jul 2023 - Mar 2025 / Hungary*

- Configured AUTOSAR Basic Software (BSW) for Infineon AURIX TriCore ECUs, debugged SPI communication with signal analysis, and developed Jenkins pipelines for unit-test verification.

NHL Stenden WAC Labs - Research Intern in Control Engineering *Sep 2022 - Jun 2023 / Netherlands*

- Integrated laboratory instruments and built a Python-based closed-loop automation and data-acquisition stack for electrospray experiments, using threads and queues to run autonomous tests and generate reliable datasets for analysis against physical models.

Vitau Automation - Intern as Embedded Systems Developer *Jan 2022 - Jun 2022 / Brazil*

- Delivered embedded consulting work in a startup setting, building ESP32-based devices across multiple client projects, including biogas plant automation, accelerometer-based riding-comfort analysis, and a web interface for remote sensor monitoring.

Supermix Concreto - Intern as Embedded Systems Developer *Jan 2021 - Jan 2022 / Brazil*

- Owned electronics and firmware for a digital hydrometer within a six-engineer R&D team at Brazil's largest concrete company, taking the device through multiple PCB revisions, actuator/sensor interfaces, BLE connectivity, calibration strategy, and field trials on mixer trucks.
- Built an ESP32 dual-core FreeRTOS stack with FSM-based control, LVGL interface, real-time CPU and memory analysis, and software compensation for accurate water dosing under component wear.

CPE Jr. - Student Engineering Consultancy *Jan 2020 - Jan 2021 / Brazil*

- Progressed from web and embedded contributor to Product Owner and electronics lead, coordinating client work and applying Scrum and Kanban practices in a high-turnover student engineering consultancy.

Education

Universidade Federal de Minas Gerais - UFMG *2017 - 2023 / Brazil*

B.S. in Control and Automation Engineering

- Strong foundation in control engineering, embedded systems, electronics, and AI.

Independent Projects

Project Octopus *github.com/jueta/Project_Octopus*

- Developing a custom miniature hidden room camera around an ESP32-S3 platform, combining low-power firmware, enclosure design, hands-on prototyping, and scalable design.

DIY DJ Controller *github.com/jueta/DIY_DJ_Controller*

- Developing a custom DJ controller through iterative prototyping, with validated hand-soldered hardware modules and firmware, ahead of a dedicated PCB revision for real-time user interaction.