

ALDANA MELANI CORREA

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ABOUT

I have extensive experience in the electronics sector, specializing in hardware and firmware development, being both effective and innovative in providing high-quality solutions for each project. I possess knowledge in embedded systems related to IoT, electronics, and web development, and I am passionate about Artificial Intelligence, neural networks, reverse engineering, circuit analysis, IoT (Internet of Things), and industrial automation. Self-taught and highly versatile when working on multiple tasks.

WORK EXPERIENCE

SOFTWARE AND FIRMWARE DEVELOPER – TECME SA

Tecme SA | 04/2023 – Present

- Developed and maintained mission-critical firmware (**IEC 62304 compliant**) in **C/C++** for a medical pulmonary ventilator, managing high-reliability tasks on the **QNX RTOS**.
- Implemented real-time control logic (sensor reading, actuator control) and the critical alarm system using C++ Finite State Machines (**FSMs**) for various ventilation modes.
- Designed, implemented, and maintained low-level C drivers for the Toradex i.MX 6 Quad Core (**ARM Cortex-A9**) platform, interfacing with peripherals (I2C, SPI, ADC) and participating in the board bring-up process.
- Integrated the **Qt/QML**-based HMI with the C++ control backend, establishing the communication API for real-time data visualization and alarm propagation.
- Developed and maintained a robust unit testing suite (e.g., **GoogleTest/CppUnit**) for C++ modules, ensuring code quality, reliability, and facilitating regression-free development.
- Automated the software internationalization (i18n) pipeline by developing **Python** scripts that consumed **AI-based translation APIs** for UI strings.
- Developed code-generation (**scaffolding**) tools in **C++** and **Python** to auto-generate system parameters and boilerplate code, ensuring consistency with the **MVVM** (Model-View-ViewModel) architecture.
- **Debugging RS232**

RESEARCH & DEVELOPMENT INTER

UTN National Technological University | March 2021 – Dec 2023

- **Research and Development – Project of current, voltage and power measurement of home electrical networks.**

Develop an electrical measurement equipment with remote communication and sending data in real time, using embedded systems tools such as ESP, power, current and voltage sensors. The product achieved optimization, efficiency and energy control.

FIRMWARE DEVELOPER

RUF Functional Utility Robotics | May 2021 – Jun 2022

- **Smart plug for remote security monitoring through cameras**
- I established communication between companies and international technicians to streamline the development and research of the microcontroller, I designed a solid structure for programming and recording on each microcontroller (ESP12, ESP32, ESP8266 and RTL) using C and C++ language, Web Design, the SDK and RTOS of the company Espressif, obtaining successful results in time and error correction in testing.
- I achieved efficiency creating technical business documentation in each process, in the project I managed GitHub, GitLab and Scrum methodology.

SKILLS & COMPETENCIES

- Advanced C++ Programming and Design Patterns
- Multi-threaded and concurrent programming
- Performance optimization and profiling
- Quantum Computing integration for C++
- Cross-platform development (Windows, Linux)
- Agile and Scrum Methodologies
- Code Review and Mentoring
- Problem-solving and Analytical Thinking
- Effective Communication and Collaboration

EDUCATION:

Electronic Engineering – UTN (National Technology University)
2019 – 2024

Software Engineering – Siglo XXI University
2024 – Present

COURSE & CERTIFICATIONS

QNX Real-Time Operating SystemQNX Real-Time Operating System
Blackberry QNX

Object Oriented Programming in C++
Udemy

Implantables Electronics Devices and Medical Applications
EAMTA – Argentina School of Micro-NanoElectronics Technology and Applications

Mastering Kali Linux for Ethical HackersMastering Kali Linux for Ethical Hackers
Udemy

Lenguaje C Avanzado
Noble Work Foundation