Renato Freitas

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Renato Freitas is an Embedded Systems Engineer from Brazil with experience in product development. He is currently living in NYC holding an L2S Visa with permission to work via EAD (Employment Authorization Document, no visa sponsor required), and is looking for an opportunity as an Embedded Software / Firmware / Embedded Systems Engineer.

Work Experience

Embedded Systems Engineer — 01/2021 – 01/2023

PullUp Solutions in Electronic Systems – Product Development Consultancy

- Designed and developed embedded HMI applications for occupational health devices using the TouchGFX Framework for **STM32 microcontrollers (ARM Cortex-M)**
- Created high-speed sensor data visualization tools using **Qt** (Desktop with USB connection) and **Grafana** (for IoT devices)
- Developed libraries and device drivers for various ICs, including high-speed accelerometer sampling, NAND flash memories, and battery managers utilizing **I²C and SPI protocols**
- Revised a legacy project, changing hardware/firmware architecture and replacing key hardware components, which led to an 80% bill-of-materials cost reduction and increased the client's profit margins
- Oversaw the work of two interns that answered directly to me
- Reduced device production time **developing test jigs**, integrated hardware/firmware test scripts, and automated continuous delivery of new binary releases to the manufacturing team
- Technical specification of new projects from ground up for various clients (medical, human safety, mining and infrastructure industries)

Embedded Systems Engineer, Intern — 09/2019 – 12/2020

PullUp Solutions in Electronic Systems – Product Development Consultancy

- Developed an embedded HMI application for a human body vibration analyzer using **Qt for Embedded Linux** on an ARM Cortex-A4 processor
- Worked alongside the hardware development team to verify and validate new projects – component choice, hardware bring-up, electrical schematics, and PCB layout review on **Altium Designer**
- Developed fast prototypes and proof-of-concept with development kits from various electronics vendors (ST, Texas Instruments, Espressif, Nordic Semi, Microchip) to reduce possible errors in the final hardware design

Education

University of Sao Paulo, Brazil

B.S. Electrical and Computer Engineering

Undergraduate Thesis: Smart comfort level sensor network designed to monitor office environments github.com/co-env

- Custom BLE Mesh sensor network that sent environmental data to InfluxDB on an AWS instance via MQTT + Grafana dashboard for visualization and analysis.

Extracurricular Activities

ThundeRatz Robotics Team — 03/2017 – 06/2020

University Robotics Team

- Won national and international competitions with autonomous robot projects – Winter Challenge, Robogames
- Self-learning environment where students ran the team without any university funding
- Software and Firmware Team Leader (11/2018 – 10/2019)
  - People management, maintainer of the team's cloud server on Digital Ocean, project management, and version control using Git on both GitHub and a private self-hosted Gitea server

Skills

Programming: C, C++, Python, SQL, Shell Scripting, Makefile, QML

Language: Portuguese (native), English (advanced)

Technology: RTOS, ARM architecture, ARM Embedded Toolchain (GCC, GDB etc), ADC, USART, I²C, SPI peripherals, BLE, Wi-Fi, MQTT protocols, ROS, development platforms such as NVidia Jetson TX2, Raspberry Pi, Arduino and ESP32, Docker container builds, GitHub Actions, NGINX, Oscilloscope, Multimeter, Logic Analyzer hardware debugging, Eclipse based IDEs (e.g. STM32CubeIDE, TI CCS)