Fabio Slika Stella

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SUMMARY

Passionate computer engineer specialized in embedded systems development, with experience in low-level programming, communication protocols (CAN, I^2C, RS-485), and firmware for industrial and automotive applications. Adept in mathematical modeling, control systems, and Linux environments. Committed to continuous learning and delivering robust R&D-driven solutions.

EDUCATION

Bachelor's Degree in Computer Engineering

Federal University of Technology – Paraná (UTFPR) • Pato Branco, Brazil • 2018-2022

- Graduation project: Implementation and simulation of an Extended Kalman Filter for Brushless DC motor control using Python.
- Research activities focused on control systems, BLDC motor simulation, and embedded systems development.
- Participated in multiple academic research initiatives with emphasis on applied control techniques and signal processing.

COURSEWORK

Signal Processing (Aluno Externo)

UTFPR – PPGEE • 2020

- Completed 4-credit postgraduate course in signal processing as an external student.
- Topics included frequency-domain analysis, filtering, and digital signal modeling.

EXPERIENCE

Development Engineer – R&D Department

Progress Rail (a Caterpillar Company) **December 2024 - Present, Curitiba**

- 1. Designed and implemented new features in embedded systems for railway solutions, enhancing functionality while preserving backward compatibility with legacy codebases.
- 2. Developed and integrated communication protocols including CAN J1939, I^2C, and RS-485 to interface with embedded hardware components.
- 3. Conducted deep debugging of firmware, resolving critical issues such as hard faults in production devices, ensuring reliability in field-deployed systems.
- 4. Engineered automated test frameworks for embedded rail control systems, elevating validation coverage and accelerating release cycles within safety-critical environments.

Software Analyst – Automotive Systems

Zeentech (contracted to Stellantis) **July 2024 - December 2024**

- 1. Developed and validated automotive control algorithms using Simulink, contributing to the safety and performance of vehicle electronic control units (ECUs).
- 2. Participated in model-based testing and verification processes for embedded automotive applications aligned with industry standards.
- 3. Integrated calibration datasets and managed ECU software updates using proprietary tools, enhancing the efficiency of deployment cycles in compliance with automotive regulatory standards.

Embedded Systems Developer

Inobram - Aviculture Automation **October 2022 - June 2024**

- 1. Led the design and deployment of an over-the-air (OTA) bootloader for STM32-based embedded systems, enabling remote firmware updates in production environments.

- 2. Maintained and extended legacy firmware for agricultural automation systems deployed across multiple poultry farms, ensuring operational stability and performance.
- 3. Collaborated with multidisciplinary teams to integrate sensor interfaces and optimize embedded control logic for field reliability.
- 4. Engineered robust communication protocols between microcontrollers and peripheral devices, elevating system interoperability and field diagnostics for automated poultry equipment.

R&D Intern – Embedded Systems

Xpert Automação de Postos **November 2021 - June 2022**

- 1. Developed embedded software for gas station automation systems.
- Configured and deployed mesh networking topologies on embedded platforms using OpenWRT, optimizing network stability and coverage for distributed systems.
- 3. Integrated sensor data acquisition modules with automated fuel management platforms to enhance the accuracy and real-time monitoring capabilities of station operations.

- 1. Designed a lightweight file transfer system over IPv6 using Python sockets, focusing on simplicity and portability across systems.
- 2. Implemented sender/receiver roles with basic error handling, compatible with CLI workflows and embedded testing.

SKILLS

C, C++, Python, Bash

Embedded UART, I²C, CAN J1939, RS-485, FreeRTOS

OS Arch Linux, Debian, Ubuntu, OpenWRT, Unraid

Tools Git, Docker, Jenkins, Qt, Pytest, Simulink

Languages C, C++, Python, Bash

PROJECT

Homelab Server

- 1. Personal server running Unraid OS, used as a platform for continuous experimentation with virtualization, networking, VPNs, and self-hosted services.
- 2. Hosts local backups and media storage for personal and family use, reinforcing data safety and hands-on sysadmin skills.
- 3. Engineered a homelab server environment to facilitate self-hosted applications, streamline network configurations, and consolidate backup routines for robust data management and technical skill advancement.

ESP32 OTA Bootloader

- 1. Implemented an OTA firmware update mechanism for ESP32 using custom socket communication and the ESP-IDF bootloader.
- 2. Designed the update pipeline with socket streaming, image validation, and dual-partition memory layout.

Stock Portfolio CLI Tool

- 1. Developed a terminal-based tool for real-time tracking of personal investments and dividends using Python and public APIs.
- 2. Features include portfolio cost basis analysis, profit/loss monitoring, and dividend tracking.

IPv6 Python File Transfer

- 1. Designed a lightweight file transfer system over IPv6 using Python sockets, focusing on simplicity and portability across systems.
- 2. Implemented sender/receiver roles with basic error handling, compatible with CLI workflows and embedded testing.
- Engineered robust transmission protocols to ensure reliable file delivery across IPv6 networks, incorporating modular design for seamless integration with diverse environments.

CERTIFICATIONS

Fundamentals of Cybersecurity (Fundamentos em Cibersegurança)

UTFPR + Cisco Networking Academy • Aug 2020

- Completed a 30-hour marathon on cybersecurity fundamentals during the Learn-A-Thon initiative.
- Topics covered: threat models, digital defenses, legal aspects, and high-availability strategies.

Introduction to Cybersecurity (Introdução à Cibersegurança)

UTFPR + Cisco Networking Academy • Aug 2020

- Completed a 15-hour introductory course on global threats, network vulnerabilities, and industry implications.
- Emphasis on the growing need for cybersecurity professionals and certification opportunities.

CCNA Routing and Switching: Introduction to Networks

Cisco Networking Academy • Dec 2019

- Acquired practical knowledge on IP addressing, routing, switching, and device configuration for small and medium business networks.
- Developed hands-on skills in deploying and monitoring basic connectivity between networked devices.