Miguel Horta

Electronics Engineer · Embedded Software Developer

Portugal

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Experience

Petrotec

Seixal, Portugal

Software Developer

Fev. 2020 - Present

- Migrate old C and lua codebases used in outdoor and indoor payment systems, to new hardware, SDK and GCC version.
- Develop solution for payment terminals that act as an extension of shop's POS system allowing outdoor sales in old or simpler fuel dispensers that do not come with such functionality built-in.
- Create new abstraction layer for tank gauge systems, written in C# capable of interfacing with multiple protocols namely IFSF, Veeder-root, and XMLRPC.
- Implement POS <> FEP protocol based on IFSF, with prepayment enabled and resiliency mechanisms in place.
- Migrate an outdated adhoc linux distribution to the current LTS version, using a more streamlined process based on Yocto that will allow for easier updates. Port init system from sysinit to systemd. Redo Bluetooth PAN support upgrading from bluez3 to bluez5 with DBus.
- Write Bitbake, CMake, and Meson recipes, to then integrate in the Yocto build used by Petrotec for its newest fuel dispensers and multimedia systems.

Wondercom

Lisboa, Portugal

Software Developer

Jun. 2019 - Dec. 2019

- Subcontracted to NOS Inovação. Worked in conjunction with the team responsible for development of residential internet gateways. Some of tasks performed were:
- Use Yocto to create a Linux distribution;
- Native development for Linux, targeting an embedded platform;
- Use linux's network stack, and RDK, to implement hotspot-like functionality;
- Develop solutions to improve system's robustness and resilience;

DSR Corporation

Porto, Portugal

Software Developer

Fev. 2018 - Apr. 2019

- Subcontracted to one of the leading providers of real-time operating systems, worked on software verification, quality assurance (QA) and testing, targeting conformity with industry standards, namely ARINC 653, ISO 26262 and EN 50128.
- The main technology used was ANSI C. It was used to create system drivers and test kernel's interfaces.
- Bash and python were used to automate some tasks.

Education

MSc in Electronic and Telecommunications Engineering

Aveiro, Portugal

Universidade de Aveiro

Set. 2012 - Dec. 2017

The integrated Masters Degree taught at Universidade de Aveiro is very exhaustive. It contains courses for system's architecture, embedded platforms, and operating systems, analog and digital telecommunications and networks, power electronics and robotics, among others. Follows a short list of relevant projects realized within the degree:

- Smart Lead battery charger - It used a simple actuation and sensing circuit controlled by an PIC32 µC. The sources for the prototype version are available here: http://github.com/MiguelHorta/SmartLeadCharger/
- Smart bicycle locker - A proof-of-concept demonstrating a lock that could be actuated using a smartphone and bluetooth. It provided real-time information through SMS if any attempt to steal the bike was attempt. A PIC32 µC was used to interface and control all elements.
- File System driver - an ext2 inspired clone developed within the "Operating Systems" course.
- "Robot plays board games with human" masters thesis - It involved computer vision (kinect) and a robotic arm (6 DoF). Its goal was to play board games against a human. The main technologies used were C++ to control the arm and logic, ROS and PCL.

Extracurricular Activity

IEEE UA Student Branch

Aveiro, Portugal

Active Member & Treasurer at 2016 — *May 2013 - Dec. 2017*

- As an active member helped organizing a few workshops and numerous bigger events: Micro-Rato 2013, 2014, 2015, 2017, IEEExtreme 8.0, 9.0, 10.0, 11.0, IEEEDay 2014, 2015, 2016, Engineering Day 2015 and LeaderShip Camp 2015.
- Developed the website used by the branch between 2013 and 2017 (http://ieee.web.ua.pt/).

NeRD - Núcleo de Robótica Diversificada

Aveiro, Portugal

Member — *Sep. 2015 - Dec. 2017*

- As member helped organizing a few events: 1st edition of *RaceWars* and 1st edition of *ShareToy*.
- Developed the website used for the *RaceWars* event.
- Built a smart charger for lithium batteries. It reused a printer's power supply, which powered a custom made PCB (KiCAD). An STM32 ARM µC was used to control its operation, it was fully programmed in C.

Competitions

IEEEXtreme- 24-Programming Competition

Online

Team — *2013 - 2017*

IEEEXtreme is a global challenge in which teams of student members compete in a 24-hour time span against each other to solve a set of programming problems.

- Participated in 5 editions between 2013 and 2018 achieving great results. The main technologies used were java, python and ruby.

MicroRato

Aveiro, Portugal

Team — *2013 - 2019*

MicroRato is an annual robotics competition which takes place at Universidade de Aveiro. It has 2 main categories, Explorer which goal is to control a robotic agent in a simulated environment, and Maze Runner where an autonomous robot is built to solve a maze.

- Explorer: participated in 2019 having achieved a 2nd place. The robotic agent used was programmed in ruby.
- Maze Runner: participated a total of three times between 2017 and 2019, reaching the 1st place twice. The robot built has as its core an STM32 ARM µC, and was fully programmed in C. PCBs were created using KiCAD, while the robot structure was designed with FreeCAD, OpenSCAD and 3D printed.

Skills

Programming	ANSI C, Ruby, Lua, Shell Script, C++11 Python , C#, JAVA , Assembly MIPS, Rust
Web	HTML , SASS(CSS) , ECMAScript , RoR(Ruby), Sinatra(Ruby), Django(Python)
Databases	PostgreSQL, MariaDB, SQLite
Embedded Platforms	PIC, ARM Cortex-M, AVR
Others	GNU/Linux, GDB, git, Bitbake, Yocto, JIRA, XML, JSON, CMake, Android(NDK), YAML, PikeOS, RDK-B, Mercurial, LaTeX, Meson
Languages	Portuguese(Mother-tongue), English