Sergio Rodriguez Freire

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Summary

Senior Software Engineer, extensive experience in different industries (electronics, quant finance, logistics) and skilled in C#, C/C++, Java, Python and MATLAB. Always willing to learn new things, I enjoy working on complex challenges and delivering innovative and robust solutions.

Experience

Software Engineer, Qorvo, Zele, Belgium May 18 - Present

- Member of a multidisciplinary HW-SW team designing test platforms for OEMs that integrate Qorvo silicon in their products, typically remote controls and low-power sensors.
- Lead software engineer and project controller for the Test Development Kit©. A low-cost SDR (software-defined radio) platform in the 2.5GHz band, custom designed to validate the Zigbee and BLE PHY perfomance of Qorvo transceiver ICs in high volume OEM's production setups. The platform is based on a STM32 MCU, an FPGA, an in-house radio chip and a C# SDK.
- Responsible for ensuring that the project is delivered within schedule and specs. Manage resources and deliverables. Plan future product evolution and roadmap. Write documentation and provide internal and customer training.
- Toolchain: C#/C++/C, Bare-metal programming, Python, MATLAB, SQLite, TeamCity, Visual Studio, Jira, Perforce, RF Lab instrumentation.

Software Engineer, SIACON, Goiânia, Brazil Dec 12 - Apr 18

- Design and development of Artemis©, a C#/C++ Windows-based client-server Warehouse Automation System, specialized in large commodity warehouses, and Atlas©, a Visual Warehouse-Layout Authoring Tool. This system supports 24x7 operations and is present in dozens of sites throughout Brazil. Our main customers are VLI Logistics, NovaAgri and Heringer. More than 5mt of grain, sugar and fertilizer processed by Artemis© in 2017.
- Development of a WPF/Qt client application for real-time viewing and control. Drivers and controllers for interfacing with various hardware systems: RFID readers, serial-IP converters, gates, industrial scales, outdoor displays, IP cameras, fingerprint readers, PLCs, card dispensers and queues. A scheduler that handles a process lifecycle in the Artemis© server.
- An H.264 video player based on FFmpeg and a custom C# RTSP/RTP server used for video stream pooling. Prototyping a card dispenser controller and an embedded scale server based on a Rapsberry Pi and a GPIO expander. Image processing algorithms for ANPR and object detection.
- Creation of a hardware emulation layer used for automated testing.
- Toolchain: C#/C++, Native Interop, Python, WPF, Qt4, SQL Server, FFmpeg, OpenCV, SignalR, TeamCity, Visual Studio, PowerShell, Git.

Software Engineer, Oobj Tecnologia, Goiânia, Brazil Mar 13 - Jun 14

- Designed the backend for a government website. Optimization of the real-time data processing stack of the company. Machine learning research for potential new products.
- Toolchain: Java 7, PotgreSQL, Eclipse, Lucene, Solr, Subversion.

Software Engineer, TEIN Technology, Brussels, Belgium Oct 11 - Nov 12

- Responsible for the maintenance and extension of SightVision©, a CCTV application used for traffic control and surveillance in several Belgian and Dutch sites.
- Extended the video playback application, created a new messaging service and developed new IP camera and DVR drivers.
- Toolchain: Delphi, C#, SQL Server, Visual Studio, Subversion.

Software Engineer, Alcatel-Lucent, Antwerpen, Belgium Apr 09 - Apr 11

- Designed IP-DSLAM access nodes for European Telcos. The development platform was based on a 2-core Freescale processor, running VxWorks OS and a Broadcom switch equipped with 24x10Gbps ports.
- Developed an MPLS protocol stack for Deutsche Telekom, mainly focusing on the L2/L3 protocol filters, QoS module and the SNMP engine in the management plane. Ported the firmware layer for a new high capacity Ethernet switch for France Telecom. Designed a new DSLAM protocol testing framework using Python and Scapy.
- Toolchain: C/C++, Python, Green Hills MULTI, Eclipse, Clearcase.

IT Quant, BNP Paribas Fortis, Brussels, Belgium Mar 06 - Mar 09

- Software development lead at the commodities and energy trading desk in the Global Markets department, trading mainly oil, natural gas, electricity and precious metals.
- Implemented new analytical and numerical methods for pricing derivatives products, such as swaps and basket options.
- Designed new energy risk management and hedging tools based on Excel, XLW and C++. Developed extensions for Sophis©. Integrated with other bank systems and market data flows.
- Research on high performance parallel computing using MPI and OpenMP implementations.
- Toolchain: Sophis© Toolkit, C/C++, Java, MATLAB, SQL Server, Boost, Visual Studio.

Software Engineer, Technicolor, Antwerpen, Belgium Jan 05 - Feb 06

- Developed a media player application for the Thomson Lyra©, a PDA (Personal Digital Assistant) running Qtopia and MontaVista Linux, equipped with a Freescale ARM processor.
- Toolchain: C/C++, Qt 3, Perl, Green Hills MULTI, Emacs, Linux, Clearcase.

Software Engineer, SONY, Brussels, Belgium Jan 99 - Dec 04

- Developed drivers and middleware for a family of high-end Digital-TV models. The main target platform was NEC's Emma, an MPEG-2 SOC based on a MIPS core, running pSOS, Nucleus RTOS and Fusion TCP/IP stack.
- Developed drivers for various components: DVB-S/T tuners, flash, I^2C bus, DVB-TS demux and MPEG-2 AV decoder.
- Wrote a middleware library that handled the MPEG-2 service selection chain, i.e. RF tuning, DVB-T network scanning and AV demux and decoding, including the corresponding Java APIs, as required for a JVM-based DVB-MHP© compliant stack.
- Maintenance of the AWT graphics engine.
- Toolchain: C/C++, Java/JNI, Green Hills MULTI, PMON and ICE emulators, Emacs, UNIX, Clearcase.

Education

MSc. in Telecommunications Engineering, Polytechnic University of Catalonia, Barcelona, Spain 1993-1999

- Master's Thesis: Study of LEGION neural networks, and its applications in computer vision. Creation of a neural network simulator using MATLAB/C.

Post-Masters degree in Mobile Communications and the GSM Standard, Polytechnic University of Catalonia, Barcelona, Spain 1998-1999

Part-time Finance MBA, United Business Institutes, Brussels, Belgium 2003-2005

- Graduated Magna Cum Laude. GMAT Score: 700 (above 90th percentile)

Languages

Fluent in English, French, Spanish (mother tongue), Portuguese and Catalan.
A2 level in Dutch.

Personal Details

Born on the 22nd of September 1975. Married, 2 children.

Visa Status

EU national (Spanish). Wife and children are Belgian citizens.

Open Source Work

Creator, POSApp 2013

- Written in C for a brazilian company in the e-ticketing business. It is a lightweight e-commerce app for POS (Point of Sale) handheld terminals, that runs on top of Verix V OS from Verifone. It contains a rudimentary GUI engine, an HTTP client and a regex parser. Developed and tested on Verifone's Vx680 model.
- http://github.com/sergiorf/posapp

Creator, IFGApp 2015

- Developed the backend for a Python/Django based web app. Its purpose is to automate the handling of IP (intellectual property) assets for the Instituto Federal de Goiás.
- http://sgi.ifg.edu.br
- http://github.com/sergiorf/ifgapp