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INFORMATION

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Only offers in the Cambridge area or remote.

Do you have to start a team or are you a startup? Well I like planning and setting up things, and I have created teams to get things running.

TECHNICAL SKILLS

C	C++	Delphi/Object Pascal/Lazarus
Java (used now and then)	Matlab/Octave	Mupad (and some Mathematica)
Python		Assemblers
GCC	UML	HEXFET
Qt/QML/Qtopia/Qt Embedded	CVS/Subversion	Network Comms
DSP/z-transform/digital filters	Radio Stacks	MISRA
Static Analysis Tools	Scitools Understand	Gcov
Windows/WinRT/Win32	Linux	Embedded Linux
Ubuntu/RedHat	Cygwin/MinGW	OpenEmbedded/Yocto/Bitbake
Angstrom	OOD+Design Patterns	UX/UI
Wireless MBUS - EN13757	Protocol Design	Internet of things - IOT
RTOS/FreeRTOS/CMSIS	STM-HAL/BSP	Valgrind
Keil uVision	Eclipse	Visual Studio
QtCreator	IGBT	FPGA (not used too much lately)
Digital Design	VHDL (not used too much lately)	Analogue Electronics (oriented to control)
Power Electronics	STM32	NXP-LPC
Source Control Systems/VCS/SCS	Mercurial/Git	MHO protections

OVERVIEW

- An experienced engineer who has developed new technologies in different fields, he has created and provided the base technology to one start up and partially to other 2 companies and likes to think that is making a change.
- Takes **consultancy** roles evaluating a client's needs and provide expert advice and opinion on what needs to be done.
- has provided independent expert opinion in inter-company meetings (for the coffee mainly).
- Understands well what is a product, and all its life cycle.
- For some unknown reason his desktop and laptop run Linux (SUSE & Kubuntu if you are curious).
- **Unavailable for jobs in the defense sector, or in any field with a direct purpose of harming human beings.**
- **This CV is PERIODICALLY TRIMMED. Expect some (more or less irrelevant) listed roles disappearing in the future.**

PROFESSIONAL EXPERIENCE

Contractor/Consultant,Freelance

(2011-**Present**)
Overview:

Role descriptions:

- Designer = I have designed, or co-designed the Software (and sometimes the hardware as well).
- Head of development = I had to take care of a team.
- Developer = I produced code.

High Speed Validation Rigs (04.2019 – 12.2019) **Ongoing but should be free in January**
Projects for the automotive industry.
Automotive EOL test machines to new parts for new vehicle models:

Proposing and writing new validation procedures to characterize the production of new parts and implementation of the software side, involved one machine model in China and two in Mexico. Reporting to the company units in Germany and South Carolina, but performed remotely from Cambridge, with a couple of one week visits to sites to oversee the new procedure and discuss results.

Clinical Analysis Machine (02.2019 – 04.2019)
Low Level Systems Consultant.
Cat IIb medical device able to detect protein traces (such antibodies or virus capsids) for diagnostic purposes.
(Embedded Linux, C++14, Yocto, MQTT, ARM, IMX8, MISRA/AUTOSAR, IEC62304, ISO 14971)
The phase was finished in record time, but the customer of my customer introduced a parenthesis in the development, not knowing when they will resume, the team was dissolved (Note: the development started again a couple of months afterwards, life with startups!).

- Preparation of initial proposal of functionality segmentation, based on risks, and different parts classified as per IEC62304 in A, B and C classes.
- Preparation of architecture documentation as per medical standards.
- Evaluation of hardware platform.
- Evaluation of static code analysis tools for code quality control.
- Induction of new team members.
- Preparing the initial Yocto system, and generation of cross compiling toolchain with Qt support.
- Managing the small team.

Tumor Detector (10.2018 – 01.2019)
Developer.
Hired to write the calibration software for a scanner device able to detect and measure tumors in/under the skin.

(C++14, Qt, OpenCV)

Automation and IoT project (11.2017 – 08.2018)
Designer, Head of Development & Developer.

An extension of a work done in 2014, a wireless measuring system for energy applications. The same technologies as in "*Wireless Sensing System (02-2014)*".

- Porting to STM32L0 and STM32F7 (nodes divided in two classes, "Low Power" and "Network Processing" nodes) to meet power constraints and lower average node cost.
- Porting to GCC 6.
- New features adding C++14/C++17 code.
- FreeRTOS with CMSIS RTX compatibility layer.
- MISRA C++ 2012 (guaranteed by static analysis).

Infusion Pump (08.2017 – 10.2017)
Developer.
Software for Infusion Pump (Cat III medical device, GCC, C++14, Qt, Embedded Linux, Protocol Buffers, gRPC, MISRA, IEC62304, ISO 14971).

End of line testing station (04.2017 – 08.2017)
Developer.

Control software for an EOL testing station, for characterization and validation of HAL effect based sensors for the automotive industry. A PC Hardware based solution using their own custom framework.

- Image feature recognition using Matrox cameras.
- Spectrum DAQ for signal acquisition from sensor and encoders.
- Ethernet based servos and laser marking, controlled PSUs.
- Compressed air actuators.

Next Generation Capacitive Touch Sensor (02.2016 - 04.2017)
Designer, Head of Development & Developer.

New mutual capacitance sensor able of 200+ full scans per second, hundreds of simultaneous touches (as many as the USB system allows), sizes of 100+ inches are possible. Extensible firmware to implement behaviours and augmented UI, allowing quick prototyping, Able to identify sources of noise, adapting to them, computing optimal driving levels for a given size and target SNR. Able to simulate pressure in contacts and support for active capacitive stylus. I had to assemble a small team for this project.

- Embedded part written in C++ 11 (GCC 5 in custom environment, on top of GDB for debugging).
- STM32 HAL Framework with CMSIS wrapper for FreeRTOS on a ARM M7 platform.
- Configuration & Testing apps, as usual, C++/Qt, Linux and Windows.

Noise canceling for sensing application (07.2015 - 02.2016)
Designer & Developer. Specification made by the customer.

Embedded software to identify different noises and deal with them in real time using sophisticate adaptive algorithms (using variations of LQE and other state observers). Implemented using the KEIL toolchain on a ARM target, using the DSP abilities of the ARM M4 platform.

- Embedded part in C++
- Using Keil uVision 5
- CMSIS Framework with RTX RTOS.
- Simulation platform written in Java.

PC based USB-Connected Spectrum Analyzer (05.2015) **←- These are completion dates**
Designer, Head of Software Development.

Portable tool to Discover sub GHz ISM band transmission issues,

- Hardware design, build around a Semtech transceiver IC with a Renesas uC, target was low cost and portability.
- Firmware design and Development (C)
- PC application showing Spectrograms and other information (C++, Qt)

Big Format Capacitive Touch Sensor (40 inch and bigger) Configuration and Testing. (08.2014)
Developer.

- Design of the multi platform Setup and Test program: UML.
- Implementation of the Setup and Test program in C++ and Qt: QtCreator, Visual Studio with Qt plug-in.
- Produced production quality executables for Windows and Linux (multi distro: Red Hat/Fedora, Ubuntu, Debian, OpenSuse). Beta quality builds for MacOS and Android.
- Tracing and Fixing of USB communication problems in Linux and WinRT platforms in the host.
- Testing multiple platforms using VirtualBox.

Wireless Sensing System (02.2014)
Design, Head of Development & Developer.

Able to report analog and digital magnitudes.

- Using one of our RE1003 together with a NXP LPC4370 (ARM M4+2*ARM M0).
- Embedded C++, Keil uVision 5
- CMSIS RTX in main CPU, “Great Loop” (no OS, direct metal) in the others.

Visual Classifier Application (2013)
Designer, Head of Development & Developer.

- Main application in Linux, using C++ and Qt, using PC compatible hardware.
- Vid4Lin/Phonon/GStreamer/OpenCV
- Servos/Actuators and their drivers.
- Image Recognition and matching, with shape recognition and classification.
- Volume and weight estimation from partial views.
- System training and configuration application written in C++/Qt for Windows.

Wireless Light Controllers (2012)
Design, Specification, Head of Development.

Family of radio controllers for lighting applications.
Low cost family of wireless switches, including low power driving units for lighting and high power models for machine control.

- Wireless dimmers and controllers for lighting purposes (RF/Embedded C++).
- Some instrumentation & sensing wireless transducers (RF/Embedded C++/Desktop C++/Qt).
- Wireless modems for pure data communications (RF/Embedded C++).
- Testing and setup utilities (C++/Qt)
- Sales, purchasing, specification development, cost estimates.

Meshing Radio Stack (2012)
Design, Specification, Head of Development.

- Meshing network, with routing capabilities..
- Self healing, to be used in unreliable comms (I. e. radio and wireless applications in noisy environments).
- Able to address huge numbers of nodes through distributed directories.
- Traffic contingency at the level of network.

AMiHo Ltd

(2009-2011) Founder & Software Director.

IHD (in Home Display) - DEVICE
Co-specification, architecture, design and development.

- Mainly focused into the Smart Metering/IoT market
- Based on a Toshiba ARM 9 Application Processor.
- Embedded Linux solution. OpenEmbedded, and some small kernel hacking (there wasn't official support at the time, not too proud of my job though).
- Tool chain bootstrapping GCC itself.
- Ported Qt Extended for the GUI.
- Remote administration tools.
- Server side tools based on CGI.

IHD - SDK
Specification, design & development of the IHD SDK (Software Development Kit).

- Based on Python and C++, allowing several layers of personalization by customers.
- Graphical editors for quick code composing and framework generation.
- Enabled customers to write their own full applications, not only plug-ins.
- Used in conjunction with remote media servers.
- Also allowed the extension of the server side tools.

"Wirelization" of gas meter
Development.
Firmware enabling wireless communication of an existing gas meter design. This project used an optical link to make the meter EN13757-4 compliant, adding some intelligence to the firmware in the modem.

Wireless MBUS
Co-specification, architecture, design and development of a highly portable (now running in 2 different architectures) EN13757-4 compliant MBUS wireless network stack. Currently licensed to several industry leaders, and key to the company investment.

Firmwares
Architecture and Development.
For the main line of radio controllers (C on Renesas R5F chips+Semtech transceivers)

Technology partner support
Evaluating and preparing technical marketing material for a FPGA manufacturer technology partner, in coordination with their USA Headquarters, integrating our technology with theirs, targeting and meeting potential European customers.

Investor Relations
Preparing investment documentation, meetings and negotiations, targeting different investment institutions.

Customer Relations
Commercial negotiation for pricing and calendars for customers in Mainland Europe.

Cambridge Artisans Ltd

Consumer Electronics.
(2008-2009) Technical Director.
Company set up with other engineers to design a IP-based set-top box for a third-party under strict NDA.

Cyan Technology Ltd

Microprocessors. Cambridge, UK.
(2004-2008) Senior Software Engineer.

Cyan Technology developed very flexible power aware micro controllers. Although the job title is software engineer, the role involved hardware specification as well, a kind of role I feel very comfortable in mixing hardware and software.

IDE (CyanIDE)
Main programmer (in C++) for the company's multi-platform IDE, using C++ and the Qt toolkit. It included a humungous amount of GUI work.

32bit RISC CPU + IEEE 754 FPU
Co-specification and design of a high performance, low cost, low power 32bit CPU and a FPU co-processor with a mixed integer/floating point vector unit, thought to perform cryptography, high speed floating point maths, and multimedia.

USB Drivers for Host and Device
Writing USB Host and USB device software (device drivers for the host and firmware USB stack for the device).

Hand held device for Smart Metering
Wireless device for remote meter reading (leading from UK the development done by a Hong Kong based team). The main CPU was running under Micrium uC/OS 2.

Visits to overseas customers
Technical visits and training

Sabbatical in Britain
(2003-2004) I came to Britain to learn Shakespeare's Language, but met my wife instead.

EDUCATION & TRAINING

BSC (Hons) Industrial Engineer
MEng (Hons) Electric, Electronic & Control Engineer
Combined 7 years degree (In Spanish: Ingeniero Superior). Universidad de Sevilla. (Seville, Spain)

Project Management
Colegio de Ingenieros Industriales de Andalucía Occidental. (Western Andalusia, Spain)
Project management by Co.I.I.A.Occ, (IPMA).

LANGUAGES
English (fluent), French (very basic, it shouldn’t be here), Japanese (in chronic stasis), Spanish (well, I am Spanish after all).