Jerome Oswald-Jones - MSc BEng (Hons)

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Nationality: British
Current job title: Electronics and Software Engineer
MSc (Merit) in Broadband and Mobile Communication Networks
BEng (Hons) 2.1 Computer Systems Engineering
HND (Merit) Electronic engineering
Full car and motorcycle licence
Please see email address above

In brief
I'm an embedded electronics and software engineer

I develop electronic circuits from concept through to production for 'bare metal' resulting in a manufacturing package with everything needed to produce fully assembled and programmed printed circuit boards; including gerbers, BOM, pick and place files and programming software. From initial ideas through schematic design, PCB layout, footprints, software coding, in-house prototype manufacture with excellent PCB prototyping skills including PCB and component procurement & population, programming, R&D test and finally production release. Amongst many other tools for this I use extensively, oscilloscopes, logic analysers, multimeters, many types of PC software including PCB design tools, Software IDEs and monitoring software for electronic communications analysis and decoding.

PCB design packages used in industry:
Mentor Graphics PADS
Proteus Design Suite
Autodesk Eagle
EasyPC
Very interested in using the Open Source KiCad EDA
But I'm completely open to new environments

Software design environments used in industry:
C Programming compilers
Processor specific IDEs
Visual Studio Visual Basic
Microchip MPLAB
Atmel Studio
Arduino IDE
LTspice
Wireshark

Useful companies I deal with:
Ragworm/Stickleback, Rochester, Kent UK. Rapid PCB manufacturing.
Bassett Electronic Systems, Swindon UK. Production PCB manufacturing.
Action Circuits, Luton, UK. IC preprogramming.
Semiconductor distributors: Farnell, RS, DigiKey, Mouser, Microchip direct, Future Electronics, Avnet, Arrow Electronics
Looking to use 'Dirtypcbs' in Shenzhen, China. Rapid PCB manufacturing.

Employment History

4/2018 – current (on request by interviewer) Oxfordshire, England, UK – Electronics Engineer
The position within the R&D team of an inertial along with GNSS receiver navigation company has responsibility to design, develop and maintain hardware and embedded software for the companies products. Also within this role I developed switch mode PSU designs (boost, buck, boost-buck, to cater for their wide variety of input/output power needs. The role is responsible for all aspects of product design from feasibility to production, including digital and analogue circuits, and microprocessor circuits and software. The role requires good knowledge of digital and analogue electronics, and software design, and some experience of mechanical design. Knowledge and experience of design for manufacture and product approval processes including EMC was required.
Current notice period 12 weeks

6/2016 – 4/2018 Integration Technology Limited, Oxfordshire, England, UK – Electronics and Software engineer.
Responsible for power and control of ultraviolet curing solutions designing constant voltage/current buck converters, bespoke auto negotiating, self addressed networked PWM fan controllers.
Diagnosed and solved through redesign of hardware and software all legacy products problems that were found to be failing in market.
Brought in new product manufacturing and test techniques throughout the company there were unknown to the company previously.
Electronic schematic and PCB layout design using the Proteus Design Suite, Autocad Eagle, EasyPC for legacy products and a look into the open source KiCad design environment.
Microchip MPLAB
Arduino IDE for legacy products
Atmel Studio
LTspice
C Programming
Visual Basic for hardware interfacing.
Beckhoff TwinCAT 2 PLC programming course, Beckhoff Automation Ltd, Henley-on-Thames

3/2012 - 6/2016 Television Systems Limited, Marlow, England, UK – Development engineer.
Responsible for product life cycle of equipment used in the broadcast industry.

I developed an analogue audio monitoring unit allowing monitoring of eight analogue balanced stereo pairs. Outputs are 20W Class-D amplifier LF, 2.8W Class-D amplifier HF, 80 mW Class AB headphone drivers, input level bar graphs, out-of-phase indicator, power indicator, balanced pair line out, 7-Seg channel pair indicator.
Input selection, volume, balance, internal speaker muting, variable or fixed line-out are all controllable via a front panel user interface.

I also created a TCP/IP accessible mains vertically rack mountable distribution and monitoring unit that is able to warn against equipment or power failure. Voltage, current, power factor and power on each of the outputs, along with providing temperature and humidity information. It has

an integrated 2x16 LCD display that gives basic information and menu access to change the unit's IP address. Ethernet port for network access. CAN bus is used to connect daughter boards due to its robust differential lines and quick to develop protocol stack. USB port is for software updates. Firmware also updatable over a TCP/IP network. RS232, SPI and IC2 for off-board communications and on-board diagnostics. General purpose input ports are provided via opto isolators and relayed contacts for a wide variety of outputs connections.

Each project would involve product costing estimates, component selection, schematic and component library design, BOM creation including all manufacturer and distributer information along with package type selection, lead time, approvals and costings. Followed by PCB layout design including routing, package footprint creation and design rule checking before releasing gerbers for PCB manufacture.

I would then test all aspects of the prototype and produce a wiring schedule.
Following this I would write test code for production and release final binary files.
Software is written in the C programming language and some assembler.

Some software packages used: Mentor Graphics PAD Suite for schematic design, BOM production and PCB layout. Microchip MPLAB, Atmel Studio, MS Outlook, Excel, notepad++, examdiff, wireshark, Saleae Logic (logic analyzer software/hardware).
Version control via SVN and Microsoft Team Foundation.
Agile project management was used to manage design and workflow.

12/2008 – 3/2012 Techrem Limited, Nuneham Courtenay, Oxfordshire – Embedded systems engineer.
My primary duties are working with microcontrollers to provide control solutions for business to business contracts. The focus of our work is on an in-house designed voting system for the 'Who wants to be a millionaire' television show. The systems software protocol and hardware is continually being developed in-house with the units being built in the Far East and then shipped all over the world.
I worked mainly in VB.NET and PIC BASIC, (mikroBasic) using Microchip PIC development tools from mikroElektronika. I used CadSoft Eagle for schematic generation and also for PCB layout to produce gerbers to send to PCB manufacturers.
Other aspects of work include motor control, custom infrared handsets and day to day running of the business.

11/2005 – 12/2008 Diagnos.co.uk, http://www.autologic-diagnos.co.uk/, Wheatley, Oxfordshire – Software engineer working with their product 'Autologic diagnostic system'.

Autologic diagnostic systems enable independent garages to provide comprehensive service in their own workshops.
Autologic for Porsche is a new diagnostic tool uniquely designed to replicate the functionality of the tools used by the manufacturer's dealers. It enables independent garages to provide comprehensive servicing for Porsche vehicles in their own workshops without having to rely on dealer availability.

This role consisted of developing independent automotive diagnostic software from concept to release by reverse engineering the Porsche dealer tool and analysing message response simulations. The main coding languages were PowerBasic (similar to Basic or C), and an in-house scripting language based on PowerBasic. In the beginning a lot of the work was

through tester to Electronic Control Unit (ECU), simulations where I would simulate an ECU's responses to the dealer tools or my own tester messages. This migrated to translating dealer tool scripting languages like XML and PHP into PowerBasic code. The project involved many automotive communication protocols including Keyword Protocol 2000, (KWP2000), Controller Area Network, (CAN) and ISO9141. Apart from the standard protocols many new Porsche specific protocols have to be analysed, deciphered and understood. These were discovered and reproduced with the use of oscilloscopes, bus monitoring hardware and software like Neo and Vehicle spy.
The majority of the work was in-house but where simulations would not suffice I negotiated relationships with independent Porsche garages for access to their vehicles and related ECU's with use of the Autologic Porsche software. CVS version control was via TortoiseCVS.

07/2003 - 10/2003 The Man of Kent, Ashford, Kent – Brief stint as a Barman for fun.
This role increased my customer service skills.

02/2002 - 02/2003 Longleys, Herne Bay, Kent – Taxi Driver to fund University.
This funded my time spent at university. It also improved my self motivational/communication skills and ability to cope with a variety of situations.

09/1999 - 10/2000 Microbus Group, High Wycombe, Buckinghamshire – Electronic Technician
Duties involved keeping the production manager's department running smoothly.
Responsibilities included fault finding, modifications, rework, prototyping, inspection, testing, installation and communicating new ideas with design departments.
Technologies used: Surface mount technology (SMT), Ball Grid Arrays (BGA).

06/1999 - 09/1999 John Icke automatics, Broadstairs Kent – Service Engineer
Duties involved installation, mobile repair and servicing of electronic gaming equipment dealing with contract and adhoc business.

01/1999 - 06/1999 Kineteco International Ltd, Canterbury Kent – Research and Development Engineer
Designing and developing from concept to completion a data logging system that enabled very accurate information to be collected on the position, direction and speed of rotation from the pinion of their innovative starter motor product. The embedded project involved C programming, serial communication, assembler code and the use of Motorola 68HC11 microcontroller and peripheral components.

08/1997 - 01/1999 CoolAir Paintersforstal Kent – Air conditioning Service Engineer
Serviced, installed and maintained air conditioning and refrigeration systems. Clients included private and industrial businesses. Self managed and motivated this added gas and plumbing work skills to my mechanical, electrical and electronic knowledge.

06/1993 - 09/1994 JH Syscom, Rainham, Kent – Circuit Board Assembler
Duties involved building circuit boards and cable assemblies.

Education

09/2004 – 09/2005 University of Kent at Canterbury, MSc (Merit) in Broadband and Mobile Communication Networks
http://www.ee.kent.ac.uk/postgraduate/pg_broadband.aspx

Areas covered:
Signal & Communications Theory, Communication systems, Communication Networks, Advanced Digital Communication Systems, Advanced Broadband and Mobile Networks and a six month TPMS (Tyre Pressure Monitoring System), research project . The project investigated the use of a Chipcon CC1010 microcontroller with an inbuilt RF communication module to be used in conjunction with established TPMS tyre modules. Technologies that were used within the project included MATLAB, Keil integrated environment, assembler programming, C programming language.

09/2001 – 06/2003 University of Kent at Canterbury, 2.1 BEng Honours in Computer Systems Engineering
http://www.ee.kent.ac.uk/undergraduate/ug_cse.aspx

Modules Covered:
Operating Systems, Computer Networks and Communication, Digital Electronics, Microcomputer Engineering, Image Processing and Computer Vision, Computer Applications Project, Computer Architecture, Digital Signal Processing and Control, Parallel and Imperative Programming, Distributed Systems, Project, Digital Communications, Embedded Computer Systems, Product Development, Digital Systems Design

Final year project - GSM phone based vehicle alarm system constructed on a double sided printed circuit board.
Technologies used: Microchip PIC16F77 microcontroller, Microchips MPLAB, HI-TECHs C cross compiler, Winbonds ChipCorder IC, High power H-Bridge, schematic design using Windraft, PCB board layout using Winboard and the auto routing package Specctra.

Other experience gained: Microsoft Visual Studio .NET, Borland JBuilder, PSpice, Macromedia Dreamweaver, C++, Java, Visual Basic, procedural C and Pascal, Occam parallel programming using Kroc Compiler for Linux, hardware description with Altera MAX-plus II, VHDL and low level assembler code, Orcad and CadSoft Eagle layout editors, RISC based Microchip PICs, Motorola 68HC11.

10/2000 - 04/2001 Cambridge Regional College
Classes in Java Programming

09/1994 - 06/1996 Canterbury College, HND (Merit) in Electronic Engineering
Awarded the Engineering Prize as the winner of the IEEIE south eastern region student cup
Final year project – Developed single board microprocessor systems using the Z80 microprocessor from Zilog and the Motorola 68000. Both of which needed to be programmed in their own assembler language respectively. The Z80 processor board was designed around an internal ISA card that could be inserted into an ISA bus in a desktop PC and could therefore be controlled using the computer's own monitor and keyboard. This was used as part of a teaching aid for college students.
Other experience included: control of microprocessor address and data buses, SPI, I^2C, serial and parallel communications, memory manipulation, register usage, interrupt handling,

hardware stacks and addressing modes. Also the use of the processors features like the hardware timers, Capture Compare modules, Pulse Width Modulation (PWM), Analogue to Digital converters (A/D), RF modules, watchdog timers and brown-out protection.

09/1993 - 06/1994 Medway Information Technology
Advanced Diploma in Electronics and Computing Systems

Other interests

I enjoy snowboarding a lot to the point where I purchased, fix, maintain and drive my own minibus for group trips to Scotland and the Alps amongst many other destinations.
Also I greatly enjoy motorcycle riding and mechanics. I go on a number of track days a year.
I was president of the Motorcycle Club back at University. I also held the position of social activity organiser and mini bus driver for both paintball and caving clubs and I am still currently a graduate member of the University of Kent caving club. I've always looked after my own properties (part of which I rent out), through masonry, electrical, gas and plumbing skills. I'm also active amongst other things in cycle/downhill, skateboarding, climbing, caving and surfing. Future activities would be paragliding, kayaking and possibly proximity flying.

Currently learning to play the guitar and ride a unicycle

Current personal projects

I have converted my car to, and still run it on waste vegetable oil and I'm continually looking to improve on the effort needed for vegetable waste oil processing to make it more of a turn-key solution.

I also look to evolve my electronics knowledge in my own time with various ongoing mini projects like motor control, human interaction, analogue interfacing to the outside world, audio visual stimulation and anything else that attracts my interest, think IoT. For this I keep a list of Open Source or low cost tools I can use along with hardware production facilities like having accounts with all the major component distributors along with small quantity PCB manufacturing companies.

Another side interest is in creating a tyre pyrolysis system to reclaim waste energy from used vehicle tyres, to firstly power my home and then to generate electricity to feed into the national grid. I've created a small working prototype unit for proof of concept and I'm now keeping my eye out for some more land to expand production. This is an excellent scalable business model where efficiency could lead to financial rewards in every step of the process.

References on request