CURRICULUM VITAE

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Holmfirth High School (September 99 – June 04) GCSE
8 GCSE's (A-C) GNVQ Information Communication Technology (Merit)

Huddersfield New College (September 04 – June 06) A/AS Levels
Electronics (B) Maths (C) *BTEC Award* Software Development (Distinction)

Aston University (September 06 – July 08) BSc Electronic Product Design – Transferred
Foundation Digital Electronics, Design Project (General), Materials and Processes, Design Project (Specific), Introduction to CAD, Java Programming Foundations, Internet Computing, Java Program Construction, Industrial Design, Product Modelling

University of Leicester (September 08 – July 11) BEng Embedded Systems Engineering – 2:1
Maths (1,2 & 3), Design and CAD, Electronics (1 & 2), Signals and Systems, Electromagnetism, Communications 1, Programming and Numerical Methods, Program Design, Computer Systems, Programming Embedded Systems (1 & 2), Control, Computer Programming for Engineers, Databases and Web Applications, Engineering Design, Data Structures and Development Environments, State Variable Control, Programmable Electronics, System Modelling (Z & CSP), Software Engineering & System Development, Microprocessor Programming, Networks & Distributed Systems

Final Year Project: *Programming a Lego Mindstorm with decision making and map following abilities*

Using an Open-Source real time operating system combined with hardware available in a Lego Mindstorm NXT kit, I designed and coded a 4 wheeled robot which was able to traverse and explore an unknown map of any size, as long as it pertained to pre-determined colours and junction types. The operating system used was nxtOSEK. My application was coded in C and leveraged task management and functions available through the Operating System API.

Achieved Mark: *69%*

Work Experience

Embedded Linux Engineer – (September 13 – Present)
Cambridge Broadband Networks Limited (CBNL), Cambridge, UK

Mainly working on the OpenEmbedded build system, our custom in-house build system, Linux kernel and Vectastar control applications which covers the whole of our product range. I also help the radio hardware team with the Embedded STM32 microchip design on our software assisted radios and coding and executing unit tests to analyse radio performance and check for regressions.

Notable Work
- Converted the legacy OpenEmbedded Classic build system to the current OpenEmbedded Core
- Rewrote the custom, in house build system which manages building the VectaStar applications and libraries
- Pruned application and libraries of legacy functions and features
- Implemented new TDM features for carrying and configuring E1 services in the VectaStar applications and daemons
- Linux Kernel debugging, bug fixing and code quality improvements to custom hardware drivers
- Performance enhancements and bring-up of new SBC's
- Improved compile and link time code checks and quality assurance
- Working with the hardware, test and software teams to orchestrate unit testing of radio hardware
- Took over the Embedded STM32 radio code from our lead radio designer on his departure
- Re-created and manage our new virtual buildhost infrastructure to allow for more deterministic builds and to have a tighter control over the build environment

Embedded Systems Engineer – (July 11 – September 13)
dB Broadcast, Witchford, Cambridgeshire

During my time at dB Broadcast I worked on numerous projects. The most major were the MERlin DVB-T/T2 monitoring receiver and our Embedded Linux Project.

In the MERlin DVB-T/T2 receiver project, I was responsible for re-designing the web front end, along with numerous back end http related changes. This was performed in my first 6 months at the company, and then was subsequently released with my code in place. During this time I enhanced my skills in C, Javascript, HTML and CSS while gaining experience with the MQX Operating system on the Freescale ColdFire platform. I was also partook in debugging and fixing bugs related to both the control code and MQX operating system.

The Embedded Linux Project was a project of my own design. The company were interested in a new platform on which to expand their product range and re-implement legacy products with modern features. I spent a number of months researching hardware, software and Linux application design patterns until I was confident enough to develop a prototype. During this time I gained experience in Linux application design, Linux Kernel design and Embedded Linux build systems and frameworks; specifically OpenEmbedded coupled with the Yocto Project.

I prototyped a range of products using the OpenEmbedded framework, with the CircuitCo Beaglebone as the ARM hardware platform. In a tight time frame, I built and configured a custom Linux distribution along with designing and implementing a multi-threaded application which controlled a variable number of FPGA's over an SPI protocol with strict timing requirements. The design also involved coding a Linux Kernel module to manage and interface to the hardware via SPI and communicate with the userspace application. The kernel device driver performed the role of bringing up of the FPGA hardware and managing multiple multiplexed SPI buses. It communicated with the userspace application through IOCTL calls and userspace to kernel memory mapping.

The userspace application was written in C and tasked with managing the FPGA's asynchronously. It's primary role was to configure the FPGA's and manage the time critical stateful data they produced. Its secondary function was to bring out a web front end, which was done with WebSockets and a JSON protocol similar to JSON-RPC. The web interface displayed information using HTML5, Javascript and made extensive use of Canvas. Due to the nature of websockets and the multi-threaded design of the application, the web front-end was almost real time in displaying and sending information.

The original MERLin code that I worked on when I started at the company was also successfully ported to the new Embedded Linux platform, which entailed working with a custom I2C Protocol, Sony Libraries, meeting timing deadlines in the userspace application and bringing performance enhancements through the use of Linux tracing tools (perf, valgrind and strace).

Student Open Source Software Engineer Summer Internship – (June 10 – September 10)
Credativ, 36 Regent Street, Rugby

During my time at Credativ I was required to undertake a variety of projects, I worked on internal company infrastructure managing network configuration and maintaining hardware and software. I was part of a project developing custom modules for an Open-source ERP system and packaging and testing development versions of the software to ensure stability. Whilst at Credativ I learnt many new skills which were usually self-taught with minimal assistance, I was required to get to grips with many new programming languages such as Perl, Python and Ruby along with being able to understand new frameworks and maintain and update past projects.

Testing was a large part of my responsibility and I would be required to test my own code, my fellow employees code and also find, fix and report bugs in software that we used. I would regularly speak to clients answering questions, providing support and occasionally travel to provide on-site assistance and set-up.

Waiter - (June 09 – September 09)
The Square, St Peter Port, Guernsey

Waiter/Bar - (June 08 – September 08)
The Huntsman Inn, Holmfirth, Huddersfield

Counsellor/Swimming Instructor/Wrote & Directed PHP Course - (June 07 – August 07)
Camp America, Watonka Science Camp, Pennsylvania

Waiter - (Jan 05 – Oct 06)
Three Acres Inn, Shelley, Huddersfield