Callan Bryant

MEng Undergraduate of Electrical and Electronic Engineering

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Education and Qualifications

I am currently studying Electrical and Electronic Engineering (MEng) full time at the University of Leicester, having completed a year in industry at Broadcom, to graduate in 2013.

I also hold 3 A2 levels (ACD, 2008) 4 AS levels (ABBC, 2007) and 11 GCSE levelss (AAABBBBBCCC, 2006).

Experience

Broadcom industrial placement

From 2010 to 2011 I worked at Broadcom in Cambridge as part of the Systems integration group.

I designed and produced a highly successful series of 3D camera/LCD test daughterboards. This involved schematic design, sourcing components and mechanical layout. The latest daughterboard interfaces a development kit with 2x Sony IMX060 camera modules and an Omnivision unit, as well as an auto-stereoscopic display from sharp; using CSI/DSI/I^2C busses.

I also implemented a hardware continuous integration system used to automatically test various corners of the BCM2763 media co-processor, in a laboratory thermal chamber, for every new software check-in. The system automatically contacts the relevant developers when a problem is detected; in addition to summarising the results to a web-based dashboard.

Additionally, I produced an exhibition platform, designed to physically show the power consumption of various phones during HD encoding. The platform has been used since 2010 and has been exhibited at numerous times at the the CES and MWC international conventions.

Practical skills

Web application development

I am experienced in PHP, Javascript (specifically node.js and jQuery) SQL, HTML5 and CSS.

As such, I have implemented a successful open-source music indexing/streaming system built on top of a search engine of my own design. The project is available at http://vosbox.org/ and is hosted on github.

The search engine that powers Vosbox is able to use SQLite, flat-file, or soon, Redis backends. It works by calculating the intersection of keywords associated with the objects and search string.

I have also designed a universal monitoring system called "MLDASH," written in javascript using node.js and websockets, that is capable of monitoring arbitrary real-time data from any source. It will also be released as open-source soon.

A screen-shot of MLDASH – shown monitoring a network of servers – is available on my website.

Embedded systems development

I am proficient in designing micro-controller based systems, programmed in C. I practice integrating low level protocols such as SPI, I^2C, asynchronous serial and JTAG.

For example, my 3rd year project (a lithium-ion battery power flow controller) at university makes use of an optically-isolated SPI bus to measure cell voltages and temperatures at arbitrary potentials, allowed by the resulting galvanic isolation. The whole system is able to maintain the state of each

cell by physically disconnecting each battery from the stack should it exceed its thermal or electrical specification; which is useful for charging and discharging. This allows the system to continue supplying or absorbing power, even if a number of cells are damaged.

Electronic design
I am familiar with the Cadence suite, and have industry experience with the schematic capture program; following Broadcom's board review and fabrication procedure.

In addition to this, I have experience with analog circuit design. For example, I have designed a computer fan controller which can visualise fan speed with no digital components. This was achieved by triggering a 555 monostable circuit once per revolution, averaging this signal using a low-pass RC filter, and then comparing the resulting signal with a set of reference voltages to drive an LED bar chart.

Network administration
I have working knowledge of the IP network stack. I run a layer 2 VPN with a group of people, consisting of 6 servers which host several websites and services. The servers are set up to route traffic and provide a fast internet connection by using a squid caching proxy, dhcpd, IPTABLES forwarding rules, and a hierarchy of BIND servers.

Positions of responsibility

I am currently managing the electrical team for our Formula student (see http://www.formulastudent.com/) racing team at my University. A new project for 2011, we intend to produce an electrical formula-style racing car to compete in the 2013 trials. This involves delegating the work load between my peers and co-ordinating the design of the induction motor, battery and motor controller.

Moreover, during my time at Broadcom I was responsible for sourcing, constructing and tracked distribution of each development kit (given to customers and internal development staff) in addition to managing the monthly lab budget. This was important in order to ensure the smooth running of the mobile multimedia department.

Career plans and profile

Completing my year in industry has made me certain of my career path. I have realized I thrive in an environment that *requires* innovation!

I intend to continue to work as an Electrical & Electronic engineer, and hope to work on both hardware and software whenever possible. I would additionally like to further develop my management skills.

I think I am suited to being an Engineer, possibly managing, as I recognise that the challenge is to produce elegant -- not just functional -- systems.

I have a non-dismissive attitude; if I am unfamiliar with something, I won't afraid to admit it, then ask questions or research the matter.

Hobbies and interests

In my spare time, I have a great interest in open source software and hardware. I enjoy developing software and hardware for the sake of learning and creating something elegant.

I am also currently developing a scalable home automation system that aims to control security, lighting and audio aspects.

Referees

Broadcom Europe

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Cheeks commercial cleaning
During 2006-2008, I worked as a cleaner for a local shopping centre.

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