Dr Paul Jones **MEng, DPhil, CEng, MIET**

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Key Skills

Embedded C/C++ (19 years):
ARM, Nordic, Sparc, Microchip, ST, Renesas, TI OMAP, Altera NIOS, Jennic, Ember and eCOG processors
Eclipse, MPLAB, Keil uVision, IAR Embedded Workbench, Code Composer Studio, Visual DSP++, Renesas Embedded Workshop, CodeBlocks and CyanIDE IDEs
Linux, FreeRTOS, QNX, VxWorks and uC/OS-II operating systems
Verilog HDL (5 years): Altera FPGAs and CPLDs
Matlab and Simulink (5 years)
Agile software development, Jenkins, PCB layout, Python, Assembler (3 years)
Google Test, Circle CI, Swift, Perl, CGI, VHDL (1 year)

Work Experience

2018 - Present **Lead Engineer, MachineMax Ltd**

Responsible for the design and development of a battery-powered IoT sensor for construction machine telematics in a startup environment. Design challenges included tight timescales, achieving very low power consumption, automated LoRa message retransmission, automated OTA firmware updates and tilt/tip detection using a 3-axis accelerometer.

2017 - 2018 **Lead Consultant, Zuhlke Engineering Ltd**

Lead Consultant in the area of embedded and IoT. Work included being the lead engineer on software and hardware development projects for the home automation and medical industries; project and customer management; sales visits, project planning and costing with potential customers; planning and providing training for the engineers in the team and keeping up to date with technological advancements in the industry.

2012 - 2017 **Senior Development Engineer, Nokia (previously Alcatel-Lucent)**

Working in the IP routing division on the company product line of core and edge network routers. Low level embedded software development for in house designed custom ASICs for the routers, including longest prefix matching algorithm development, simulating VHDL code in software, development of a framework to simplify the writing and debugging of programs for embedded Sparc processors, software support for bringing up new hardware, optimising high speed memory interfaces, customer bug fixes and architectural changes for new hardware platforms.

2007 - 2012 **Director, Attic Technology Ltd**

Running an engineering design consultancy specialising in embedded systems software. Consultancy contracts are listed below.

Native Design Ltd: Linux device driver development for touchscreens and a keypad used in a prototype digital camera demonstrated at the Photokina Imaging Tradeshow. Design of HDL to split the video out of a Gumstix module to two separate LCD screens in the camera using an FPGA.

Stratxx Near Space Technology: Development of a camera stabilisation platform and a satellite based location beacon for a UAV. Development of low level library code for peripheral interfacing that could run on the company's full range of products.

Innovonix Ltd: Embedded C programming to implement a maximum power point tracking algorithm for a solar powered irrigation system.

Moixa Technology Ltd: Embedded C programming on PIC processors and an ARM processor running embedded Linux to control a home solar panel electricity distribution product supplying and switching power to DC powered lighting and devices.

Onzo Ltd: Embedded C programming for Microchip PIC and Ember processors to add a USB communication and software update interface to a Zigbee wireless energy monitoring product.

Cyan Technology Ltd: Embedded C programming to create a gateway device to allow GPRS commands to control and report information from nodes on Cyan's Cy-Net wireless mesh network. The gateway was used in wireless street lighting and wireless gas metering products.

Tensor PLC: Embedded C programming on an ARM-based hardware platform to implement the entire software functionality for the *HeatingSave* energy efficient heating control system. Software tasks included low level communication with sensors and actuators, menu system user interface development via a keypad, high level communication with networked PCs and other *HeatingSave* units and development of algorithms to estimate thermal time constants.

Intelligent Sustainable Energy: Embedded C programming for a Zigbee wireless power monitor, used to log mains device power usage to a laptop basestation. A data logging application was developed for the laptop in C++ to store the data to log files in the approved format.

Oxford University Centre for the Environment: Software development for a Renesas processor prototype device used to halt central heating when a building becomes unoccupied.

Intelligent Sustainable Energy: C++ software development for the DSP subsystem of a TI OMAP-L137. Implementation of TCP/IP, DHCP and FTP networking protocols on the DSP for remote update of firmware and data logging to a webserver using HTTP POST to a Perl CGI script.

Oxford University Department of Materials: Development of a framegrabber card device driver for the QNX RTOS.

Royal Festival Hall: C++ software development under Linux to control audio and pneumatic actuators for an interactive mobile art sculpture displayed outside the Royal Festival Hall during its re-opening.

2004 – 2007 **Senior Software Engineer, Overview Ltd**

Leader of a multidisciplinary development team, consisting of mechanical, electronics and software engineers, creating new Pan-Tilt-Zoom CCTV camera systems and video processing products from concept to full on-site production as well as providing support and maintenance for the current product line. The role required project management skills, including customer liaison, requirements specification, timescale estimation, engineer recruitment, reporting to upper management and resource allocation, as well as technical skills including development tool selection, appraisal of new technologies, technical support for junior engineers and software and electronics development. Technology exposure included video processing and compression, real-time motor control, external communication protocols (TCP/IP, GPRS, RS485) and on-board communication protocols (RS232, SPI, I2C).

2003 – 2004 **Software Architect, Samsung Electronics Research Institute**

Mobile phone requirements specification and software architecture design for Samsung's line of mobile handsets.

2000 – 2003 **Departmental Researcher, Oxford University Department of Engineering Science**

Research in the area of realtime control for the sprayform tooling process. Research tasks included the design and implementation of a multivariable realtime control system to maintain a desired surface temperature profile during the metal spraying process, used to fulfil commercial orders. Modelling and control algorithm design were performed with Matlab and Simulink, implementation was with C++ and assembler on the QNX RTOS.

1995 - 1999 **Engineer, Cambridge Consultants Ltd**

Working in the Mixed Signals Design Group on projects such as ultrasonic gas flow meter, electrical metering ASIC, contact free angular position measurement using electrical impedance and liquid level measurement using electrical pulse time of flight.

Other

Presentations:

Designing a LoRaWAN solution for the construction industry - The Things Conference 2019, Amsterdam
The challenges of global rollout of a LoRa-based system - LPWAN London Meetup 2019, Digital Catapult

Patents:

Processing captured video data (patent no. WO2006125938)
Transmission of video frames (patent no. GB2426652)
Temperature profile determination (patent no. US2004218661)
Control of deposition and other processes (patent no. US2004020624)

Published Papers:

Estimating surface temperature profile from a sequence of partial thermal
Observer design for the control of the sprayforming of tooling
Signal processing of thermal images of temperature profiles
Control of temperature for a spray deposition process

Qualifications:

CEng via Institute of Engineering and Technology (IET)
PhD in Control Engineering, University of Oxford
MEng (1st Class) in Engineering Science, University of Oxford

Referees

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