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**Key Skills**

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| --- | --- |
| Requirements Management | Agile/Scrum |
| Safety Analysis | Real-Time OS/Theory |
| Embedded Software (largely C) | Linux development |
| Software (C/C++, Python, Perl) | Device Drivers |
| Debug |  |

**Summary**

With an academic background in Software Engineering, Control Engineering and Real-Time Software/OS I entered the automotive industry around 20 years ago. While I have worked mainly in the automotive industry, working on power steering, braking, drive train, and infotainment, I also spent 3 years working as a Software Systems Engineer for Xerox (working on multi-function printing devices).

I have worked as software engineer, systems engineer, and safety engineer.

I have been a key contributor to many projects over the years, and feel that I am able to adapt to new application areas quickly.

During my time at Xerox I was a Software Systems Engineer, in charge of gathering requirements and overseeing the development, testing and delivery of product software features. I undertook Scrum Master training during this time.

**Employment History**

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| --- | --- | --- | --- |
| **From** | **To** | **Role** | **Company** |
| **May’19** |  | Software Engineer | **Cambridge Consultants,** Science Park, Milton Road, Cambridge |
| **Mar’19** | **May’19** | Software Engineer | **Cambridge Touch Technologies,** Unit 154 Cambridge Science Park, Milton Road, Cambridge. |
| **Sept’18** | **Feb’19** | Software Engineer | **DCA Design,** Warwick. |
| **May’18** | **Jul’18** | Software Engineer | **CMRSurgical**, Cambridge. |
| **Sept’17** | **Jun’18** | Software Engineer | **Thales eSecurity,** 1 Station Square, Cambridge |
| **Jun’17** | **Aug’17** | Systems Engineer | **Tata Technologies**, European Innovation & Development Center, Olympus Avenue Tachbrook Park, Warwick CV34 6RJ, UK |
| **Apr’13** | **Apr’17** | Senior Software Engineer | **Visteon**, 1 Springfield Lyons Approach, Chelmsford. CM2 5LB |
| **Feb’13** | **May’13** | Embedded Software Engineer | BF1 Systems, Diss. |
| **Oct’11** | **Jan’13** | Software Engineer | **Caterpillar**, Peterborough, Cambs. |
| **Nov’10** | **Sep’11** | Dependability Engineer | **TRW**, Solihull**.** |
| **Jul’10** | **Sep’10** | Software Systems Engineer | **Delphi Diesel Systems**, Concord Rd Ind. Estate, Park Royal, W3 0SE |
| **Aug’07** | **Mar’10** | Software Systems Engineer | **Xerox** Limited, Bessemer Road, Welwyn Garden City, Hertfordshire, AL7                             1BU. |
| **Jan’06** | **Jul’07** | Systems Engineer | **Pi-Shurlock**, Milton Hall, Milton Cambridgeshire. |
| **Jan’05** | **Dec’05** | Systems Engineer | **Ricardo (UK) Ltd**., Westbrook Centre, Cambridge, Cambs. |
| **Oct’03** | **Jun’04** | Part-Time Teaching (Networks and Communications). | Cannock Chase Technical College, Cannock, Staffs. |
| **Jul’99** | **Dec’04** | Senior Software Engineer/Safety Systems Engineer | **TRW Automotive**, Dog Kennel Lane, Shirley, West Midlands |
| **Feb’97** | **Jun’99** | Rensearch Associate | Computer Science Department, **University of York**, Heslington, York, Yorks. |

**Academic History**

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| **From** | **To** | **Course** | **University** |
| **Oct’94** | **Dec’99** | PhD in Real-Time Computer Control | Control Systems Centre, UMIST, Manchester. |
| **Oct’93** | **Aug’94** | MSc in Control and Information Technology | Control Systems Centre, UMIST, Manchester. |
| **Oct’89** | **Aug’93** | BSc (2:1) Information and Business Systems Technology | Electronic Systems Engineering Dept., University of Essex, Wivenhoe Park,Colchester, Essex. |

**School Summary**

‘A’ Levels:                Chemistry, Biology, Pure Mathematics

‘O’ Levels:                English, English Lit., Mathematics, Additional Mathematics, Biology,

Chemistry, Physics, Art, Latin.

**Experience**

**Cambridge Consultants**

I have been working to on to create training material for a Satellite communication system deployed in the US. In this role I have had to dive into the details of the system sufficiently to prepare and deliver a training course to system operators.

I have also been tasked with providing Python scripts to aid in the analysis of fault logs, and for automated regression testing.

**Cambridge Touch Technologies**

Working for a touch screen manufacturer on their Embedded Linux distribution containing driver software for the hardware and demo applications written in Python and C++.

The development makes use of Docker images to create and deploy Yocto OELinux images onto bespoke hardware based around the NXP iMX8Q processor. CI is provided via a Jenkins server.

Source control for this project is via Git and hosted on Github.

**DCA Design**

As a software engineer in the test group at DCA I have been responsible for the analysis and generation of Unit Test reports (using TESSY), and for the review of software implementation, detailed software design, and system software requirements.

**CMRSurgical**

The focus of the contract at CMR was to ensure that the C/C++ software for their medical robot was sufficiently documented, unit tested, and met the MISRA C programming requirements. The reason for this was so that they could ensure that they were producing a medical device which would be compliant with IEC62304. The software was written to operate on a bespoke RTOS, but to be compatible with Windows and Linux hosted applications, also included an OS abstraction layer.

**Thales**

Thales is a company that produces cyber security devices, and as such they required certification the emerging Common Criteria. I was employed in a contract basis to develop documentation in both web (Confluence) form and in the form of Doxygen comments in the source code.

**Tata Technologies**

I have been embedded into Caterpillar engineering in Peterborough as part of a team of Tata Technology consultants. While my role is loosely defined, I have been operating largely as a systems engineer for the Large Engines group within CAT electronics. This has involved leading investigations into field reported issues, aiding in continuous improvement of software development processes, and analysing new product designs and FMEA with a view to developing and overseeing a verification test plan.

**Visteon**

During my time at Visteon, I worked on embedded C programming projects related to in-car entertainment systems running on a Vybrid microprocessor. The Vybrid is a heterogenous dual core processor utilising an ARM Cortex M4 and an ARM Cortex A5. I worked in the infrastructure team, being responsible for the definition, documentation, and implementation of the OS abstraction layer (OSAL), OS (a bespoke RTOS called MQX), and device drivers. My OSAL design and implementation became a key part of the software platform for current Visteon products. The aim of the OSAL was to make the transition from MQX to freeRTOS as transparent to client code as possible. During the latter part of my time at Visteon designs began to be captured as UML model, and made use of Enterprise Architect.

Development followed a continuous integration scheme, making use of RTC for version control via Eclipse, IAR workbench for debugging, Vectorcast for unit testing, Coverity for memory usage analysis, and static analysis to check for MISRA-C compliance. Overall the software development adopted an Agile/Scrum based approach.

In addition to the software implementation, I have been heavily involved in the design of the infrastructure layer. This is both in terms of its API for other components, and its internal design.

**BF1 Systems**

Worked briefly as a software engineer, largely on a hand-held reader for in-tyre pressure monitoring system. This was a three-month embedded C project, source controlled via GiT.

**Caterpillar**

I worked as a software engineer co-ordinating the integration of software components for variants of a marine engine management system. This included defect analysis and fixing, as well as preparing software ‘packages’ for release to customers.

**TRW**

I took on the role of an ISO26262 safety manager. My responsibilities were to gather and disseminate safety related data concerning a SIL 2 system. This meant helping the component teams to conduct their design FMEA’s, producing fault tree diagrams, and general hazard and risk assessments in order to produce a set of ISO26262 compliant documentation.

**Delphi**

I worked on requirements engineering for diesel engine management systems. This role involved the investigation of systems and software already working, capturing customer and functional requirements, and overseeing the testing and validation process.

Delphi are beginning to use an Agile Scrum-based development approach, which is an area where I have some experience.  This meant that I was able to advise Delphi on matters relating to the use of scrum within their projects.

The role also involved the use of Matlab/Simulink to capture and develop functional 'requirements' for the various engine management system modules, and testing 'on engine' to capture and analyse operational data.

In support of document management processes at Delphi I also wrote a number of Visual Basic applications to automate some of the more repetitive tasks involved with cross-checking spreadsheets and database table entries with tables in word documents.

**Xerox**

For two and a half years I worked as a Systems Engineer at the Xerox development centre in Welwyn Garden City.  My role there was to gather customer requirements, create requirements documentation, run multi-disciplinary ‘feature teams’, and verify that deliveries met the requirements prior to delivery to the product software baselines.

Additional concerns during this work were to adhere to a platform model (many products all sharing the same requirements and software baseline).  There was also a move towards Agile development, and I attended Scrum-Master Training sessions.  The agile scrum approach was employed on two projects during my time at Xerox.

The MFP software utilised VXworks and Linux operating system, and was written in C++.  As part of my role as Software Systems Engineer it was necessary to perform code reviews and analysis.  During feature testing it was useful to access the machines via telnet in order to access the Linux file system, and on-board development applications.

**Pi-Shurlok**

As a Systems Engineer I worked on generation and documentation of Engine Management System Requirements.  This was part of a wider project to create a requirements modelling package using Matlab/Simulink as a front-end.   To aid in this work I programmed in Visual Basic as well as creating some text-file translation programs in C.

Also during this time I worked on an Emissions Estimator.  This was bespoke hardware, requiring an operating environment to be coded in C.  This included providing a low-level CAN driver, and a higher level ODB-II communications protocol. The detailed design required extensive discussions with the client in order to elicit a verifiable requirements set.

**Ricardo(UK) Ltd.**

Projects during my time at Ricard (formerly Tarragon) included requirements capture and analysis, software verification, embedded C programming in support of a hybrid power-train project, and module testing.

**Cannock Chase College**

Whilst working for TRW I took on a Further Education class in Networking for Cannock Chase College.  This involved creating lesson plans, taking registers, setting and marking assignments, and completing student assessments.

**TRW**

I began at TRW as an embedded software engineer, writing largely in C for embedded targets.  The work was focussed on vehicle ECU's for steering and braking, as well as writing operating environments for bespoke hardware.  During this time I designed and implemented a fixed priority pre-emptive scheduling kernel for an ST10 based module, together with CAN communications driver, fault management system, and a mechanism for integrating code generated from Matlab.  This module was used to implement a demonstrator for an advanced vehicle stability control system which made use of data from steering and braking systems in conjunction with an electrically actuated power steering system.

Later I move into the Systems and Safety group, where I developed a method for generating preliminary hazard analyses which could be used to produce a report within a 5-day period.  This was an improvement on the previous approaches used which would take several weeks to reach a preliminary result.

As part of a small team, I was also involved with the generation of a system integration methodology which we referred to as MuLCH (Multi-Layer Control Hierarchy).  This was targeted at easing the development of functionality that relied on multiple in-vehicle ECUs.

I was also instrumental in the trialling of DOORS in the Systems group.  I attended a two day training session in Oxford with Telelogic.  We then employed DOORS on a test project, based upon my recommendation of the tool. DOORS late became the TRW standard tool for requirements management.

**University of York**

At the University of York I worked on a project to code an Ada Runtime support kernel (in C) for Motorola processor based development boards.  This involved creating a number of Ada programs to test the run-time environment, and the interfaces to the control test equipment. The test environment for this project made use of VME and CANbus.

**PhD at UMIST**

My PhD was entitled ‘A Software Environment for the Development, Testing and Implementation of Real-Time Computer Control’.  The core thesis was the creation of an environment to support a system of re-usable executable components.  These components could be configured to interact with one another to produce varying control effects.

This work involved addressing the real-time scheduling of tasks in a Linux operating system.  The system was coded in C to run on a modified Linux kernel.  The kernel had a POSIX compliant fixed priority pre-emptive scheduler.  The system of software components was accessed via a GUI application which I implemented using X11R6 libraries rather than a GUI creation tool.  This involved the creation of objects for generic widgets, with children for specific items.

It was also necessary during this project to write device drivers for A/D converter hardware.

During my PhD I also aided in a Systems Engineering PhD for the University of Derby.  I was involved, in a consultancy role, in the definition of a change management system to aid the development of an electronic patient record for the Derbyshire Royal Infirmary's Care of the Elderly Day Unit.  I also implemented a prototype solution using SQL server and Visual Basic.  This built upon database design theory learned as part of my undergraduate degree at the University of Essex.

**Misc. Skills**

Over many years of working in office environments I have become very familiar with the Microsoft Office packages, including the incorporation of VBA macros to aid with repetitive tasks.

**Interests**

My interests include watching movies and reading.  I have an assortment of pets, including cats, and horses.