Curriculum Vitae

Neal Nelson

Date of Birth: 1967-07-17

Nationality: British

Technical Experience

Hardware: SUN SPARCstation, VAX, Alpha, PC

Languages: Python, C++, C, FORTRAN, Ada, Pascal, SmallTalk, Eiffel

Operating Systems: UNIX (FreeBSD, Solaris), VMS, Windows 95/NT

Education

OND Computer Studies: Filton Technical College

HND Computer Studies: University of the West of England

Professional Experience

ERG Transit Systems Pty Ltd

November 2000 - July 2001: Contract Software Engineer

Originally working on the design on a SCADA (Supervisory control and data acquisition) subsystem for a new multi application smart card system (MASS) in Java. After three months at ERG the project was scaled down and I was moved to the Singapore AFC (Automated Fare Collection) system project where I worked on augmenting a middle-ware component called the Transaction Delivery System (TDS). To this I added a transaction filtering and a value add facility. Later I designed and wrote two loadable modules for the Clearing House System. One performed statistics collection and the other fare apportionment. The latter was a system whereby fares were apportioned to different service providers when a customer crossed company boundaries, based on a very arcane set of business rules. All work on the Singapore AFC project was on Solaris using C++.

Optiscan Pty Ltd

May 2000 - July 2000: Contract Software Engineer

Working as part of a team developing a medical imaging application utilising confocal microscopy. The work consisted mainly of design and coding of image acquisition and processing from custom hardware. All work was performed on Microsoft NT 5 using Visual C++.

Qualitative Solutions and Research Pty Ltd (QSR)

December 1998 - Mid April 1999:Contract Software Engineer

Working as part of a team producing a Qualitative Analysis package for academic and research use called N-Vivo. This was written in SmallTalk for Microsoft Windows and NT. Initial tasks included the production of a textual and tabular reporting subsystem, but was made responsible for all of the software which used a matrix OLE control called Objective Grid. Later I wrote a project database structure verifier and object tracking tools used to track memory leaks, both within the SmallTalk environment itself and with third party products being used.

Science Systems (Space) Ltd

April 1994 - May 1998: Principal Analyst Programmer (Originally Senior Analyst Programmer)

Based at the European Space Operations Centre (ESOC), Darmstadt, Germany.

Initially worked on the Huygens Monitoring and Control System (HMCS). The HMCS was the first use of ESAs then new SCOS-II generic spacecraft control system. It is fully object-oriented system written in C++ on a distributed Sun platform.

Throughout the development of the system I have had responsibility for the telemetry reception and other external interfaces. This involved the production of the ICD (Interface Control Document) to the NASA network followed by the SRD (Software Requirements Document) and ADD (Architectural Design Document). I later became the team leader of the telemetry receiver team. Following the production of the telemetry receiver I designed and wrote a data distribution system for the dissemination of the received scientific data. This involved distributing the data via a web and FTP server plus the production of CDs.

Following the delivery of the system I was involved in the resolution of anomalies and also in adapting the external interfaces to changes in the NASA system. This also included further development of the SCOS-II generic spacecraft control system.

Science Systems (Space) Ltd

1990 - 1994: Senior Analyst Programmer (Originally Analyst Programmer)

Team leader for the Data Filing functional until of the EUMETSAT ground control system project.

Team leader for the Telemetry Processing functional unit of the British Aerospace LEOP satellite control system. Involved in all phases of the software development from the high level design through to integration, testing and user education.

Member of a team producing Telemetry Processing subsystem for the HISPASAT satellite ground control system. I was involved from the architectural design through to integration and testing. I was responsible for writing the real time telemetry processing chain.

All projects undertaken were written in FORTRAN on VAXes, including VAXstations and VAX-MIRA high availability machines.

University of the West of England

1987 - 1990

Undertook a day release three-year course in Computer Studies. This was biased towards the practical elements of software engineering

covering such subjects as :

- Concurrent Programming (Ada and Occam II)
- Distributed Systems
- Software engineering (mainly Yourdon and Booch OOD)

The final year project involved the development of a real time concurrent object oriented simulation written in Ada and running on Sun workstations. The project was designed using the Booch object oriented methodology with Yourdon Real Time bring used for implementation specification and package design.

Westinghouse Systems Ltd

1989 - 1990: Programmer

Involved in the development of Supervisory Control and Data Acquisition (SCADA) systems on a multiprocessor VAX platform using a real time database environment called HABITAT, in FORTRAN and C.

Another aspect of the work was extensive system configuration and management of VAX 8800s as well as MicroVAXes and VAXstations.

MVM Consultants plc

1988 - 1989: Programmer / System manager

As Programmer / System manager covered a wide area of tasks ranging from the running of the companies in-house VAX systems to working on development of the (British) national Land Charges system using Oracle.

Other projects, such as databases in Informix and DBase were also developed. I also wrote installation kits for the Land Charges system, written using VMSinstal and worked on development of an in-house configuration control system.

Bristol Water plc

1986 - 1988: Draughtsman / Mapping Operator

Involved in the setup and use of a digital mapping system running Informap II on a VAXstation.

Designed and implemented the schema for the storage of the water mains information as well as the graphical representation of the map data.

Personal Projects

I am currently working on several home projects. All of these use FreeBSD as either the target or development platform.

- WebConfig. This is a FreeBSD system configuration utility with a web interface, similar to WebMin. It is written entirely in Python using Medusa as it's server infrastructure. It is completely modular in structure, so that the functionality can be altered for different system configurations. Initially I have written modules for basic system configuration (rc.conf, sysctl.conf and resolv.conf) as well as a PPP and Firewall module for IPFW. The latter uses my previous firewall project as it's starting point since I have been using that for some time now. Modules under development currently are for IPSec configuration and a generic service management module that will form a framework for additional server modules, such as mail, web or file servers.
- ADSL firewall. This is a CompactFlash based firewall that acts as a network gateway using PPPoE and runs FreeBSD with IPFW as it's firewall. IPSec is used for wireless encryption. It is currently running on a converted PC but is envisaged to run on an embedded platform eventually.
- Home control system for the control of X-10 based devices. These communicate over the normal mains wiring and may be used to control normal household appliances and lighting. A prototype was originally developed in Eiffel but development is now using Python.
- Solar tracker. The aim of this project is to keep solar panels aligned with the sun for optimal power output. It is being developed using an AVR micro-controller using GNU Binutils and assembly language as the development environment. It may eventually migrate to GCC and C if the need arises.