

## Summary

I have over 20 years of experience in the high-tech industry with 12 years of experience as a Linux application developer, administrator and user. I have been responsible for the development of at least 15 different embedded products. At Etelos I was responsible for developing the application system used to distribute purchased apps to hosting servers and I managed a network of over 100 Linux servers.

My unique set of skills includes the development of embedded, command-line and networked software as well as dynamic web pages driven by live data. I have done schematic capture and PCB designs, digital electronics design and Digital Signal Processor programming.

I am an experienced telecommuter, having spent the last 2 years working from my home office. I am equipped with a broadband connection, OS X and Linux computers, virtualization software, Oscilloscope and an office with a door.

I have published 5 articles in Linux Journal, presented at Linux Fest Northwest and several Western Washington Linux User Groups.

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## Skills

**Languages:** C, Python, PHP, Perl, Assembly, Javascript

**Systems:** Linux (CentOS, Debian, Gentoo, RedHat), OS X, PalmOS, Windows XP

**Development Tools:** gcc, gdb, Xcode, Code Composer Studio, ImageCraft C, CrossWorks C, IAR C, CodeWarrior, Visual Studio 6, Borland C++, Watcom C++

**Software:** Squid, Cacti, BackupPC, OpenVZ, Doxygen, Subversion, Mercurial, TRAC, OpenVPN, Nagios, nmap, snort, tcpdump, epylog, Eagle CAD, Open Office, Abiword, Gnumeric

**Databases:** MySQL, PostgreSQL, SQLite

**Internet Services:** Apache, OpenSSH, Postfix, Qmail, djbdns, Bind, Dovecot, Courier IMAP, ncftpd, SMB/Samba, NFS, syslog-ng, memcached

**DSP:** TI TMS320C54xx, Analog Devices ADSP-21xx

**Microcontrollers:** TI MSP430, Motorola 68HCxx, Philips ARM LPC21xx, Microchip PIC, Motorola 68VZ328 Dragonball

**Hardware:** Desktop PCs, Linux Servers, RAID Arrays, Switches, Emulators, Oscilloscopes, Spectrum Analyzers, Signal Generators, Digital Multimeters, GPIB Test Equipment Interfaces

**Technologies:** TCP/IP, HTML, XML, JSON, SOAP, XMLRPC, Core Internet Protocols (DNS, SMTP, HTTP, POP, SSH, FTP, etc.), Automatic Identification System (AIS), VHF and HF Radios, Modulators, Demodulators, User Interfaces

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## Professional Experience

**Senior Software Developer** (Telecommute), 2008-Present **Tyramm International, Inc.** New York

I created custom Linux distributions for point of sale system hardware, wrote custom applications for the POS systems as well as new web applications. The custom distributions included modifying a livecd iso to become an automated installer, custom rpm packages for the specific hardware being supported patching drivers to work with new hardware. I wrote custom applications to enhance the reliability and security of the POS systems and back end database systems. I setup an integrated software revision system and wiki using Subversion and Trac for better software development tracking. I also maintained their back end database servers and I enhanced their web application using CakePHP and jQuery.

**Senior Software Developer/System Administrator** (Telecommute), 2006-2008 **Etelos, Inc.**, Renton, WA

As a senior software developer I worked on the server side of the Etelos Application System (EAS) and developed the system used to package and distribute customer applications to one of our 100 application servers. I wrote a license enforcement system and worked with the EMS team to implement a daemon to

manage account packaging and deploys using Python and XMLRPC. I was responsible for developing tools to allow active accounts to be migrated between servers.

As the senior system administrator I was responsible for all aspects of server installation, package maintenance, security, performance, database configuration, service monitoring and troubleshooting. I streamlined the server installs using CentOS, a repository of custom built rpms and a install script which reduced the time to bring up a new server to less than an hour. I architected a more secure virtual hosting environment by using a custom Apache daemon. I deployed a reliable backup system based on BackupPC that provided nightly snapshots of all the systems and databases. Using Trac and later MediaWiki I instituted collaborative documentation so that knowledge was distributed. I developed a repository of useful system administration tools written in Python and bash that allowed tasks to be executed across all of the servers, including monitoring of software release versions and RAID health monitoring. I used a variety of open source tools to monitor the systems including Nagios, Cacti, syslog-ng, epylog and Hyperic. I also helped implement a Squid based reverse proxy to reduce the load on the main corporate server.

### **Senior Software Developer, 1985-2006 Shine Micro, Inc., Port Ludlow, WA**

I quickly advanced from an entry level position to senior programmer for all Shine Micro projects. My responsibilities included software development for embedded systems, host platforms, PC applications and Linux systems. I maintained the company's network infrastructure, including file, web, mail and svn servers running on Linux. I performed a variety of tasks associated with the design, implementation, testing and maintenance of projects -- I drew schematics, designed digital circuits and used test equipment to verify design parameters and debug hardware and software projects. I designed a test fixture that reduced the time needed to test AIS receivers from 40 minutes per unit to 5 minutes each, automatically calibrated the unit and stored the results in a MySQL database. I designed and wrote the Perl, C and Python software for the Sealinks Live AIS data network which takes receiver data and plots real-time charts for display on the company website.

Projects included marine radios and electronics, automotive electronics, an amateur radio packet modem, MP3 player, AIS receiver and Class-B AIS transponder. Clients include companies such as SEA, Inc., Banks Turbochargers, Harris Corporation, Maritel, W-H Autopilots and Tideland Signal.

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### **Representative Projects**

#### *SEA, Inc. Marine Radio Products*

During my time with Shine Micro I wrote the control software for most of the SEA VHF and HF marine radio product line. This included implementation, maintenance and custom modifications per customer requirements. SEA radios are used in the Alaskan fishing fleet, by Washington State Ferries and Atlantis Submarine. If you watch the popular Discovery Channel show "World's Deadliest Catch" and you will usually see a SEA 222 radio on the bridge of the fishing boats. SEA radios used a range of microprocessors including 8 and 16-bit Motorola devices and Texas Instruments TMS320C5402 Digital Signal Processors. Modifications to the SEA radios were made for Maritel and Harris to integrate it with the Maritel marine VHF telephone service.

#### *Banks DynaFact Inertial Dynamometer*

The DynaFact was a product for Banks Turbocharger that used an 8-bit Motorola microprocessor to monitor the vehicle's speed and acceleration, calculate the horsepower produced by the engine under real-world driving conditions displaying it to the user on an analog meter and LCD display. The DynaFact was featured in January 1990 issue of Hot Rod Magazine.

#### *W-H Autopilots*

The W-H Autopilots line of products are used by sailors to automatically control their boat's heading based on GPS position and a heading indicator. More advanced versions are used by sailors to track the wind. These products were implemented in assembly language with 16-bit Motorola processors to calculate the correct heading and control the steering hydraulics based on input from the GPS or Loran Receiver, a flux gate compass and user settings.

#### *Handspring Visor MP3 player and Amateur Radio Packet Radio*

This project included integrating custom software modifications with Texas Instruments (TI) MP3 libraries, a TI TMS320C5416 fixed point DSP and the PalmOS based Handspring Visor platform. It required writing software in C and assembly and interfacing with the TI DSP/BIOS application framework. I ported the Linux soundmodem driver to the DSP in order to implement an amateur radio 1200bps APRS modem.

#### *SL161R AIS receiver*

High sensitivity Automatic Identification System receiver. This product used 2 processors communicating with each other and 2 radio receivers to receive digital position reports from large ships. The TMS320C5410 DSP software, written in C and assembly, implements a 9600bps GMSK demodulator to receive digital AIS messages for output to an attached PC or network interface.

#### *SM162B AIS Class-B transponder*

This project added a 9600bps GMSK transmitter and DSP modulator software to the SL161R receiver. It implemented the IEC 62287 international specification for AIS Class-B transponders.

#### *AIS Data Network*

This project implemented a server using Linux, Perl, C and Python. It receives serial AIS data from Internet connected SL161R AIS receivers around the United States, stores the data in a MySQL database, and combines the data streams into a single output stream that can be displayed using marine navigation software. I wrote the server and database storage in Perl and the AIS parser in 'C'. The combined output stream server was written as a multi-threaded Python application that queried the MySQL database for the latest ship positions and output them to Internet clients.

#### *Database driven live chart display*

This project implemented a web chart display of live AIS ship data from locations such as the Puget Sound, Astoria, San Diego and Boston. I wrote it using a Perl CGI script that builds a PNG image of ship tracks overlaid on a nautical chart. It queries the MySQL database populated by the AIS data network and draws the ships track for the last 2 hours.

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## **Independent Projects and Activities**

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### **Kitsap Peninsula Linux User Group (KPLUG)**

- Webmaster and System Administrator (1999-present)
- President (1999-2000, 2006-present)
- Python training sessions
- Linux training sessions

### **Linux Fest Northwest**

- 2005 - Presented MSP430 Microprocessor development using Linux tools
- 2008 - Presented using Python to automate daily repetitive tasks

### **Linux Developer**

#### *picprg Microchip PIC programmer software for Linux*

Designed and implemented a ncurses program to control a PIC microprocessor programmer via the parallel port of Linux PCs.

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*XfreeCD CD player for Xwindows using GTK+ GUI*

Designed and implemented a minimalist GTK+ CD player with CDDB CD database support for CD track names.

*DigiTemp Temperature sensor software for Linux, DOS and Windows*

Designed and implemented a command line interface to the Dallas 1-wire bus. A flexible user interface allows the program to be used to easily implement temperature monitoring and alerting systems or integrated into network monitoring systems such as Nagios. DigiTemp users include individuals, server colocation facilities and government computer clusters.

*TheBusyBride.com online wedding catalog system*

Designed and implemented an online wedding catalog and ordering system using Perl, Apache and MySQL system. This system include a manager interface for entering wedding invitation prices and descriptions, a dynamic website that generates a custom quote based on the customer's requirements. It also includes a theme based search feature to make it easier to find a suitable invitation.

*FindHAM APRS logging system*

Designed and implemented a system to log and map Amateur Radio position reports using Perl and MySQL database. Positions were plotted using Mapquest.

*TrollBridge network access control*

Designed and implemented a system to block access to a network until the user filled out an authorization webpage. This was written using iptables, Python and the Apache web server.

*up2dateiso security updated iso image generator*

This Python project updated Fedora iso images with the latest security patches from the Internet and created new iso images.

*System Health Monitor*

I wrote this user friendly tool to generate graphs of Linux system processes, network activity and memory usage. It was written using Python and the RRD-Tool graphing library.

*MovieLandmarks.com*

A dynamic mashup of movie and tv filming locations and Google maps. Written using PHP, Javascript and Python.

*live.aisparser.com*

A live display of ship positions in the Puget Sound using my AIS Parser SDK, Javascript and Google Maps.

## **Hardware Projects**

*Sony Control-L remote control for video camera control*

This project used the keypad and case from a RCA Universal remote and a prototype board with a Microchip PIC 16C84 to implement the Sony 2 wire remote control protocol. It allowed the photographer to control the zoom and record options on his video camera without touching it and moving the picture. This is especially useful for stop motion animation shot in-camera where any unwanted movement would be obvious to the viewer.

*DigiTemp DT-1A temperature sensor modules*

This project was a simple printed circuit board for the TO-92 packaged 1-wire temperature sensors. I added a diode and RJ-45 connectors to make it easy to connect the sensors using RJ-11 or RJ-45 cables.

*LinkWiFi 802.11b to 1-wire adapter*

For this project I created a printed circuit board to connect a iButtonLink OEM module to a Digi Ethernet module so that the 1-wire network could be accessed using ASCII commands over a wireless 802.11b network.

*OneLock 1-wire lock controller*

I designed this project for my Linux Fest Northwest presentation on MSP430 development with Linux. It consisted of a small MSP430 processor and a couple of transistors to control a lock via a simple DC motor. A Dallas Semiconductor iButton was used as the key to the lock.

**Publications**, Linux Journal

October 1998, Programming Microchip PIC processors with Linux

December 1999, Customizing the XDM login screen

August 2002, Installing RH 7.3 on Presario 711 Laptops

February 2003, Inexpensive RAID Backup system

February 2006, MSP430 Programming with Linux

**Owner, Nexus Computing 1992-Present**

*DigiTemp temperature sensor*

For a number of years I sold my temperature hardware designs and software. Users include individuals, corporations, government agencies and even a robotic telescope.

*Linux web hosting services*

From 1999-present I have provided simple web and email hosting on my own server.

*AIS Parser Software Development Kit*

The SDK is used to parse the output of an AIS receiver into ship position and static information. It has been used in numerous products and by government agencies worldwide.

As a demo of the SDK's capabilities I created <http://live.aisparser.com>, a website displaying live ship positions for the Puget Sound area using an AIS receiver positioned at my home.

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**Education**

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- High School Diploma from Eatonville High School, Eatonville WA (1987)
- AAS degree from Pierce College, Tacoma WA (1997) - Emphasis on Computer Science
- EET degree from Pierce College, Tacoma WA (1997)