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In Brief

"Specialization is for Insects." - Robert A. Heinlein

I am a generalist with a broad skill set. Be it high level design, low-level implementation, quality assurance, production, operations, and especially troubleshooting – I believe that an understanding of the big picture is essential to the success of any endeavor.

Employment History

- **Senior Software Engineer**   May 2013 - Current
  ARM Wireless Connectivity   Deerfield Beach, FL

  ARM WC's initial offering, CORDIO BT4, is a complete Bluetooth Low Energy controller subsystem, covering HCI to the antenna, offered as licenseable IP.

  – Software lead for the CORDIO BT4 product.
  – Defined and implemented the CORDIO BT4's software architechure.
  – Helped define overall system architechure, especially relating to software-hardware interaction.
  – Created and implemented software/hardware co-verification strategies in both analog and digital realms.
  – Helped define and implement production testing methodologies.
  – Assumed a leading role in intial bringup of internal test silicon and assisted customers with their silicon bringups.
  – Constructed miscellaneous internal tools.

- **Senior Software Engineer**   April 2011 - May 2013
  Sagrad, Inc.   Melbourne, FL

  As "The Software Guy" at an engineering services company, I constantly juggled a variety of tasks, including contract engineering work, internal product development, sales and customer support, and miscellaneous IT tasks.

  – Create Board Support Packages (BSPs) for new Single-Board computers (SBCs), including low-level Linux, bootloader, and driver ports.
  – Develop independent IEEE802.11 (WiFi) protocol stacks and device drivers for FreeRTOS, eCOS, and Linux.
  – Port FreeRTOS to hardware based on the STM32 family of microcontrollers.
  – Perform technical feasibility studies and other sales engineering tasks.
  – Develop automated regression and production test systems, including the use of GPIB-connected instrumentation.
  – Transition Sagrad to a continuous-integration model for software development, and other process improvements.

- Develop software to support internal business and production needs.
- Maintain the Engineering IT infrastructure.
- Maintain the Asterisk phone system.

- **Embedded Systems Engineer**   May 2002 - April 2011
  AbsoluteValue Systems Inc.   Melbourne, FL

  As one of two employees of an embedded-systems-and-software firm, my responsibilities could be summed up as "Do what needs doing", albeit with a heavy technical tilt.

  - Developed a full-featured cross-platform IEEE802.11 (WiFi) stack and device drivers for multiple chipsets.
  - Created BSPs for new SBCs, including low-level Linux, bootloader, and device driver ports.
  - Maintained a Linux distribution for deeply embedded systems such as wireless access points.
  - Designed and implemented a custom 900MHz Frequency Hopping MAC.
  - Ported computationally-intensive RF modeling and visualization algorithms to GPUs using OpenCL.
  - Developed an automated platform for testing multi-node wireless networks utilizing both real and virtual hardware.
  - Developed a high performance 802.11 sniffer capable of synchronized captures on multiple simultaneous channels.
  - Supported internal IT needs, including SCM, ticketing, and virtualizing services where it made sense.

- **Platform Developer**   May 2000 - March 2002
  Incanta, Inc   Atlanta, GA

  I started out writing support tools and eventually liased between development and production, becoming the technical go-to person with fingers in nearly every technical pie baking in Incanta's ovens. Most of these would be considered "Cloud Servces" today.

  - Developed tools for support, business reporting, system testing, and large-scale service monitoring.
  - Developed procedures for deployment and operations, including configuration management and tools to implement these procedures.
  - Team lead on Incanta's signature Music Service, simultaneously improving scalability and reliability while enhancing the overall feature set and user experience.
  - Authored a secure peer-peer communications platform similar to Nullsoft's later *Waste* platform.
  - Designed and implemented a secure, distributed, content delivery network.
  - Designed a novel application of Dynamic DNS that was eventually patented.

Skills

- Intimately familiar with the IEEE 802.11 family of standards, having independently implemented most of them, as well as various Internet protocols including TCP/IP, DHCP, DNS, and many others.

- Extensive experience with the Bluetooth Low Energy (aka BT Smart) link layer and the rest of the BTLE stack, particpating in several of the BT SIG's working groups.

- Extensive experience with C for deeply-embedded microcontroller applications.

- Fluent Perl, Shell, SQL (especially PostgreSQL), Python, Expect, and PHP.

- Less fluent in Java, C++, HTML, CSS, Javascript, Assembly, LaTeX, Verilog, and Arabic.

- Competent at high-level design and low-level implementation across a broad swath of disciplines, including:

  - Highly resource-constrained real-time embedded systems
  - Complex database systems, including web-based frontends
  - Fault-tolerant distributed systems (both client-server and peer-peer paradigms)
  - Low-level and high-level network protocols
  - Sound, Graphics, I/O, Printer, and Network device drivers
  - Reverse-engineering using sniffers and decompilation tools
  - Numerical processing and analysis including the use of GPGPUs via OpenCL
  - Test and production automation including the use of bench instrumentation via GPIB
  - GIS including terrain and map generation
  - Application frameworks
  - Desktop GUI applications

- Competent Linux system/database/network administrator, having run *shaftnet.org*, an old-school shell server, for over fifteen years.

- Avid amateur photographer. *see http://www.peachyphotos.com/*

Current F/OSS Projects

- Photo Organizer: *http://po.shaftnet.org* A PHP-based image management tool, it emphasizes multi-user asset management over *du jour* social networking features and easily scales to hundreds of thousands of images. It is intended to be a photographer's primary image repository, and makes heavy use of advanced PostgreSQL features. I am currently the lead developer.

- Gutenprint: *http://gimp-print.sf.net* Contributed support for more than two dozen dye-sublimation printers manufactured by Canon, Kodak, Mitsubishi, DNP/Citizen, Shinko/Sinfonia, and Sony. This includes the intelligent CUPS backends for Linux/OSX that are needed to communicate with these models. The majority of the necessary knowledge was obtained via reverse-engineering.

- ST-Ericsson CW1200: Maintain the ST-E CW1200 WLAN device driver for Linux, which was finally merged into v3.11 of the mainline kernel.

- The Linux-wlan project: *http://www.linux-wlan.org* A project which provides Linux device drivers for the now-obsolete Intersil Prism 802.11b (PCI, PCMCIA, and USB) chipsets. Portions of this codebase have been merged into the mainline Linux kernel.

- I have made minor contributions to countless other projects, including Fedora Linux, Rockbox, Wireshark, GNUMP3d, FreeSCI/ScummVM, and DNSJava. I routinely poke around in software I use on a regular basis.

Education

- **Georgia Institute of Technology**   Atlanta, GA
  B.S., Computer Science   August 2000

  - Specializations include network protocols, operating systems, and low-level hardware design.
  - Out-of-major focus on economics and linguistics.

TL;DR

"Miscellaneous"

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