Mitchel Allen Humpherys

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Work Experience

L-3 Communications, Linkabit Division **San Diego, CA**
Senior Embedded Software Engineer *2011-current*
Developed software in C++ and C for a Satcom IP Modem. Made improvements to the over-the-air message format to optimize bandwidth utilization. Implemented new features and enhancements to the modem protocol code. Worked on porting a TCP accelerator module (based on the SCPS-TP protocol) from a modified FreeBSD system to VxWorks. Worked with Linux, FreeBSD, and VxWorks kernel modules and device drivers, as well as the internals of the FreeBSD network stack. Developed scripts in Python and Bash to automate the process of downloading new code to the target platform. Worked on a Wireshark dissector used to debug the over-the-air messages. Implemented an Ethernet software bridge in userspace with libnetfilter_queue and iptables using C and Bash to simulate the latency of the satellite network. Produced design documentation for several new features and conducted design reviews. Trained other team members on the git version-control tool.

Utah State University ECE Department **Logan, UT**
Research Assistant *2010*
Worked in a research lab in the ECE department to develop a wireless sensor network to monitor horse distress levels using an AVR-based ZigBee software/hardware stack, accelerometer, and tilt sensors. Built using a gcc cross-toolchain under Linux.

Utah State University Research Foundation **Logan, UT**
Web Applications Developer *2007 - 2010*
Developed dynamic web applications using Tcl, JavaScript, and PostgreSQL in a Unix environment.

Center for Self-Organizing and Intelligent Systems **Logan, UT**
Research Assistant *2008 - 2009*
Helped develop a platform for an Unmanned Aerial Vehicle project. Developed airplane-tracking software in C++ and OCaML for the UAV autopilot software. Worked with an embedded Linux environment on Gumstix boards. Helped develop a vision-based navigation platform for the UAV using OpenCV and the Ivy Software Bus.

Other Projects

Android Development
Developed and maintain two Android applications (currently available on the Amazon App Store). *Track That Thing*: a real-time location tracker which stores data to a Google App Engine cloud application with an accompanying web interface. *WikiPaper*: a live wallpaper that pulls random articles from Wikipedia and displays their summary in an auto-scrolling interface on the home screen.

Education

Utah State University *2004 - 2010*
Graduated cum laude with a B.S. in Computer Engineering and a minor in Computer Science. GPA: 3.67.

Coursework

Real-Time Systems
Implemented an entire real-time operating system in C. The system provided priority-based tasks, a preemptive scheduler, and several types of semaphores. Impemented on an ARM microcontroller with one other student.

Microcomputer Interfacing
Built a self-solving maze platform based on an 8051 microcontroller and the OpenCV library.

Skills

Programming Languages: C, C++, Python, Bash, JavaScript, Emacs Lisp, PHP, TCL, Assembler (x86 and ARM), Java, C#.

Libraries, Tools, and Systems: GCC, GDB, GNU/Linux, Make, TCP/IP, Emacs, Vim, GNU global, cscope, Git, Subversion, ClearCase, awk, sed, Boost, scapy, matplotlib, Wireshark, tcpdump, iperf, Sqlite3 (C and Python bindings), PostgreSQL, MySQL, HTML, CSS, Google App Engine, Django, Android SDK, VxWorks, libnetfilter_queue, iptables, LaTeX, I^{2}C, JTAG, RS-232, Eagle PCB Design, OpenCV.

Miscellaneous: Fluent in the Portuguese language.

Activities

College of Engineering Ambassador **Utah State University**
2008 - 2010

Served as a representative for the College of Engineering. Gave tours to potential engineering students. Also went on recruiting trips.

USU IEEE Council Webmaster **IEEE**
2009 - 2010

Served on the USU IEEE Council as the webmaster. Was involved with planning activities and recruiting students for the IEEE and ECE. Also maintained the branch web site and a Sage Math compute server.

National Science Foundation Research Experience **Utah State University**
Summer 2008

Participated in a summer research program sponsored by the National Science Foundation. Worked on an autonomous UAV project.

Accomplishments

- Received the UCR Chancellor's Distinguished Fellowship.
- Wrote a grant proposal and received funding through Utah State University's URCO program to do research on Vision-Based Autonomous Navigation of UAVs.
- Completed a 2-year service mission in Campinas, Brazil.
- Finalist in the Fall 2007 USU Voices writing competition with a paper on using Linux as an alternative operating system to Windows on campus.
- Received the USU Presidential Scholarship.
- Eagle Scout.