

# MITCHEL ALLEN HUMPHERYS

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## WORK EXPERIENCE

### L-3 Communications, Linkabit Division

San Diego, CA

*Embedded Software Engineer II*

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. Helped with the port of a TCP accelerator based on the SCPS-TP protocol from a Linux and FreeBSD-based system to VxWorks. Gained experience with Linux kernel modules, Linux and VxWorks device drivers, and 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. Gave training to other software team members about the git version-control tool.

### Utah State University ECE Department

Logan, UT

*Researcher 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

*Researcher 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.

## 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. Implemented 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 (in order of proficiency):* C, C++, Python, Bash, JavaScript, Emacs Lisp, PHP, TCL, Assembler (x86 and ARM), Java.

*Libraries, Tools, and Systems:* GCC, GDB, GNU/Linux, Make, TCP/IP, Emacs, Vim, awk, sed, diff, patch, ssh, rsync, Git, Subversion, STL, Boost, scapy, matplotlib, Wireshark, tcpdump, iperf, CORBA, IDL, Sqlite3 (C and Python bindings), PostgreSQL, MySQL, HTML, CSS, Google App Engine, Django, Android SDK, VxWorks, libnetfilter\_queue, iptables, L<sup>A</sup>T<sub>E</sub>X, I<sup>2</sup>C, JTAG, RS-232, Eagle PCB Design, OpenCV, Ivy Software Bus, Eclipse, Netbeans, GTK, MatLab, Octave.

*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.