Michael Pratt

Contact Information

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github.com/prattmic

Objective

Designing, building, optimizing embedded and/or operating systems. Kernel hacking; circuit hacking.

Relevant Experience

Google, Mountain View, California

Software Engineering Intern, Platform Linux Kernel Team — **May – August 2014**

- Contributed to new process-level virtualization solution
- Developed application loader to set up process-level virtualization
- Added a new Linux system call to provide fine-grained control of process memory layout
- Became familiar with Intel virtualization extensions and ELF binary format

Google, Mountain View, California

Software Engineering Intern, Google Chrome OS — **May – August 2013**

- Developed support to boot an ARM device from embedded MMC
- Ensured eMMC boot met the Chrome OS boot security requirements
- Worked primarily on the U-Boot bootloader and Chrome OS Verified Boot
- Interfaced with ARM SoC peripherals and the Linux kernel

Aerial Robotics Club, North Carolina State University Student Organization

Payload Team Lead — **August 2012 – present**

Member — **August 2011 – present**

- Develop and maintain hardware and software solutions for unmanned aerial systems
- Synthesize subsystems into a complete, autonomous, unmanned aerial system
- Designed and built aircraft control failsafe PCB and software
- Built interface libraries to machine vision cameras and an autopilot with the Python C API
- Designed and implemented aerial imaging pipeline, from image capture aboard the aircraft to target characterization UI and permanent image storage on the ground
- 2014 team at AUVSI Student UAS competition took home 1st place overall out of 28 teams

F4OS, Personal Project

github.com/prattmic/F4OS — **May 2012 – present**

- Real-time operating system supporting several ARM microcontrollers and processors
- Soft real-time scheduling using a preemptive rate-monotonic scheduler
- Modular memory management subsystem, with multiple memory management schemes
- Flexible object framework allows typed resources to define unique operations

Programming: C, Python, ARM Assembly, Go, Bash, x86 Assembly
Software: Linux, Git, GDB, GNU Make, Altium Designer, CADsoft Eagle, LaTeX, HTML
Embedded: ARM Cortex-M4F (STM32F4, Tiva C), AVR, MSP430, JTAG (J-Link, ST-Link)

Education

B.Sc. Computer and Electrical Engineering — **August 2011 – December 2014**

North Carolina State University, Raleigh, North Carolina

- Current GPA: **4.00/4.00**
- Courses include: Microelectronics, Elements of Controls, Discrete Control Systems (Grad), Compiler Optimization and Scheduling, Advanced Microprocessor System Design

Honors and Awards

Payload Team Lead on 1st place AUVSI Student UAS competition team, June 2014
Dean's List, North Carolina State University, Fall 2011 through Spring 2014
Goodnight Scholarship, North Carolina State University, 2011
People Helping People Scholarship, NC State Employees' Credit Union, 2011
Eagle Scout Award, Boy Scouts of America, 2010