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## Experience

### Johns Hopkins University Applied Physics Laboratory

Software Engineer/Reverse Engineer

Laurel, MD

August 2011 - Present

- Lead developer on analysis tools for Linux kernel self-modifying code, critical to multiple client contracts
- Awarded \$50k in competitive internal R&D funding for investigation into Android platform security
- Implemented a "Low Cost Personal Encryptor" - embedded Linux USB encryption device

### Drexel Autonomous Systems Laboratory

Researcher

Philadelphia, PA

September 2007 - August 2011

- Developed a multi-platform real-time operating software for humanoid robots
- Designed, printed, and fabricated PCBs for multiple projects (motor controller, simple amplifier)
- Taught in-house C programming course for other researchers

### Hubo Lab

Researcher

Daejeon, South Korea

June 2010 - September 2010

- Participant in the National Science Foundation's (NSF) East Asia and Pacific Summer Institutes (EAPSI) Program, Primary Investigator (PI) on NSF Grant: "EAPSI: Humanoid Operating Software"
- Authored cross platform control code in C++ for adult-sized, miniature, and virtual humanoid robots

### Lawrence Livermore National Laboratory

Intern / Researcher

Livermore, CA

June 2009 - September 2009

- Worked with nuclear detectors group to enhance existing data fusion experimentation program
- Extended and verified multi-agent nuclear detection experiments written in C++ and Python
- Independently performed energy response characterization of industry standard radiation detector

### SEEPS: Systems Engineering Embedded Prototyping Software

2010 - 2011

- Real-time programming language for rapid design of control algorithms (PID, state-feedback, etc)
- Built upon the popular FreeRTOS Real Time Kernel, written in C/C++
- Designed and fabricated custom ARM-based motor controller board to test the language

### Conductor: High Degree-of-Freedom Robot Programming Framework

2009 - 2011

- Real-time, multi-threaded framework for designing control algorithms for high degree of freedom systems
- Built upon real time Linux kernel and the Orocos real time toolkit
- Framework adapted as operating system for Drexel's adult-sized, miniature, and virtual humanoid robots

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## Education

### Drexel University

Master of Science, Electrical Engineering (GPA: 3.89)

Philadelphia, PA

June 2011

### Drexel University

Bachelor of Science, Electrical Engineering (GPA: 3.89)

Philadelphia, PA

June 2011

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## Skills

**Programming Languages:** C/C++ (Including mixed mode, Template based, and Boost), Python, Matlab, Flex/Bison, Bash

**Hardware:** TI's Stellaris MCUs, Microchip PIC MCUs, ST Micro MCUs, Benchtop Tools (Oscilloscopes, Spectrum Analyzers, Multimeters, etc), Soldering/Board Layout (Low-Frequency)/Fabrication

**Real-Time Kernels/Tools:** FreeRTOS, Real Time Linux, Orocos Real-Time Toolkit

**Software:** Virtualization Technologies (Xen, KVM, LXC, VMware, etc), SPICE Simulators, Orcad Board Layout, Android OS Internals

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## Honors

- National Science Foundation - Graduate Research Fellowship Program 2010 - 2011
  - National Science Foundation - East Asia & Pacific Summer Institutes Summer 2010
  - International Society of Automation Scholarship June 2010
  - Department of Homeland Security Scholarship and Fellowship Program 2008-2010
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## Publications

- Sherbert, R.; Oh, P. "Conductor: A Controller Development Framework for High Degree of Freedom Systems". Intelligent Robots and Systems (IROS), 2011 IEEE/RSJ International Conference on. 25-30 Sept. 2011.
- Ellenberg, R.; Sherbert, R.; Oh, P.; Alspach, A.; Gross, R.; Oh, J. "A Common Interface for Humanoid Simulation and Hardware". 10th IEEE-RAS International Conference on Humanoid Robots. Dec. 2010.