Michael Swan

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Education

University of Texas at San Antonio - San Antonio, TX — Spring 2017 - Fall 2017
B.S. Computer Science — 3.1 GPA

Rochester Institute of Technology - Rochester, NY — Fall 2012 - Spring 2016
Computer Science

Experience

Raytheon - San Antonio, TX — August 2016 - Present
Vulnerability Researcher & Software Engineer — https://www.raytheon.com/
Analyzed various programs and consumer electronics for vulnerabilities, finding several that allow for remote code execution. Patched QEMU for reduced VM detection by guests. Added support for various Intel features to a hardware-accelerated state-of-the-art virtual machine. Wrote a small x86 bootloader program to unit test VM features.

Delphix - San Francisco, CA — June 2016 - August 2016
Software Engineer Intern — https://www.delphix.com/
Made improvements to the Unix filesystem mounting abstractions used by the core Delphix product. Worked with a large team of programmers independently making changes to the same project.

Janssen Biotech - Spring House, PA — June 2015 - January 2016
Software Engineer Intern — https://www.janssen.com/
Developed tooling and services for generating visualizations of tabular data sets, written predominantly in Haskell. Such datasets were often many gigabytes in size and so careful optimization was often necessary.

ShoreTel - Rochester, NY — June 2014 - December 2014
Software Engineer Intern — https://www.shoretel.com/
Developed an HTTP load tester for slow internal services. Exposed particularly inefficent access patterns.

Languages

C, C++, Haskell, x86 Assembly, Erlang, Python, Coq, Verilog (In decreasing order of proficiency)

Projects

pcf-font — https://github.com/michael-swan/pcf-font
Implemented a Haskell library for parsing and rendering X11 PCF fonts, which was later used for other projects involving text rendering with OpenGL and a font texture atlas.

Causal Commutative Arrow — https://github.com/michael-swan/CausalCommutativeArrows
Wrote a mechanized proof in Coq of rewrite rules used for CCA optimization as described in the 2011 paper by Liu, Cheng, and Hudak.

Gameboy VGA Module — https://github.com/michael-swan/Gameboy-RGB
Developed an FPGA device which converts video output from the classic Gameboy main board into a standard VGA output video signal.

NES Controller Serial-to-Parallel — https://github.com/michael-swan/NES-Controller-SIPO
Created a module which converts serial data from NES controllers into a parallel bus for which separate wires correspond to separate buttons on the controller.

ProtectExec — https://github.com/michael-swan/ProtectExec
Developed a simplified container system by configuring Linux control groups, namespaces, and chroot features in a simple C library.

Hardware Pong — https://github.com/michael-swan/Pong
Implemented classic Pong on an FPGA with VGA output, written in Verilog.

SSH Honey Pot — https://github.com/michael-swan/HoneyPot
Developed a simple SSH Honey Pot in Erlang.