

EDUCATION	University of Texas at San Antonio - San Antonio, TX B.S. Computer Science Rochester Institute of Technology - Rochester, NY Computer Science	Spring 2017 - Fall 2017 3.1 GPA Fall 2012 - Spring 2016
EXPERIENCE	Raytheon - San Antonio, TX <i>Vulnerability Researcher & Software Engineer</i> 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.	August 2016 - Present https://www.raytheon.com/
	Delphix - San Francisco, CA <i>Software Engineer Intern</i> 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.	June 2016 - August 2016 https://www.delphix.com/
	Janssen Biotech - Spring House, PA <i>Software Engineer Intern</i> 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.	June 2015 - January 2016 https://www.janssen.com/
	ShoreTel - Rochester, NY <i>Software Engineer Intern</i> Developed an HTTP load tester for slow internal services. Exposed particularly inefficient access patterns.	June 2014 - December 2014 https://www.shoretel.com/
LANGUAGES & SKILLS	C, C++, Haskell, x86 Assembly, Erlang, Python, Coq, Verilog, OpenGL	
PROJECTS	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.	https://github.com/michael-swan/pcf-font
	Causal Commutative Arrow Wrote a mechanized proof in Coq of rewrite rules used for CCA optimization as described in the 2011 paper by Liu, Cheng, and Hudak.	https://github.com/michael-swan/CausalCommutativeArrows
	Gameboy VGA Module Developed an FPGA device which converts video output from the classic Gameboy main board into a standard VGA output video signal.	https://github.com/michael-swan/Gameboy-RGB
	NES Controller Serial-to-Parallel 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.	https://github.com/michael-swan/NES-Controller-SIPO
	ProtectExec Developed a simplified container system by configuring Linux control groups, namespaces, and chroot features in a simple C library.	https://github.com/michael-swan/ProtectExec
	Hardware Pong Implemented classic Pong on an FPGA with VGA output, written in Verilog.	https://github.com/michael-swan/Pong
	SSH Honey Pot Developed a simple SSH Honey Pot in Erlang.	https://github.com/michael-swan/HoneyPot