

Education

BS, Computer Engineering

Graduated 2010

Computer Science Minor. Focused on digital systems.

Montana State University

Bozeman, MT

Professional Experience

Senior System Software Engineer

January 2022 - Present

NVIDIA

Remote

Worked on automotive hypervisor team. Protected hypervisor from DRAM hardware attacks by moving memory allocations to encrypted memory region. Implemented framework for fuzzing the hypervisor's hypercall interface from a VM. Added feature for native processes to have separate page sizes.

Senior Software Engineer

March 2013 - November 2021

Green Hills Software

Santa Barbara, CA

Worked with INTEGRITY RTOS and embedded platforms including ARM64, MIPS, PPC and x86 targets.

Added support for new targets to the INTEGRITY Multivisor hypervisor. Increased guest VM storage read throughput by 1.5x. Added support for dynamically migrating devices between guest VMs. Added support for new Linux and Android guest VMs.

Wrote Universal Flash Storage, SD/eMMC, Ethernet, USB, clock, and SCIF drivers. Added features to file systems and improved performance of storage devices. Did board bring-up on new targets with INTEGRITY RTOS.

Wrote safety-critical drivers to ISO 26262 standards. Followed Automotive SPICE development procedures. Wrote software requirements, detailed designs, test procedures, and tests.

Debugged issues with and improved the performance of a high-speed FPGA communication channel on a JTAG probe.

Added assembler, linker, and simulator support for a new instruction set architecture. Designed and implemented compiler, assembler, and linker optimizations and features.

Delivered releases to customers and provided ongoing technical support.

Led small teams of other engineers.

Software Engineer

May 2009 - March 2013

AnthroTronix

Silver Spring, MD

Programmed everything from embedded microcontrollers, to wearable sensors, to inertial measurement units, to 3D simulations, to Android applications, to software vision algorithms.

Primarily programmed embedded and performance-critical software in C or C++ and GUI applications in Java.

Logistics Manager

May 2008 - August 2008

NASA Goddard Space Flight Center

Greenbelt, MD

Managed 19 NASA Academy interns. Organized trips and events across the country. Set up meetings with leaders of the space industry.

Intern

May 2007 - July 2007

AnthroTronix

Silver Spring, MD

Implemented joystick support for 3D game engine in OS X and Linux. Programmed iRobot Create to be JAUS compliant (Joint Architecture for Unmanned Systems). Developed a menu system for a LCD character display.

Research Assistant

2006 Summer

NASA Goddard Space Flight Center

Greenbelt, MD

Worked as a part of a team programming a robot in C to map its surroundings with a LIDAR (Light Detection And Ranging) scanner. The robot was designed to autonomously map its environment and transmit the map data to other robots for navigation.

Research Assistant

2005 Summer

AnthroTronix and NASA Goddard Space Flight Center

Silver Spring, MD

Worked as an intern at AnthroTronix through the NASA Robotics Academy. Programmed a PIC microprocessor to interface between motor driver boards, sonar sensors and a PC. Programmed a Java GUI to provide basic control to a robot over a network connection.

Certifications & Skills

- Proficient in C, Python, Bash, Assembly (ARM64, MIPS, PPC)
- Less frequently used: C++, C#, Java, PHP, Java Script
- Design and implementation knowledge of ARM, PIC, AVR and Freescale microprocessors
- Advanced knowledge of Linux
- Experience with embedded operating systems (Linux, INTEGRITY)
- Proficient in reading schematics and debugging hardware issues with an oscilloscope
- Eagle Scout