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CURRENT APPOINTMENTS

Assistant Professor, Gianforte School of Computing, Montana State University August 2019 - Present

EDUCATION

Ph.D., Computer Science 2013 - 2019

Dartmouth College, Hanover, NH

Dissertation Title: "Trustworthy Wireless Personal Area Networks"

B.S., Mathematics & Computer Science 2008 - 2012

Western Washington University (WWU), Bellingham, WA

INDUSTRY & RESEARCH EXPERIENCE

Assistant Professor, Montana State University August 2019 - Present

- Collaborate with multidisciplinary teams to research a variety of topics, including: issues in software and network security, and developing teaching curriculum for computing in K-12 and undergraduate classes.
- Lead a group of undergraduate and graduate researchers focused on issues in computer and network security.
- Teach undergraduate and graduate courses in operating systems, and computer and network security.

Research Assistant, Dartmouth College January 2014 - August 2019

- Collaborate with multidisciplinary teams to research security and privacy threats in mobile health (mHealth).
- Achieve security through the design and experimental validation of hardware and software architectures.
- Investigate how to apply machine learning and anomaly detection to detect malicious or errant devices in networks of wireless devices by developing models based on historical network traffic and conducting comparative analysis.

Security Research Intern, Intel Labs 2015, 2016

- Conducted a survey on security and privacy threats in the Internet of Things (IoT). Presented findings to researchers and product groups; aided team in developing a larger IoT security research agenda.
- Designed and implemented a security architecture to enhance Bluetooth security on Intel platforms.
- Published and presented our work in *HASP'18* and filed a related patent.

DevOps Engineer, Attachmate January 2013 - August 2013

- Designed and built an automated virtual machine (VM) template management infrastructure using Chef and VMware's vCloud Director. The infrastructure automated how VMs running various operating systems (Windows, Red Hat Linux, SUSE) are deployed and maintained (patched & updated).
- Developed automation routines in Ruby, Bash, and Batch (install software, configure machine settings, etc.).
- Wrote and maintained design specifications and unit tests.

Software Engineer Intern, Attachmate August 2012 - December 2012

- Extended Luminet (enterprise fraud management system) to integrate with various Security Information & Event Management (SIEM) systems. The extensions used our customizable XML configuration file to enable network operators to configure Luminet to log to various SIEMs.
- Demonstrated correctness of code through implementation of unit tests & automated testing methods.

Mobile Developer & Intern Team Lead, Emergency Reporting January 2012 - June 2012

- Designed and implemented a mobile application to aid Fire/Rescue and EMS responders.
- Led team of four interns to implement compatible mobile application on iOS and Android platforms.
- Implemented data security (at-rest and in-transit), database access, and integration with Google Maps.

SELECTED PROJECTS

BASTION-SGX (2015-2019). Trusted I/O prototype for Bluetooth data built on Intel's SGX (ISA extensions for security). Published paper in *HASP'18* and filed a related [patent](#). Technologies: C; Linux, BlueZ, proprietary firmware.

Amulet (2014-2016). Custom mobile health device built for security and low-power operation. Published paper in *SenSys'16* and open-sourced our system ([Amulet on GitHub](#)). Technologies: C, Java; custom OS built on QP RTOS.

TECHNICAL SKILLS

Programming Languages: Python, C, Java, Javascript, Matlab, x86 assembly, Bash, Ruby, SQL, L^AT_EX, HTML/CSS. **Software Development & Prototyping:** Linux, Android, OSX, iOS; Linux and Android Bluetooth stacks; Raspberry Pi, Arduinos, and other custom platforms (e.g., Amulet); Git, SVN, Perforce; Vagrant, Docker, Chef. **System & Software Inspection & Diagnostics:** software inspection, e.g., GDB, dtrace, strace, ptrace, perf; physical inspection, e.g., oscilloscopes, spectrum analyzers. **Data Collection & Analysis:** Wireshark, GNU Radio, Jupyter, MATLAB. **Wireless and Software Defined Radios (SDRs):** Ubertooth; USRP, LimeSDR; GNU Radio. **Databases & Web Frameworks:** MySQL, MongoDB; Node.js.

AWARDS, LEADERSHIP, AND VOLUNTEER EXPERIENCE

- **Volunteer Assistant Coach (Couch-to-5k, High School)**, Hanover, NH 2016 - 2019
- **Lead Sunday School Teacher**, Christ Redeemer Church 2014 - 2019
- **Free Geek Build Volunteer**, Free Geek (Portland, OR) 2016
- **Organizer & Facilitator**, Graduate Student TA Orientation 2015
- **Teaching Award**, Dartmouth College 2013, 2014, 2015
- **Vice President of Business & Operations**, Associated Students of WWU 2011 - 2012
- **Outstanding Winner, Frank Giordano Award**, Contest in Mathematical Modeling 2012