Travis W. Peters

Department of Computer Science, Dartmouth College

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Education

Ph.D., Computer Science *September 2013 - present (expected: June 2019)*
Dartmouth College, Hanover, NH
Advisor: Dr. David Kotz

B.S., Mathematics & Computer Science *September 2008 - December 2012*
Western Washington University (WWU), Bellingham, WA

Work Experience

Researcher – mHealth Security & Privacy, *Dartmouth College, Hanover, NH* *January 2014 - Present*

- Designed and implemented a lightweight operating system for an embedded systems platform (MSP430).
- Designed trust & security models for innovative mHealth wearable device that includes the software and hardware of physical devices, a cloud interface and cloud services, as well as human users.
- Implemented (near) real-time energy usage analysis tools for low-power application development.
- Implemented mHealth applications suitable for low-power wearable device using C programming language and QP active object framework for microcontroller programming.
- Designed and implemented an EMA application for mobile phones running Android OS that is being used to study the biosignals and behaviors of smokers in order to produce meaningful interventions.

Security Research Intern, *Intel, Hillsboro, OR* *June 2016 - September 2016*

- Conducted a survey on IoT frameworks, technologies, as well as current and future-looking usages to identify areas of future work with respect to security, privacy, and safety.

Security Research Intern, *Intel, Hillsboro, OR* *June 2015 - September 2015*

- Designed a Trusted I/O solution to secure data between a PC and connected Bluetooth devices.
- Implemented a Proof of Concept, firmware-based solution for cryptographically protecting sensitive I/O data from Bluetooth Human Interface Devices (HID) between a trusted Bluetooth Controller running on the host and a trusted application (i.e., the intended sender/receiver of the I/O data) running in a Trusted Execution Environment (TEE); our TEE is realized in Intel's SGX.

DevOps Engineer (Contractor), *Attachmate, Bellingham/Seattle, WA* *January 2013 - August 2013*

- Designed and built major components of a virtual machine (VM) template management infrastructure using Opscode Chef and VMware's vCloud Director to maintain (patch & update) Windows, Red Hat Linux, and SUSE Linux systems.
- Developed scripts (Ruby, Bash, and Batch) to automate routine tasks (installing software components, configuring machine settings, etc.).
- Maintained specification & design documentation about progress in software development, and relevant processes & systems.

Software Engineer Intern, *Attachmate, Bellingham, WA* *August 2012 - December 2012*

- Generalized the solution for the Sentinel Extensions for Luminet solution to support logging to various Security Information & Event Management (SIEM) systems.
- Designed a customizable XML configuration file, wrote the related StAX parser, and developed various implementations of generic data structures to support the generic logging solution for Luminet.
- Demonstrated correctness of code through implementation of unit tests & automated testing methods.
- Co-authored and delivered a presentation/demonstration of project results to the Luminet Product team.

iOS Developer & Intern Team Lead, *Emergency Reporting, Bellingham, WA* *January 2012 - June 2012*

- Developed requirements document and design for Emergency Reporting mobile application.
- Led team of four interns to implement compatible mobile application on iOS and Android platforms.

- Implemented features such as secure communication across network and encryption/decryption of data, local and cloud database access and storage, and GPS related functionality for way-finding including integration with Google Maps.

Teaching Experience

Teaching

Problem Solving via Object-Oriented Programming (COSC 10), *Dartmouth College* — *Winter 2015*

Teaching Assistantships

Software Design & Implementation (COSC 50), *Dartmouth College* — *Spring 2016*

Introduction to Programming & Computing (COSC 1), *Dartmouth College* — *Spring 2014*

Problem Solving via Object-Oriented Programming (COSC 10), *Dartmouth College* — *Winter 2014*

Introduction to Programming & Computing (COSC 1), *Dartmouth College* — *Fall 2013*

Programming Fundamentals in C++ (CSCI 140), *Western Washington University* — *Fall 2012*

Teaching Assistant, *Family House Academy* — *Summer 2009*

Publications

Refereed Papers

Travis Peters, Reshma Lal, Srikanth Varadarajan, Pradeep Pappachan, and David Kotz. **BASTION-SGX: Bluetooth and Architectural Support for Trusted I/O on SGX**. In *Proceedings of Hardware and Architectural Support for Security and Privacy (HASP)*, June 2018.

David Kotz and Travis Peters. **Challenges to ensuring human safety throughout the life-cycle of Smart Environments**. In *Proceedings of the ACM Workshop on the Internet of Safe Things*, November 2017.

Josiah Hester, Travis Peters, Tianlong Yun, Ronald Peterson, Joseph Skinner, Bhargav Golla, Kevin Storer, Steven Hearndon, Kevin Freeman, Sarah Lord, Ryan Halter, David Kotz, and Jacob Sorber. **Amulet: An Energy-Efficient, Multi-Application Wearable Platform**. In *Proceedings of the ACM Conference on Embedded Network Sensor Systems (SenSys)*, pages 216–229. ACM, 2016.

Andres Molina-Markham, Ronald Peterson, Joseph Skinner, Tianlong Yun, Bhargav Golla, Kevin Freeman, Travis Peters, Jacob Sorber, Ryan Halter, and David Kotz. **Amulet: A Secure Architecture for mHealth Applications for Low-power Wearable Devices**. In *Proceedings of the Workshop on Mobile Medical Applications - Design and Development (WMMADD)*, pages 16–21. ACM, November 2014.

Travis Peters and Puneet Jain. **MobiSys 2014**. *IEEE Pervasive Computing*, 13(4):93–96, October - December 2014.

Chip Jackson, Lucas Bourne, and Travis Peters. **Computing Along the Big Long River**. *The UMAP Journal for Undergraduate Mathematics & Research*, 33(3):231–246, 2012.

Demos, Posters, Tech Reports, Patents, Work in Progress, etc.

Travis Peters. **A Survey of Trustworthy Computing on Mobile & Wearable Systems**. Technical Report TR2017-823, Dartmouth Computer Science, May 2017.

Co-inventor on pending US patent application. *Related to: Hardware-supported Secure I/O*, Filed 2016.

Josiah Hester, Travis Peters, Tianlong Yun, Ronald Peterson, Joseph Skinner, Bhargav Golla, Kevin Storer, Steven Hearndon, Sarah Lord, Ryan Halter, David Kotz, and Jacob Sorber. **The Amulet Wearable Platform: Demo Abstract**. In *Proceedings of the ACM Conference on Embedded Network Sensor Systems*, SenSys '16, pages 290–291, New York, NY, USA, 2016. ACM.

Travis Peters. **An Assessment of Single-Channel EMG Sensing for Gestural Input**. Technical Report TR2015-767, Dartmouth Computer Science, September 2014.

Technical Skills

Programming Languages: Java, C, Python, Javascript, Matlab, Ruby, Bash, SQL, LaTeX, HTML5/CSS3

Relevant Technologies & Tools: The Linux and Android Bluetooth stacks, Node.js, Vagrant and Chef (automated provisioning tools), Git and Perforce (version control), OS diagnostic tools (e.g., GDB, dtrace, strace, ptrace)

Leadership Experience

Graduate Student Web Team, Dartmouth College Computer Science — *January 2014 - Present*

Graduate Student Council Rep., Dartmouth College Computer Science — *September 2013 - Present*

Lead Teacher & RK Coordinator, Redeemer Kids at Redeemer Church — *November 2011 - June 2013*

Chair, AS Management Council & AS Facilities & Services Council — *June 2011 - June 2012*

Vice-Chair, AS Board of Directors & AS Budget Committee — *June 2011 - June 2012*

Awards & Honors

Best Teaching Assistant Award, Department of Computer Science, Dartmouth College — *2014 - 2015*

Graduate Student Teaching Award, Dartmouth College — *2013 - 2014*

Dartmouth Fellowship, Dartmouth College — *2013 - 2014*

Oscar Edwin Olson Scholarship, Western Washington University — *2012*

Outstanding Winner, Frank Giordano Award, Mathematical Contest in Modeling — *2012*

Kaiser Borsari Scholarship, Western Washington University — *2011 - 2012*

Giusti Scholarship, Western Washington University — *2011 - 2012*

Activities

Assistant Track Coach, Hanover High School — *Winter-Spring 2017*

Free Geek Build Volunteer, Free Geek (Portland, OR) — *Summer 2016*

Assistant Track Coach, Hanover High School — *Spring 2016*

Organizer & Facilitator, Graduate Student TA Workshop — *December 2015*

Member, Academic Honesty Board — *June 2011 - June 2012*

Member, Academic Honesty Board — *June 2011 - June 2012*

Big Brother, Big Brothers Big Sisters of Whatcom County — *September 2010 - September 2011*

4-year member of Varsity Track & Field, Western Washington University — *2008 - 2012*

4-year member of Junior Varsity Cross Country, Western Washington University — *2008 - 2011*