Austen Thomas Barker

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RESEARCH INTERESTS

Computer Security, Steganography, Deniable systems, operating systems, flash storage and nonvolatile memory, storage systems, cryptography.

ACADEMIC BACKGROUND

Ph.D. Computer Science 2018-2022
University of California, Santa Cruz (UCSC), Santa Cruz, California

- Ph.D. research in computer science focusing on storage systems and security under the direction of Professor Darrell D. E. Long.
- Dissertation title: *Artifice: Rethinking the Adversary to Design Usable Deniable Storage*

M.S. Computer Science 2017-2018
University of California, Santa Cruz, Santa Cruz, California

- Focused on storage and security.
- Masters Project: *Artifice: A Deniable Steganographic Storage System*

B.S. Computer Science 2013-2017
University of California, Santa Cruz, Santa Cruz, California

EMPLOYMENT HISTORY

Graduate Student Researcher March 2018 - Present
University of California, Santa Cruz, Storage Systems Research Center, Santa Cruz, California

- Graduate Student Researcher in the UCSC Storage Systems Research Center (SSRC/CRSS).
- Currently working on deniable and steganographic storage systems and secure deletion technologies.

Teaching Assistant January - March 2018, September - December 2019
University of California, Santa Cruz, Storage Systems Research Center, Santa Cruz, California

- Upper division Introduction to Operating Systems, CMPS-111, in the winter quarter of 2018.
- Lower division Computer Systems and C Programming, CSE-13S, in the fall quarter of 2019.

Information Security Intern July - December 2017, June - September 2018
DataStax, Santa Clara, California

- API security components for a cloud platform single sign on application. Including password hashing, database interfaces (AWS RDS and Apache Cassandra), and user credential management.
- Secure cloud systems setup and hardening automation. Security focused VPC log analytics API and web visualizations.

Software Engineering Intern June - September 2016
TidalScale Inc., Los Gatos, California

- Software engineering summer internship. Also worked over the 2016 winter break between school terms.
- Ubuntu certification testing for a software defined server appliance.
- Python admin and monitoring utilities for a software defined server platform.

Software Engineering Intern June - September 2014, June - September 2015
Immediate Insight, Los Altos, California

- Supported Kaiser Permanente Immediate Insight deployment.
- Installation, capacity, and operational testing for IT data analytics product.

SPECIAL ACHIEVEMENTS

Awards

- *Eagle Scout* Boy Scouts of America, Troop 30, Los Altos, California, 2012

Grants

- *NSF Award* Artifice research funded by NSF award #1814347 CSR Small: A Multi-layered Deniable Steganographic File System under P.I. Prof. Darrell D. E. Long.

PUBLICATIONS

1. Kyle Fredrickson, Austen Barker, Darrell D. E. Long, "A Multiple Snapshot Attack on Deniable Storage Systems," *Proceedings of the 29th International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems* (MASCOTS '21), November 2021, pp. 1-8.
2. Austen Barker, Yash Gupta, James Hughes, Ethan L. Miller, Darrell D. E. Long, "Rethinking the Adversary and Operational Characteristics of Deniable Storage," *Journal of Surveillance, Security, and Safety* (JSSS), 2021;2;42-65.
3. Austen Barker, Yash Gupta, Sabrina Au, Eugene Chou, Ethan L. Miller, Darrell D. E. Long, "Artifice: Data in Disguise," *Proceedings of the 36th International Conference on Massive Storage Systems and Technology* (MSST '20), October 2020.
4. Austen Barker, Staunton Sample, Yash Gupta, Ana McTaggart, Ethan L. Miller, Darrell D. E. Long, "Artifice: A Deniable Steganographic File System," *Proceedings of the 9th USENIX Workshop on Free and Open Communications on the Internet* (FOCI '19), August 2019.