

Ariana Mirian

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CURRICULUM VITAE

I am a collaborative researcher who quantifies and improves security processes using real-world, large-scale datasets. I use active experimentation, passive analysis, and statistical methods to answer the questions: "How do we measure security?" and also "How do we improve security processes?". My current research focuses on applying these methods to help improve processes at an organizational level. I've previously used similar methods to understand the "Hack for Hire" market and HTTPS adoption.

EDUCATION

University of California – San Diego <i>Doctor of Philosophy (Ph.D.)</i> <i>Computer Science and Engineering</i> <i>Thesis: Prioritizing Security Practices via Large-Scale Measurement of User Behavior</i>	June 2023
University of California – San Diego <i>Master of Science (M.S)</i> <i>Computer Science and Engineering</i>	February 2019
University of Michigan – Ann Arbor <i>Bachelor of Science in Engineering (B.S.E)</i> <i>Computer Science and Engineering</i>	May 2016

RELEVANT WORK EXPERIENCE

UCSD IT Security team, Researcher <ul style="list-style-type: none">Partnered with IT employees across teams to develop research projects that improved organizational safety; prioritized projects based on organizational needsImproved patch rate of organizational vulnerabilities from 3% to 78% using active experimentation, strategic planning, and empirical analysis of real-world dataFurther quantified organizational patching difficulties with expert interviewsSpurred organizational protocol changes in campus-wide communications via behavioral analysis about user responses to communicationsCreated and executed active experiments to lower phishing rate by improving phishing training/simulations within the organizationIdentified lack of relationship between yearly security training and security outcomes using passive analysis of real-world data, which prompted an investigation into best methods for lowering security outcomesCommunicated oral and verbal results to stakeholders ranging from technical managers to c-suite level executives	2021 - Present
UCSD Graduate Student Researcher <i>Advisors: Stefan Savage and Geoffrey M. Voelker</i> <ul style="list-style-type: none">Directed 8 research projects from ideation to analysis to publication; collaborated on an additional 5 projectsCreated and managed multiple large data-collection systems in Python, C, and Bro, with the goal of collecting real-world data accuratelyInitiated and executed collaborations with industry partners and other research labs, both within UCSD and outside of the organizationAdvised 12 PhD/MS/BS students, leading to 2 publications and 2 honors' theses	2016 - Present

Google, Chrome Metrics

Summer 2018

Mentors: Nik Bhagat, Caitlin Sadowski, Adrienne Porter Felt

- Created internal tool that assisted teams with data-driven deprecation decisions
- Identified and set metrics for different categories of deprecation to create programmatic decision making pipeline

Google, Chrome Security

Summer 2017

Mentors: Adrienne Porter Felt, Emily Stark

- Analyzed less popular sites to determine HTTPS blockers; identified websites that could be targeted for direct outreach, and helped inform team strategy
- Modified Pshtt (open source tool) to be more robust for internal and external use

PUBLICATIONS

Please Act Now: An Empirical Analysis of Enterprise-wide Mandatory Password Updates

Ariana Mirian, Grant Ho, Stefan Savage, Geoffrey M. Voelker

In Submission

On Knowing a Hawk from a Handsaw: The Challenges of Passive Device Classification

Ariana Mirian, Audrey Randall, Aaron Schulman, Stefan Savage, Geoffrey M. Voelker

In Submission

Forward Pass: On the Security Implications of Email Forwarding Mechanism and Policy

Enze Liu, Gautam Akiwate, Mattijs Jonker, Ariana Mirian, Grant Ho, Geoffrey M. Voelker, Stefan Savage

8th IEEE European Symposium on Security and Privacy (Euro S&P), Delft, Netherlands, 2023

Distinguished Paper Award Winner

In the Line of Fire: Risks of DPI-triggered Data Collection

Ariana Mirian, Alisha Ukani, Ian Foster, Gautam Akiwate, Taner Halicioglu, Cindy Moore,

Alex C. Snoeren, Geoffrey M. Voelker, Stefan Savage

Cybersecurity Test and Experimentation Workshop, Marina Del Rey, United States, August 2023

Locked-In in During Lock-Down: Undergraduate Life on the Internet in a Pandemic

Alisha Ukani, Ariana Mirian, Alex C. Snoeren

21st Internet Measurement Conference (IMC), Virtual, November 2021

Who's Got Your Mail? Characterizing Mail Service Provider Usage

Enze Liu, Gautam Akiwate, Mattijs Jonker, Ariana Mirian, Stefan Savage, Geoffrey M. Voelker

21st Internet Measurement Conference (IMC), Virtual, November 2021

CoResident Evil: Covert Communication in the Cloud with Lambdas

Anil Yelam, Shibani Subbareddy, Keerthana Ganesan, Stefan Savage, Ariana Mirian

The Web Conference, Ljubljana, Slovenia, April 2021

Hack for Hire: Investigating the Black Market of Retail Email Account Hacking Services

Ariana Mirian

ACM Queue, Volume 17 Issue 4, October 2019 &

Communications of the ACM, Volume 62 No. 12, December 2019

Measuring Security Practices and How They Impact Security

Louis DeKoven, Audrey Randall, Ariana Mirian, Gautam Akiwate, Ansel Blume, Lawrence K. Saul, Aaron Schulman, Geoffrey M. Voelker, Stefan Savage

19th Internet Measurement Conference (IMC), Amsterdam, Netherlands, October 2019

Web Feature Deprecation: A Case Study for Chrome

Ariana Mirian, Nikunj Bhagat, Caitlin Sadowski, Adrienne Porter Felt, Stefan Savage, Geoffrey M. Voelker
41st International Conference for Software Engineering, Software Engineering in Practice (ICSE SEIP), Montreal, Canada, May 2019

Hack for Hire: Exploring the Emerging Market for Account Hijacking

Ariana Mirian, Joe DeBlasio, Stefan Savage, Geoffrey M. Voelker, Kurt Thomas
The Web Conference, San Francisco, United States, May 2019

HTTPS Adoption in the Longtail

Ariana Mirian, Christopher Thompson, Stefan Savage, Geoffrey M. Voelker, Adrienne Porter Felt
Tech Report, Google and UC San Diego, 2018

Security Challenges in an Increasingly Tangled Web

Deepak Kumar, Zane Ma, Zakir Durumeric, Ariana Mirian, Joshua Mason, J. Alex Halderman, Michael Bailey
26th International World Wide Web Conference, Perth, Australia, April 2017

An Internet-Wide View of ICS Devices

Ariana Mirian, Zane Ma, David Adrian, Matthew Tischer, Thasphon Chuenchujit, Tim Yardley, Robin Berthier, Josh Mason, Zakir Durumeric, J. Alex Halderman and Michael Bailey
Privacy, Security and Trust Conference (PST), Auckland, December 2016

A Search Engine Backed by Internet-Wide Scanning

Zakir Durumeric, David Adrian, Ariana Mirian, Michael Bailey, J. Alex Halderman
22nd ACM Computer and Communications Security (CCS), Denver, CO, October 2015

Neither Snow Nor Rain Nor MITM...An Empirical Analysis of Mail Delivery Security

Zakir Durumeric, David Adrian, Ariana Mirian, James Kasten, Kurt Thomas, Vijay Eranti, Nicolas Lidzborski, Elie Bursztein, Michael Bailey, J. Alex Halderman
15th ACM Internet Measurement Conference (IMC), Tokyo, October 2015
IRTF Applied Networking Research Prize (ANRP)

ADDITIONAL WORK EXPERIENCE

Researcher

Advisor: J. Alex Halderman

2014 - 2016

- Used measurement to analyze various network ecosystems
- Performed Internet-wide studies on email security and ICS device security
- Maintained ZMap (zmap.io) and Censys (censys.io)
- Published several papers on completed work

RetailMeNot

Product Management Intern

Summer 2014

- Designed a web responsive application that recommends gifts for a shopper
- Worked with and managed a team of interns from various, diverse schools over a 3 months
- Operated as product lead, technical lead, marketing, and as main point of contact to company

SERVICE

Usenix Security Program Committee Member, 2021 - present
CSET Program Committee Member, 2019 - present
UCSD CSE Diversity, Equity, and Inclusion Committee, 2018 – present
UCSD Ph.D. Student Admissions Committee, 2018 – present
UCSD Visit Day Organizing committee, 2016 - 2020

POSTERS AND LIGHTNING/INVITED TALKS

On the Theory and Practice of Vulnerability Remediation

2023 Never Work in Theory (NWIT)

Informed Research or Pandora's Box? The Case for Using Demographic Data in Large-Scale Security Measurements, Lightning Talk

2019 Usenix Summit in Hot Topics in Security

Awarded "Most Surprising" Talk

Hack for Hire: Exploring the Emerging Market for Account Hijacking, Invited Talk

Dropbox, May 2019; University of Washington, November 2019

HTTPS Adoption in the Longtail, Poster

Usenix Security, August 2018; CNS Research Review, October 2018; UCSD CSE Research Open house, January 2019

Introduction to TLS, Guest Lecture

CSE 224, December 2018

STUDENT ADVISING

Isabel Suizo -> Google Software Engineer, CMU PhD
Undergraduate, 2020 – 2022

Jeff Xu → Georgia Tech PhD
Undergraduate, 2019 – 2022

Elizabeth Tran, Marlon Trujillo, Young Kim
Undergraduates, 2020 – 2021 Academic Year

Yehonatan Hezkiya, Eric Siu, Aaron Wu
Undergraduates, 2019 – 2020 Academic Year

Ansel Blume → UIUC PhD
Undergraduate, Spring 2019

Barbara He → Twitter
Undergraduate, Spring 2018, Winter + Spring 2019

Nadah Feteih → Google, Meta, Tech Policy Fellow @ UC Berkeley
Undergraduate, Spring 2017

TEACHING

CSE 127 (Undergraduate Security)

Spring 2020

Teaching Assistant

- Acted as head Teaching Assistant (TA) for the course
- Organized and co-taught discussion structure and managed logistics of other TAs
- Helped to transform the 200-person course into an online format because of University closures due to COVID19

CSE 227 (Graduate Security)

Fall 2019

Teaching Assistant

- Assisted student groups in creation and completion of quarter-long, independent research projects
- Created formal rubrics for project proposal, final report, and final presentation
- Assessed students to produce final grades
- Guest lectured for usable security portion of course curriculum

UCSD Splash

2017, 2019

Teacher

- Created powerpoint on best security practices for online interactions
- Presented to multiple 15 – 20 high school sections

Engr 110

Fall 2015

Staff for Engr 110: The Engineering Profession

- Planned and executed discussion for introductory to engineering course (aimed towards incoming, undeclared freshmen in the college of engineering) and also graded assignments
- Worked with College of Engineering staff in revamping of course

Big Data Science Camp

Summer 2015

Teaching Assistant

- Facilitated camp that focused on teaching humanity PhD students the basics of SQL and python for use in data analysis
- Worked one-on-one and in group settings with students of different skill levels and backgrounds

Women in Science and Engineering Residential Program

2013 - 2014

Study Group Facilitator

- Planned and executed weekly study group for Math 156 (Honors Applied Calculus 2) and Math 255 (Honors Applied Calculus 3)

LEADERSHIP & ACTIVITIES

CSE Diversity, Equity, and Inclusion Committee, UC San Diego

2018 – 2021

Co-lead and Member, 2018-2021

- Created CSE committee focused on Diversity, Equity, and Inclusion initiatives
 - comprised of staff, faculty, and students; currently at > 80 people on the committee
 - created steering committee with 8 people as leads to facilitate better coordination
- Co-ordinated and empowered launch of several initiatives, such as
 - creation of student committee for PhD admissions to CSE department
 - recruiting efforts at conferences such as GHC, Tapia, and oSTEM

- internal focus groups, to determine culture issues in different populations
- launch of DEI lecture series

Graduate Women in Computing (GradWIC), UC San Diego 2016 - 2021

President, 2017-2020

- Acted as main point of contact for industries, organizations, companies, and the University
- Planned strategy for upcoming year for goals and measurements of success
- Launched Mentorship program in Fall 2017
- Increased membership body and number of events hosted

General Member 2016-present

- Organized various events around diversity issues within the department
- Launched a mentorship program for the graduate community

Society of Women Engineers, University of Michigan 2012-2016

President, 2015-2016

- Acted as main point of contact for industries, organizations, companies, and the University
- Provided support for 35 leader corp members and also 400+ general members
- Planned and organized 2015 Fall Career Fair, largest career fair on campus

Strategic Planning Director and Marketing and Membership Director, 2014- 2015

- Devised methods to keep SWE growing and changing positively
- Introduced and implemented the marketing and membership committee

Participant in SWE Overseas Walchandnagar, India Trip, Summer 2014

- Organized day of computer science activities to teach to students
- Immersed in culture, traditions, and changes in India

Middle School Outreach Officer, 2013 - 2014

- Organized 4 events per semester, which included 20-100 participants
- Planned and organized 2013 Fall Career Fair, largest career fair on campus
- Organized GREAT Day 2014, with 260 participants attending

Women in Science and Engineering Residential Program, University of Michigan 2012-2014

Study Group Facilitator, 2013

Peer Mentor, 2013

- Facilitated a 2 hours study group every week, helping students with content from class
- Assisted in transition from high school to college for a group of freshman

Persian Student Association, University of Michigan 2012-2016

Member

- Increased awareness of the Persian culture and its attributes
- Performer in the annual New Year's show

College of Engineering Honor Council, University of Michigan 2013 - 2014

Council Member

- Investigated Honor Code Violations every week for College of Engineering
- Presented findings at a weekly hearing with other council members

AWARDS AND RECOGNITIONS

ITS STAR Award for Creativity – University of California, San Diego <i>For creativity in improving vulnerability remediation pipeline within the enterprise organization</i>	2022
Inclusive Excellence Award Campus Wide Student Recipient – University of California, San Diego <i>For promoting inclusion and demonstrating exemplary support of the Principles of Community</i>	2019
2019 Usenix Summit on Hot Topics in Security “Most Surprising” talk award	2019
CSE Award for Leadership – University of California, San Diego <i>For significant contributions to the CSE department via various leadership roles and initiatives</i>	2019
GSA Outstanding Community Leader Award – University of California, San Diego <i>For significant contributions to the CSE department via various initiatives and roles</i>	2018
CSE Award for Contributions to Diversity – University of California, San Diego <i>For significant contributions to the department via diversity initiatives</i>	2017
Duo Security Women in Security (Academic) Award Nominee <i>For significant contributions to the fields of information security and privacy</i>	2015
Willie Hobbs Moore Trailblazer Award – University of Michigan <i>For dedication to outstanding outreach programs within the University and also for dedication to improvement within the Society of Women Engineers at the University of Michigan</i>	2015
Aspire, Advance, Achieve Scholarship – Society of Women Engineers, University of Michigan <i>For showing constant motivation and dedication and making vital contributions to the section</i>	2015
Dow Chemical Scholarship – Society of Women Engineers, University of Michigan <i>For outstanding leadership and academics</i>	2014
Outstanding SWE Leader Scholarship – Society of Women Engineers, University of Michigan <i>For outstanding leadership and mentorship within the section</i>	2014
Outstanding Freshmen Scholarship – Society of Women Engineers, University of Michigan <i>For outstanding work in the section as a freshman</i>	2013