

Pardis Emami-Naeini

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Research Interests

Social and Economic Aspects of Security and Privacy, Statistical Modeling of Security and Privacy Behaviors, Human-Computer Interaction.

Education

- 2015 – 2020 **Ph.D. in Computer Science**, *Carnegie Mellon University*, Pittsburgh, PA.
Advisors: Lorrie Cranor and Yuvraj Agarwal.
Thesis Committee: Lujo Bauer and Mohammad Reza Haghghat.
- 2015 – 2018 **M.Sc. in Computer Science**, *Carnegie Mellon University*, Pittsburgh, PA.
Advisor: Lorrie Cranor.
- 2011 – 2015 **B.Sc. in Computer Engineering**, *Sharif University of Technology*, Tehran, Iran.
Advisor: Ali Movaghar.

Employment

- Sept 2022 – **Assistant Professor**, *Computer Science Department*, Duke University.
- Feb 2022 – **Research Consultant**, Consumer Reports.
- Aug 2020 – **Postdoctoral Researcher**, *University of Washington*, Seattle, WA.
July 2022 Working with Tadayoshi Kohno and Franziska Roesner.
Quantitatively and qualitatively studying users' privacy and security concerns and attitudes toward emerging technologies, including smart cities and remote communication tools.
- June 2020 – **Postdoctoral Researcher**, *Carnegie Mellon University*, Pittsburgh, PA.
Aug 2020 Worked with Lorrie Cranor and Yuvraj Agarwal.
Investigated the economic aspects of IoT privacy and security labels.

- Aug 2015 – **Graduate Research Assistant**, *Carnegie Mellon University*, Pittsburgh, PA.
May 2020 Worked with [Lorrie Cranor](#) and [Yuvraj Agarwal](#).
Established a thorough understanding of how users make privacy-related decisions when interacting with IoT devices, combined the obtained knowledge with experts' insights to develop a privacy and security label for IoT devices, and evaluated its usability and risk communication to effectively inform consumers' IoT-related purchase decision making.
- June 2019 – **Research Intern**, *Microsoft Research*, Redmond, WA.
Aug 2019 Worked with [Kristin Lauter](#) and [Kim Laine](#).
Implemented homomorphic encryption schemes onto a system on a chip (SoC).
- June 2017 – **Research Intern**, *Intel Corporation*, Santa Clara, CA.
Aug 2017 Worked with [Mohammad Reza Haghighat](#), [Richard Chow](#), and [Heather Patterson](#).
Investigated the impact of social influence on IoT-related privacy decision making.
- June 2014 – **Undergraduate Research Assistant**, *Sharif University of Technology*, Tehran, Iran.
May 2015 Worked with [Ali Movaghar](#).
Developed and evaluated algorithms for energy efficient networking in wireless sensor networks and software defined networks (SDN).
- June 2014 – **Research Intern**, *University of Michigan*, Ann Arbor, MI.
Aug 2014 Worked with [Mina Rais-Zadeh](#).
Designed and implemented a chip-scale clock that had consistency in the presence of fluctuations under extreme conditions, such as outer space.
- June 2014 – **Research Intern**, *University of Michigan*, Ann Arbor, MI.
Aug 2014 Worked with [David Neuhoff](#).
Designed a method to classify different wood textures with minimum array of pixels information.
- June 2013 – **Research Intern**, *University of Michigan*, Ann Arbor, MI.
Aug 2013 Worked with [Igor Markov](#).
Conducted research on optimizing the area and power in logic circuits.
- June 2012 – **Research Intern**, *Massachusetts Institute of Technology*, Boston, MA.
Aug 2012 Worked with [Iman Soltani Bozchalooi](#).
Designed a wide-band nano-positioning stage for high-frequency stimulation of cartilage tissue for osteoarthritis research.

Publications

Conference Proceedings

- C13 **Pardis Emami-Naeini**, Janarth Dheenadhayalan, Yuvraj Agarwal, and Lorrie Cranor. Are Consumers Willing to Pay for Security and Privacy of IoT Devices? *To appear in Proceedings of the 32nd USENIX Security Symposium (USENIX Security'23)*.

- C12 Miranda Wei, **Pardis Emami-Naeini**, Tadayoshi Kohno, and Franziska Roesner. Skilled? Gullible? Likely to Install Software Updates and Verify HTTPS? Investigating Gender Stereotypes Related to Computer Security and Privacy. *In Proceedings of the 44th IEEE Symposium on Security and Privacy (S&P'23)*.
- C11 Kentrell Owens, Johanna Gunawan, Dave Choffnes, **Pardis Emami-Naeini**, Tadayoshi Kohno, and Franziska Roesner. Exploring Deceptive Design Patterns in Voice Interfaces. *In Proceedings of the European Symposium on Usable Security (EuroUSEC'22)*.
- C10 **Pardis Emami-Naeini**, Tiona Francisco, Tadayoshi Kohno, and Franziska Roesner. Understanding Privacy Attitudes and Concerns Towards Remote Communications During the COVID-19 Pandemic. *In Proceedings of the 17th Symposium on Usable Privacy and Security (SOUPS'21)*.
- C9 **Pardis Emami-Naeini**, Janarth Dheenadhayalan, Yuvraj Agarwal, and Lorrie Cranor. Which Privacy and Security Attributes Most Impact Consumers' Risk Perception and Willingness to Purchase IoT Devices? *In Proceedings of the 42nd IEEE Symposium on Security and Privacy (S&P'21)*.
- C8 **Pardis Emami-Naeini**, Yuvraj Agarwal, Lorrie Cranor, and Hanan Hibshi. Ask the Experts: What Should Be on an IoT Privacy and Security Label? *In Proceedings of the 41st IEEE Symposium on Security and Privacy (S&P'20)*.
- C7 **Pardis Emami-Naeini**, Yuvraj Agarwal, Lorrie Cranor, and Henry Dixon. Exploring How Privacy and Security Factor into IoT Device Purchase Behavior. *In Proceedings of the 37th ACM Conference on Human Factors in Computing Systems (CHI'19)*.
- C6 **Pardis Emami-Naeini**, Martin Degeling, Richard Chow, Lujo Bauer, Lorrie Cranor, Mohammad Reza Haghghat, and Heather Patterson. The Influence of Friends and Experts on Privacy Decision Making in IoT Scenarios. *In Proceedings of the 21st ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW'18)*.
- C5 Hana Habib, **Pardis Emami-Naeini**, Summer Devlin, Maggie Oates, Chelse Swoopes, Lujo Bauer, Nicolas Christin, and Lorrie Faith Cranor. User Behaviors and Attitudes Under Password Expiration Policies. *In Proceedings of the 14th Symposium on Usable Privacy and Security (SOUPS'18)*.
- C4 Sarah Pearman, Jeremy Thomas, **Pardis Emami-Naeini**, Hana Habib, Lujo Bauer, Nicolas Christin, Lorrie Faith Cranor, Serge Egelman, and Alain Forget. Let's Go in For a Closer Look: Observing Passwords in Their Natural Habitat. *In Proceedings of the 24th ACM Conference on Computer and Communications Security (CCS'17)*.
- C3 **Pardis Emami-Naeini**, Sruti Bhagavatula, Hana Habib, Martin Degeling, Lujo Bauer, Lorrie Cranor, and Norman Sadeh. Privacy Expectations and Preferences in an IoT World. *In Proceedings of the 13th Symposium on Usable Privacy and Security (SOUPS'17)*.

- C2 Blase Ur, Felicia Alfieri, Maung Aung, Lujo Bauer, Nicolas Christin, Jessica Colnago, Lorrie Faith Cranor, Henry Dixon, **Pardis Emami-Naeini**, Hana Habib, Noah Johnson, and William Melicher. Design and Evaluation of a Data-Driven Password Meter. *In Proceedings of the 35th ACM Conference on Human Factors in Computing Systems (CHI'17)*.
- C1 Primal Pappachan, Martin Degeling, Roberto Yus, Anupam Das, Sruti Bhagavatula, William Melicher, **Pardis Emami-Naeini**, Shikun Zhang, Lujo Bauer, Alfred Kobsa, Sharad Mehrotra, Norman Sadeh, and Nalini Venkatasubramanian. Towards Privacy-Aware Smart Buildings: Capturing Communicating, and Enforcing Privacy Policies and Preferences. *In Proceedings of the 37th IEEE International Conference on Distributed Computing Systems Workshops (ICDCSW'17)*.

Magazine and Journal Papers

- J2 **Pardis Emami-Naeini**, Janarth Dheenadhayalan, Yuvraj Agarwal, and Lorrie Cranor. An Informative Security and Privacy ‘Nutrition’ Label for Smart Devices. *IEEE Security & Privacy*, 2021.
- J1 Noah Apthorpe, **Pardis Emami-Naeini**, Arunesh Mathur, Marshini Chetty, and Nick Feamster. You, Me, and IoT: How Internet-Connected Consumer Devices Affect Interpersonal Relationships. *ACM Transactions on Internet of Things*.

Selected Awards and Honors

- 2022 Duke Science and Technology Scholar.
- 2021 IEEE S&P paper selected to be highlighted in the IEEE Security and Privacy Magazine.
- 2019–2020 CyLab Presidential Fellowship.
- 2019 Rising Stars Research Pitch Award.
- 2018–2019 UnifyID AI Fellowship (Declined).
- 2017 Best Paper Award at CHI'17.
- 2017 Scholarship Grant to attend Women in CyberSecurity conference (WiCyS).
- 2017 Scholarship Grant to attend Enigma.
- 2016 Scholarship Grant to attend Grace Hopper Celebration.
- 2016 Scholarship Grant to attend USENIX Security.
- 2016 Scholarship Grant to attend Women in CyberSecurity conference (WiCyS).
- 2012–2015 Ranked 2nd in GPA among undergraduate students in the Department of Computer Engineering, Sharif University of Technology.

Invited Talks

- 2022 **Privacy and Security By People, for People**, *Society of Women in Science*.

2022 **Empowering People to Have Secure and Private Interactions with Digital Technologies.**

- Georgia Institute of Technology: School of CyberSecurity and Privacy
- University of Michigan: Department of Computer Science and Engineering
- Northeastern University: Khoury College of Computer Sciences
- Duke University: Department of Computer Science
- University of California San Diego: Department of Computer Science and Engineering
- University of California San Diego: Halıcıoğlu Data Science Institute
- Pennsylvania State University University: Department of Computer Science and Engineering
- Pennsylvania State University: College of Information Sciences and Technology
- North Carolina State University: Department of Computer Science
- Washington University in St. Louis: Department of Computer Science and Engineering
- Johns Hopkins University: Department of Computer Science
- Emory University: Department of Computer Science
- Vanderbilt University: Department of Computer Science
- University of Colorado Boulder: Department of Computer Science
- University of Toronto: Department of Computer Science
- Ecole Polytechnique Fédérale de Lausanne: School of Computer and Communication Sciences
- Imperial College London: Department of Computing
- CISPA Helmholtz Center for Information Security
- Max Planck Institute for Security and Privacy

2022 **Designing an Informative and Usable Security and Privacy Label for IoT Devices**, *Northwestern University*.

2021 **Designing an Informative and Usable Security and Privacy Label for IoT Devices**, *University of California, Berkeley*.

2021 **Designing an Informative and Usable Security and Privacy Label for IoT Devices**, *Imperial College London*.

2021 **Ethical Aspects of Security and Privacy Research: Overview of User-Centered Research Techniques**, *University of Denver*.

2021 **Designing an Informative and Usable Security and Privacy Label for IoT Devices**, *Responsible Data Science and AI Talk Series, University of Illinois Urbana-Champaign*.

2021 **The Human Element in Autonomous Cyber Security Workshop**, *Florida Institute of Technology*.

- 2021 **Designing an IoT Privacy and Security Label**, *National Institute of Standards and Technology (NIST)*.
- 2021 **Privacy and Security Nutrition Labels to Inform IoT Consumers**, *Bace Cybersecurity Institute*.
- 2020 **Informing Privacy and Security Decision-Making in an IoT World**, *University of Maine*.
- 2020 **Informing Privacy and Security Decision-Making in an IoT World**, *University of Illinois Urbana-Champaign*.
- 2020 **Designing an IoT Privacy and Security Label**, *Cellular Telecommunications Industry Association (CTIA)*.
- 2019 **Informing Privacy and Security Decision-Making in an IoT World**, *Rising Stars in CS Talk Series, University of Massachusetts Amherst*.
- 2019 **Security and Privacy Nutrition Labels for IoT Devices**, *CyLab Partners Conference, Carnegie Mellon University*.
- 2019 **Privacy Enhancing Environmental Technology**, *Microsoft Research*.
- 2018 **“Erm... What do you think?” The Effect of the Crowd in Making Privacy Decisions**, *Intel Corporation*.

Selected Presentations

- 2021 **Safe and Secure with IoT Nutrition Labels**, *USENIX Enigma’21*.
- 2021 **Internet of Things**, *PrivacyCon’21*.
- 2020 **Internet of Things**, *PrivacyCon’20*.
- 2018 **Consumer Preferences, Expectations, and Behaviors Session**, *PrivacyCon’18*.

Invited Panel Appearances

- 2021 **Designing for Data Awareness: Addressing Privacy and Security Concerns About “Smart” Technologies Workshop**, *CSCW’21*.
- 2021 **WARNING: This Label is Really Important**, *Open Technology Institute (in partnership with Consumer Reports)*.
- 2021 **Decadal Plan for Semiconductors: Measurable ICT Security and Privacy**, *Semiconductor Research Corporation*.
- 2020 **Smart Home Energy Management Systems (SHEMS) Pitch Party**, *Energy Star*.

Selected Teaching Experience

- 2023 **Instructor**, *Duke University*
COMPSCI 4654: Human-Centric Privacy and Security.
- 2019 **CS Teaching Assistant**, *Carnegie Mellon University*
CS 17-331: Information Security, Privacy, and Policy.
- 2019 **CS Teaching Assistant**, *Carnegie Mellon University*
CS 17-735: Engineering Privacy in Software.
- 2014 **CE Teaching Assistant**, *Sharif University of Technology*
CE 40-215: Numerical Analysis.
- 2012 **CE Teaching Assistant**, *Sharif University of Technology*
CE 40-153: Fundamentals of Programming.

Professional Service

External Service

- 2023 **Program Committee Member.**
 - IEEE Symposium on Security and Privacy (S&P)
 - USENIX Security Symposium
 - Privacy Enhancing Technologies Symposium (PETS)
 - ACM Conference on Computer-Supported Cooperative Work (CSCW)
 - ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec)
- 2022 **Program Committee Member.**
 - IEEE Symposium on Security and Privacy (S&P)
 - USENIX Security Symposium
 - Privacy Enhancing Technologies Symposium (PETS)
 - ACM Conference on Computer-Supported Cooperative Work (CSCW)
 - Workshop on Usable Security and Privacy (USEC)
 - IEEE Workshop on the Internet of Safe Things (SafeThings)
- 2021 **Program Committee Member.**
 - USENIX Security Symposium
 - ACM Conference on Computer-Supported Cooperative Work (CSCW)
 - European Symposium on Research in Computer Security (ESORICS)
- 2021 **Posters and Demos Program Committee Member.**
 - ACM Conference on Computer and Communications Security (CCS)
- 2020 **Program Committee Member.**
 - ACM International Conference on Intelligent User Interfaces (IUI)

- International Conference on Advances in Computer-Human Interactions (ACHI)
- 2019 **Conference Chair.**
 - Workshop on “Ubiquitous Privacy: Research and Design for Mobile and IoT Platforms,” ACM Conference on Computer-Supported Cooperative Work (CSCW)
 - Session on “Accessible Content Creation,” ACM Conference on Human Factors in Computing Systems (CHI)
- 2016–2022 **Invited Conference Reviewer.**
 - USENIX Security Symposium
 - Privacy Enhancing Technologies Symposium (PETS)
 - ACM Conference on Human Factors in Computing Systems (CHI)
 - ACM Conference on Computer-Supported Cooperative Work (CSCW)
 - Network and Distributed System Security Symposium (NDSS)
 - ACM Symposium on User Interface Software and Technology (UIST)
 - ACM Conference on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)
- 2019–2022 **Invited Journal Reviewer.**
 - ACM Transactions on Computer-Human Interaction (TOCHI)
 - Journal of Computer Security (JCS)
 - Communications of the ACM
 - IEEE Access

Internal Service

- 2020 **Hiring Committee Member.**
 - Faculty Hiring Committee, School of Computer Science, Carnegie Mellon University
 - Ph.D. Admissions Committee, School of Computer Science, Carnegie Mellon University

Media Coverage

- 2021 **Washington Post**, *Big Tech is Pushing Smart Home Devices as the Latest Work-from-Home Tools.*
- 2021 **Vox**, *Your Echo Is Now Sharing Your Internet With Your Neighbors. Here’s How To Opt Out.*
- 2021 **Consumers’ Checkbook**, *Are You Sharing Your Wi-Fi with Amazon? If So, Should You Be Concerned?.*

- 2021 **TechXplore**, *CyLab's IoT Security And Privacy Label Effectively Conveys Risk, Study Finds.*
- 2021 **Consumer Reports**, *Connected Devices Share More Data Than Needed, Study Says.*
- 2021 **The Seattle Times**, *Zoom Bombings That Target Marginalized People Spark Demands For Legal Protections.*
- 2020 **The Wall Street Journal**, *Imagine A Nutrition Label—For Cybersecurity.*
- 2020 **WIRED**, *Apple's App 'Privacy Labels' Are Here—And They're A Big Step Forward.*
- 2020 **Consumer Reports**, *How To Use Apple's Privacy Labels For Apps.*
- 2020 **WIRED**, *IoT Security Is A Mess. Privacy 'Nutrition' Labels Could Help.*
- 2020 **BankInfoSecurity**, *Product Labels Could Make IoT Risks More Transparent.*
- 2020 **Digital Privacy Podcast**, *Episode 1: Digital Privacy With Pardis Emami Naeini.*
- 2020 **TechXplore**, *IoT Labels Will Help Consumers Figure Out Which Devices Are Spying On Them.*
- 2019 **TechXplore**, *Security And Privacy Rarely Considered Before Buying IoT Devices.*

Mentorship Experience

- 2022 **Inyoung Cheong (PhD Student)**, *University of Washington.*
- 2022-2023 **Kentrell Owens (PhD Student)**, *University of Washington.*
- 2021-2022 **Markus Schiffer (Master's Student)**, *University of Washington.*
- 2020-2022 **Miranda Wei (PhD Student)**, *University of Washington.*
- 2020-2021 **Janarth Dheenadhayalan (Master's Student)**, *Carnegie Mellon University.*
- 2020-2021 **Michelle Ling (Undergraduate Student)**, *Carnegie Mellon University.*
- 2020 **Tiona Francisco (Undergraduate Student)**, *University of Washington.*
- 2020 **Huilin Liu (Master's Student)**, *Carnegie Mellon University.*
- 2020 **Ziyuan Zhu (Undergraduate Student)**, *Carnegie Mellon University.*
- 2019 **Shreyas Nagare (Undergraduate Student)**, *Carnegie Mellon University.*