Lisa Oakley

Curriculum Vitae

Khoury College of Computer Sciences
Northeastern University
Boston, MA
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🖥 *lisaoakley.github.io*

Research Interests: Formal Verification for Cybersecurity and Privacy, Differential Privacy, Robust Reinforcement Learning

Education

Sept. 2020 – (exp. 2025)
PhD in Computer Science, *Northeastern University*, Khoury College of Computer Sciences.
  ○ Advisor: Alina Oprea

Aug. 2022
Master of Science in Computer Science, *Northeastern University*, Khoury College of Computer Sciences.
  ○ Selected coursework: Foundations of Probabilistic Programming. Formal Specification, Verification, and Synthesis. Machine Learning Security and Privacy. Privacy in Statistics and Machine Learning.
  ○ GPA: 3.97

Dec. 2018
Bachelor of Science in Mathematics and Computer Science, *Northeastern University*, Khoury College of Computer Sciences.
  ○ *summa cum laude* (highest honors)

Research Experience

June 2022 – present
Quant Research Intern, *Proof Trading, Inc.*.
  ○ Advisor: Allison Bishop

Sept. 2018 – present
Research Assistant, *Northeastern University*, Khoury College of Computer Sciences.
  ○ Advisor: Alina Oprea

Publications

Conference Papers

2024
Synthesizing Tight Privacy and Accuracy Bounds via Weighted Model Counting.
Lisa Oakley, Steven Holtzen, Alina Oprea
In *37th IEEE Computer Security Foundations Symposium*, (CSF '24) 2024.
https://arxiv.org/abs/2402.16982

2024
Defining and Controlling Information Leakage in US Equities Trading.
Arthur Américo, Allison Bishop, Paul Cesaretti, Garrison Grogan, Adam McKoy, Robert Moss, **Lisa Oakley**, Marcel Ribeiro, Mohammad Shokri
In *24th Proceedings on Privacy Enhancing Technologies*, (PoPETs '24) 2024.
https://eprint.iacr.org/2023/971

2022
Adversarial Robustness Verification and Attack Synthesis in Stochastic Systems.
Lisa Oakley, Alina Oprea, and Stavros Tripakis
In *35th IEEE Computer Security Foundations Symposium*, (CSF '22, FLoC'22) 2022.
https://arxiv.org/abs/2110.02125

2019
QFlip: An Adaptive Reinforcement Learning Strategy for the FlipIt Security Game.
Outstanding Student Paper Award
Lisa Oakley and Alina Oprea
In *10th Proceedings of the Conference on Decision and Game Theory for Security*, (GameSec'19) Stockholm, Sweden, 2019.
https://link.springer.com/chapter/10.1007/978-3-030-32430-8_22

Preprints

2024   **Hierarchical Multi-Agent Reinforcement Learning for Cyber Network Defense**.
Aditya Vikram Singh, Ethan Rathbun, Emma Graham, **Lisa Oakley**, Simona Boboila, Alina Oprea, Peter Chin
In Submission. 2024.
https://arxiv.org/abs/2410.17351

Workshop Presentations

2024   **Synthesizing Tight Privacy and Accuracy Bounds via Weighted Model Counting**.
Lisa Oakley, Steven Holtzen, Alina Oprea
Poster at *Theory and Practice of Differential Privacy (TPDP)*, 2024.

2024   **What Does Privacy Mean for Stock Trading?**.
Speakers: Allison Bishop and **Lisa Oakley**. Other Contributers: Arthur Américo, Paul Cesaretti, Garrison Grogan, Adam McKoy, Robert Moss, Marcel Ribeiro, Mohammad Shokri
Accepted Talk at *IACR Real World Crypto (RWC)*, 2024.

2023   **Defining and Controlling Information Leakage in US Equities Trading**.
Arthur Américo, Allison Bishop, Paul Cesaretti, Garrison Grogan, Adam McKoy, Robert Moss, **Lisa Oakley**, Marcel Ribeiro, Mohammad Shokri
Poster at *Theory and Practice of Differential Privacy (TPDP)*, 2023.

2020   **Adversarial Robustness of AI Agents Acting in Probabilistic Environments**.
Lisa Oakley, Alina Oprea, and Stavros Tripakis
Short paper at *Workshop on Foundations of Computer Security* (Affiliated with *Computer Security Foundations Symposium*), 2020.
http://www.ccs.neu.edu/~stavros/papers/2020-fcs.pdf

Other Presentations

2024   **Saying NO! to Workplace Surveillence: Lessons from the Cybersecurity and Privacy Institute**.
Lisa Oakley, xenia dragon, Eysa Lee
Re-Imagining Cryptography and Privacy (ReCAP) Workshop, 2024.

2023   **Differential Privacy Verification**.
Lisa Oakley
Northeastern University Software Day, 2023.

2022   **Model Checking Adversarial Robustness in Stochastic Systems**.
Lisa Oakley, Alina Oprea, and Stavros Tripakis
CRA-WP Grad Cohort for Women, 2022.

2019   **Reinforcement Learning Techniques to Increase Intrusion Resilience in Game Theoretical APT Models**.
Lisa Oakley and Alina Oprea
NSF Secure and Trustworthy Cyberspace PI Meeting, 2019.

2019   **Game Theoretical Modeling and Reinforcement Learning Techniques for Cybersecurity**.
Lisa Oakley
Northeastern University Math Club, 2019.

2019   **Diversity in Tech Panel**.
Northeastern University Women in Technology and Multi-Diverse Unified Leaders in the Technology Industry, 2019.

Teaching Experience

Fall 2022, Spring 2023   **Graduate Teaching Assistant**, *Northeastern University*.
- Spring 2023: Logic and Computation (CS2800). Instructor: Daniel Patterson.
- Fall 2022: Logic and Computation (CS2800). Instructor: Stavros Tripakis.

Spring 2017,	**Undergraduate Teaching Assistant**, *Northeastern University.*
Spring 2018,	○ Fall 2018: Algorithms and Data Structures (CS3000). Instructor: Jon Ullman.
Fall 2018	○ Spring 2018: Algorithms and Data Structures (CS3000). Instructor: Huy Nguyen.
	○ Spring 2017: Logic and Computation (CS2800). Instructors: Pete Manolios, Thomas Wahl, and David Sprague.

Awards and Honors

2024	**Student Travel Grant**, *Computer Security Foundations Symposium (CSF) '24.*
2023	**Student Travel Grant**, *High Assurance Crypto Systems (HACS) Workshop '23.*
2023	**Student Travel Grant**, *Real World Crypto (RWC) '23.*
2023	**Student Volunteer**, *Principles of Programming Languages (POPL) '23.*
2022	**Northeastern Google Fellowship Nominee**, *Northeastern University.*
2022	**CRA-WP Grad Cohort for Women**, *CRA-WP Grad Cohort for Women '22.*
2021	**USENIX Diversity Grant**, *USENIX Security '21.*
2021	**GREPSEC Workshop Attendee**, *GREPSEC Workshop, USENIX Security '21.*
2019	**Outstanding Student Paper Award**, *GameSec '19.*
2018	***summa cum laude***, *Khoury College of Computer Sciences, Northeastern University.*
2015–2018	**Merit Scholarship**, *Northeastern University.*
2015–2018	**Dean's List**, *Northeastern University.*
2013–2015	**Dean's List, President's List**, *California Polytechnic State University, SLO.*
2013–2015	**Italian Catholic Federation Merit Scholarship**, *Italian Catholic Federation.*
2013	**California Scholarship Federation Lifetime Member**, *California Scholarship Federation.*
2013	**Kiwanis Merit Scholarship**, *Kiwanis.*
2013	**Sons of Italy Merit Scholarship**, *Sons of Italy.*

Software Engineering Experience

June – Aug. 2018	**Software Engineering Intern**, *VMWare Tanzu Greenplum*, Palo Alto, CA. ○ Member of Infrastructure team for distributed Postgres database
July – Dec. 2017	**Software Engineering Co-Op**, *VMWare Tanzu*, New York, NY. ○ Windows team for cloud platforms software (Google Cloud, AWS, Microsoft Azure, VMWare On-Prem)
July – Dec. 2016	**Quality Assurance Engineering Co-Op**, *Runkeeper (Asics Digital)*, Boston, MA. ○ Mobile app wearables team (Garmin, Apple Watch, Android Watch, Pebble, iOS, Android OS)

Other Activities

2020-present	**Organizer**, *Khoury PhD Women Group.*
2020-2021	**Member**, *Northeastern University Accountable Algorithms Reading Group.*
2019-2020	**Volunteer**, *Y2Y Youth Shelter (Cambridge, MA), Rosie's Place Womens' Shelter (Boston, MA).*
2018-2020	**Cast Member**, *ImprovBoston All Access Improv Comedy Show.*
2015-2018	**Vice President, Member**, *Northeastern University Math Club.*
2015-2018	**Member**, *Northeastern University Women in Technology Club.*
2015-2017	**Member**, *NU & Improv'd (Northeastern University Improv Comedy Troupe).*
2014-2015	**Volunteer**, *Habitat for Humanity ReStore (San Luis Obispo, CA).*
2011-2012	**Sponsorship Chair**, *Justin-Siena High School Relay for Life (American Cancer Society).*