Lisa Oakley

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`https://lisaoakley.github.io/`
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1 Eductation

Ph.D. Student/Research Assistant in Computer Science (expected 2025)
Advised by Professors Alina Oprea and Stavros Tripakis
Northeastern University, Boston, MA

Bachelor of Science in Mathematics and Computer Science (December 2018)
Northeastern University, Boston, MA
summa cum laude

2 Research Projects

Formal verification for adversarial robustness in machine learning systems (January 2020 - present)
with Prof. Alina Oprea and Prof. Stavros Tripakis
Using optimization techniques and the PRISM model checker to verify robustness properties of machine learning agents acting in uncertain environments.
Outcomes:

- Workshop talk (FCS) see section 3

Adversarial attacks against active search algorithms on networks (July 2019 - December 2019)
with Prof. Alina Oprea and Prof. Tina Eliassi-Rad
Developing poisoning attacks and defenses on active search algorithms in network science applications.
Outcomes:

- Some initial results of attack effectiveness.

Adaptive reinforcement learning strategies for the FlipIt security game (Sept. 2018 - Dec. 2019)
with Prof. Alina Oprea
Used reinforcement learning techniques to develop a strategy for the FlipIt game theory model of Advanced Persistent Threats.
Outcomes:

- Conference paper (GameSec) see section 3

- **Outstanding Student Paper Award** (GameSec)

3 Publications

[workshop paper] **Adversarial Robustness of AI Agents Acting in Probabilistic Environments**
Lisa Oakley, Alina Oprea, and Stavros Tripakis
Workshop on Foundations of Computer Security (Affiliated with *Computer Security Foundations Symposium*),
Virtual Conference, 2020.

[conf. paper] **QFlip: An Adaptive Reinforcement Learning Strategy for the FlipIt Security Game**
Lisa Oakley and Alina Oprea
In *Proceedings of the Conference on Decision and Game Theory for Security* (GameSec), Stockholm, Sweden,
2019. **Outstanding Student Paper Award**

[poster] **Reinforcement Learning Techniques to Increase Intrusion Resilience in Game Theoretical APT Models**
Lisa Oakley and Alina Oprea (presented by Alina Oprea)
NSF Secure and Trustworthy Cyberspace PI Meeting, October 2019.

[technical blog post] **Concourse as a Service and Multi-CPI**
Trevor Yacovone, Lisa Oakley, Jason Vigil, and Kristofer Macoskey
Pivotal Engineering Journal, 2018.

4 Awards and Honors

- Outstanding Student Paper Award (GameSec) (2020)

- Graduated *summa cum laude* (2018)

- Dean's List (Northeastern Univesity) (2015-2018)

- Dean's List, President's List (Cal Poly, SLO) (2013-2015)

- Northeastern Merit Scholarship (2015-2018)

- Italian Catholic Federation Scholarship (2013-2015)

- California Scholarship Federation Lifetime Member (2013)

- Kiwanis Scholarship (2013)

- Sons of Italy Scholarship (2013)

5 Talks and Panels

Game Theoretical Modeling and Reinforcement Learning Techniques for Cybersecurity
Northeastern University *Math Club*
October 24, 2019

Diversity in Tech Panel
Northeastern Univ. *Women in Technology* and *Multi-Diverse Unified Leaders in the Technology Industry*
October 22, 2019

6 Course Assistant Experience

CS 3000 (formerly 4800) Algorithms and Data Structures
Professor Jon Ullman
Fall 2018

CS 3000 (formerly 4800) Algorithms and Data Structures
Professor Huy Nguyen
Spring 2018

CS 2800 Logic and Computation
Professors Pete Manolios, Thomas Wahl, David Sprague
Fall 2017

7 Industry Experience

Software Engineering Internship
June 2018-August 2018
VMWare Tanzu Greenplum (Distributed Postgres Database)

Software Engineering Co-op
July 2017-December 2017
VMWare Tanzu (Cloud Platforms Software)

Quality Assurance Engineering Co-op
July 2016-December 2016
Asics Digital (Runkeeper Mobile App)

8 Groups

NDS2
Advisors Alina Oprea and Cristina Nita-Rotaru
Cybersecurity and Privacy Institute

9 Other Activities

Volunteer
Y2Y Youth Shelter and Rosie's Place Womens' Shelter

Cast Member
ImprovBoston's All Access Improv Comedy Cast

Undergraduate Club Member (membership prior to graduation)
NU Women in Tech, NU Math Club (Vice President Spring 2017), NU & Improv'd (improv comedy troupe)