Matthew Landen

PhD Student

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Research Interests

Attack detection, systems and network security

Education

Ph.D. Georgia Institute of Technology — Atlanta, Georgia
Computer Science — Expected May 2023
Specialization: Information security
Minor: Security and privacy policy
Advisor: Dr. Wenke Lee
NSF Graduate Research Fellow — $34,000 / year, 3 years
Georgia Tech Presidential Fellowship — $5,500 / year, 4 years

B.S. University of Maryland, Baltimore County (UMBC) — Baltimore, Maryland
Computer Science and Mathematics, Summa Cum Laude — May 2017
Meyerhoff Scholar — $15,000 / year, 4 years
Phi Kappa Phi Honors Society Member — April 2017 – Present
GPA: 4.0 / 4.0

Research Experiences

Georgia Tech, Institute for Information Security & Privacy (IISP) — Atlanta, GA
Advisor: Dr. Wenke Lee — August 2017 – Present

Leveraging provenance audit for intrusion detection

- Extract representations of attack tools to later enhance intrusion detection systems by flagging attack tool reuse

Android malware classification using machine learning

- Features capture the frequency that a sensitive API call is invoked by an android framework entrypoint
- Outcomes
    - (Allen, 2018): Improving Accuracy of Android Malware Detection with Lightweight Contextual Awareness

UMBC MAPLE Lab — Baltimore, MD
Advisor: Dr. Marie desJardins — November 2016 – August 2017

Planning with learned subtask hierarchies in reinforcement learning domains

- Designed and implemented a hierarchical reinforcement learning algorithm using BURLAP java library
- Implanted R-MAXQ as a baseline to our approach
- Outcomes
    - (Squire, 2017): R-AMDP: Model-Based Learning for Abstract Markov Decision Process Hierarchies
    - (Winder, 2017): Towards Planning With Hierarchies of Learned Markov Decision Processes

National Institute of Standards and Technology — Gaithersburg, MD
Advisors: Michaela Iorga, Ph.D. and Dmitry Cousin — May 2015 – May 2017

Hash chaining for secure and privacy-preserving digital forensics in the cloud

- Implemented a hash chain logging approach in a research cloud environment using java which has applications in information security and privacy-preserving digital forensics

NIST cloud security framework analyzer and visualizer

- Developed a tool in C# that allows agencies to analyze the NIST cloud computing security architecture and see pertinent information in a variety of situations as well as visual trends

Publications

Joey Allen, **Matthew Landen**, Sanya Chaba, Yang Ji, Simon Chung, Wenke Lee "Improving Accuracy of Android Malware Detection with Lightweight Contextual Awareness" In Annual Computer Security Applications Conference, 2018

Shawn Squire, John Winder, **Matthew Landen**, Stephanie Milani, Marie desJardins "R-AMDP: Model-Based Learning for Abstract Markov Decision Process Hierarchies" In The Multi-disciplinary Conference on Reinforcement Learning and Decision Making 2017, 2017

John Winder, Shawn Squire, **Matthew Landen**, Stephanie Milani and Marie desJardins "Towards Planning With Hierarchies of Learned Markov Decision Processes" In ICAPS-2017 Integrated Execution of Planning and Acting Workshop, pg 50-53, 2017

Technological Skills

Programming Languages:	Java, Python, C, C++, C#, Visual Basic, intel assembly, HTML, CSS, JavaScript, PHP, SQL, Latex
Frameworks / Libraries:	Python – Keras, Sklearn, NumPy, Pwntools; Web – Jquery, AngularJS
Tools:	Git, IDA Disassembler

Teaching Experience

Georgia Institute of Technology

Fall 2018	CS 6262 – Network Security	Teaching Assistant

University of Maryland, Baltimore County

Fall 2016	COMP 101 – Computational Thinking and Design	Head Teaching Fellow
Fall 2015	COMP 101 – Computational Thinking and Design	Teaching Fellow

Conferences & Workshops Attended

Annual Computer Security Applications Conference	December 2018
USENIX Security and Artificial intelligence Networking Workshop	May 2018
CRA Grad Cohort Workshop for Underrepresented Minorities + Persons with Disabilities	March 2018
ACM Richard Tapia Celebration of Diversity in Computing	September 2017
The Multi-disciplinary Conference on Reinforcement Learning and Decision Making	June 2017

Relevant Employment

United States Defense Intelligence Agency — College Park, MD
Student Intern — June 2014 – August 2017

Software engineering projects

- Developed a tool to update a mailing list for updates specific to a piece of software automatically
- Engineered software to get digital certificate information from users on a website

References for Matthew Landen

Wenke Lee, PhD
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School of Computer Science
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Georgia Institute of Technology
404-385-2879
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