Evan Downing
PhD Student

Contact Information

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Research Interests

Malware analysis & detection, intrusion detection

Education

Ph.D. in Computer Science, Georgia Institute of Technology, Atlanta, GA. 2014-Present.
        Advisor: Prof. Wenke Lee

B.S. in Computer Science, University of Tennessee, Knoxville TN. 2009-2013.

Relevant Employment

2014-Present	Graduate Research Assistant at Georgia Institute of Technology, Atlanta, GA
2011, 2012, 2013	Summer Intern at Oak Ridge National Laboratory, Oak Ridge, TN

Publications: Refereed Conferences

Park, Kyuhong, Burak Sahin, Yongheng Chen, Jisheng Zhao, Evan Downing, Hong Hu, Wenke Lee. "Identifying Behavior Dispatchers for Malware Analysis." AsiaCCS, 2021.

Downing, Evan, Yisroel Mirsky, Kyuhong Park, Wenke Lee. "DeepReflect: Discovering Malicious Functionality through Binary Reconstruction." USENIX Security Symposium, 2021.

Ji, Yang, Sangho Lee, Mattia Fazzini, Joey Allen, Evan Downing, Taesoo Kim, Alessandro Orso, Wenke Lee. "Efficient Data Flow Tagging and Tracking for Refinable Cross-host Attack Investigation." USENIX Security Symposium, 2018.

Ji, Yang, Sangho Lee, Evan Downing, Weiren Wang, Mattia Fazzini, Taesoo Kim, Alessandro Orso, Wenke Lee. "RAIN: Refinable Attack Investigation with On-demand Inter-Process Information Flow Tracking." ACM Conference on Computer and Communications Security (CCS), 2017.

Harrison, Lane, Riley Spahn, Michael Iannacone, Evan Downing, and John R. Goodall. "NV: Nessus Vulnerability Visualization for the Web." Proceedings of the Symposium on Visualization for Computer Security (VizSec), ACM International Conference Proceedings Series, 2012, 25-32.

Publications: Extended Abstracts

Das, Nilaksh, Siwei Li, Chanil Jeon, Jinho Jung, Shang-Tse Chen, Carter Yagemann, Evan Downing, Haekyu Park, Evan Yang, Li Chen, Michael Kounavis, Ravi Sahita, David Durham, Scott Buck, Polo Chau, Taesoo Kim, Wenke Lee. "MLsploit: A Framework for Interactive Experimentation with Adversarial Machine Learning Research". KDD 2019.

Chen, Li, Carter Yagemann, and Evan Downing. "To believe or not to believe: Validating experimentation fidelity for dynamic malware analysis". CVPR Workshop on Explainable AI, 2019.

Publications: Other

Jiménez, Jarilyn M. Hernández, Lee M. Hively, Evan P. Downing, Aaron E. Ferber, Stacy J. Prowell, and Ryan D. Wagner. "Beholder: Phase-Space Detection of Cyber Events," ORNL/TM-2013/294 (Aug 2013).

Harrison, Lane, Jason Laska, Riley Spahn, Michael Iannacone, Evan Downing, Erik M. Ferragut, and John R. Goodall. "situ: Situational Understanding and Discovery for Cyber Attacks". IEEE Symposium on Visual Analytics Science and Technology Challenge Entry, 2012.

Awards

2019	Georgia Tech IISP Demo Day Commercialization Track Winner
2014, 2015, 2016, 2017	Georgia Institute of Technology Presidential Fellowship

Invited Talks

12/2017	"Introduction to Cuckoo & Evasive Malware"	Industry Partnership with Intel, Equifax, & Experian
9/2016	"Ransomware: How to Respond"	Georgia Tech Cyber Security Summit - Breakout Session
9/2016	"Introduction to Malware"	Georgia Tech CS 4235/6035 Guest Lecture
9/2016	"GDB and Buffer Overflows"	Georgia Tech CS 4235/6035 Guest Lecture
4/2016	"Introduction to Malware Analysis"	Georgia Tech CS 4235/6035 Guest Lecture

Service

Program Committee Member:

Deep Learning and Security Workshop…….………………………………………2022
co-located with IEEE Symposium on Security and Privacy (S&P)

Conference External Reviewer:

Network and Distributed System Security Symposium (NDSS)……………….. 2016, 2017
Conference on Computer and Communications Security (CCS)………………..2015, 2016, 2018,
2019, 2020
USENIX Security Symposium……………………………………………..2015, 2021, 2022
IEEE Symposium Security & Privacy (S&P)…………………………………... 2020
International Symposium on Research in Attacks, Intrusions, and Defenses…... 2017
(RAID)
International Symposium on Cyber Security Cryptography and Machine……... 2017
Learning (CSCML)
European Symposium on Security and Privacy (Euro S&P)…………………… 2018

Teaching Experience

Georgia Institute of Technology:

Fall 2016	CS 4235/6035 - Introduction to Information Security	Head Teaching Assistant
	OMS CS 6262 - Network Security	Consultant
Summer 2016	OMS CS 6035 - Introduction to Information Security	Head Teaching Assistant
Spring 2016	CS 4235/6035 - Introduction to Information Security	Teaching Assistant
	CS 4235/6035 - Introduction to Information Security	Consultant
Fall 2015	CS 4235/6035 - Introduction to Information Security	Consultant

Relevant Activities

Graduate Career (2014-Present):
- Designed and implemented a dynamic malware analysis project, computer hacking project, and a software exploitation project for two "Introduction to Information Security" classes
- Designed and implemented a malware modeling and evasion project for a third (more advanced) Information Security class
- Gave talks on malware analysis, was a conference external reviewer, and was awarded Georgia Tech's Presidential Fellowship
- Won the 2019 IISP Demo Day Commercialization Track for MLSploit
- Assisted Georgia Tech's School of Computer Science Faculty Recruiting Committee
- Served on Georgia Tech's School of Cybersecurity & Privacy Permanent Chair Search Committee

- Participated in and assisted at PhD Visitation and PhD Welcome weeks throughout graduate school
- Mentored students in information security research (primarily in malware analysis & detection, and intrusion detection):
  - James Pastan (Yale - Undergraduate)
  - Vishal Llewellyn (Master's) - HughesNet
  - Sena Sahin (Master's) - pursued a PhD
  - Janaki Bhagwath (Master's) - Adobe Systems
  - Hrushikesh Yemme (Undergraduate)
  - Grace Harper (Undergraduate) - IBM Quantum
  - Haoran Wang (Master's) - pursued a PhD
  - Scott Bergstresser (OMSCS)

Undergraduate Career (2009-2013):
- Tutored students in their computer science and math classes both officially and unofficially throughout entire undergraduate career
- Students & Technology in Academia, Research & Service (STARS) Alliance tutor for the University of Tennessee in Knoxville's (UTK) Electrical Engineering & Computer Science (EECS) Department for two semesters
- Chair of the Association for Computing Machinery (ACM) at UTK for three semesters
- Vice Chair of the ACM at UTK for two semesters
- Chair of the UTK ACM Programming Team for three semesters
- International Computer Programming Competition (ICPC) participant for three years

Relevant Memberships

Association for Computing Machinery (ACM)
Institute of Electrical and Electronics Engineers (IEEE)