

DANIEL J. VOTIPKA

dvotipka@cs.tufts.edu

Mobile Phone: 252-908-4464

www.eecs.tufts.edu/~dvotipka/

Academic Appointments

Tufts University

Lin Family Assistant Professor, Computer Science

Medford, MA

2021-Present

Education

University of Maryland

Ph.D., Computer Science

Advisor: Michelle L. Mazurek

Committee: Michael Hicks, Jeffrey S. Foster, Michael Reiter, and Katie Shilton

Dissertation: *A Human-Centric Approach to Software Vulnerability Discovery*

Teaching Training: Future Faculty Fellows

College Park, MD

2016-2020

Carnegie Mellon University

M.S. Information Security, Technology, and Management

Advisor: Nicolas Christin

Thesis: *A General Collection Methodology for Android Devices*

Pittsburgh, PA

2010-2012

Illinois Institute of Technology

B.S. Computer Science

Chicago, IL

2006-2010

Selected Publications

Conference Proceedings

- C.17 Bug Hunters' Perspectives on the Challenges and Benefits of the Bug Bounty Ecosystem.
USENIX '23 Omer Akgul, Taha Eghtesad, Amit Elazari, Omprakash Gnawali, Jens Grossklags, Michelle L. Mazurek, **Daniel Votipka**, Aron Laszka. In the USENIX Security Symposium, 2023.
- C.16 Vulnerability Discovery for All: Experiences of Marginalization in Vulnerability Discovery.
IEEE S&P '23 Kelsey R. Fulton, Samantha Katcher, Kevin Song, Marshini Chetty, Michelle L. Mazurek, Chloé Messdaghi, **Daniel Votipka**. In the IEEE Symposium on Security and Privacy, 2023.
- C.15 A Qualitative Evaluation of Reverse Engineering Tool Usability.
ACSAC '22 James Mattei, Madeline McLaughlin, Samantha Katcher, and **Daniel Votipka**. In the Annual Computer Security Applications Conference, 2022. [*Acceptance Rate: 24%*]
- C.14 Understanding the How and the Why: Exploring Secure Development Practices Through a Course Competition. Kelsey R. Fulton, **Daniel Votipka**, Desiree Abrokwa, James Parker, Michelle L. Mazurek, Michael Hicks. In the Conference on Computer and Communications Security, 2022. [*Acceptance Rate: 23%*]
- C.13 How Ready is Your Ready? Assessing the Usability of Incident Response Playbook Frameworks. Rock Stevens, **Daniel Votipka**, Josiah Dykstra, Fernando Tomlinson, Erin Quartararo, Colin Ahern, Michelle L. Mazurek. In the Conference on Human Factors in Computing Systems, 2022. [*Acceptance Rate: 26%*] **Best Paper Honorable Mention**

- C.12 Studying Security Information Workers: Comparing Six Software Developer Samples.
USENIX '22 Harjot Kaur, Sabrina Amft, **Daniel Votipka**, Yasemin Acar, Sascha Fahl. In the USENIX Security Symposium, 2022. [*Acceptance Rate: 18%*]
- C.11 An Investigation of Online Reverse Engineering Community Discussions in the Context of
EuroS&P '21 Ghidra. **Daniel Votipka**, Mary Nicole Punzalan, Seth M. Rabin, Yla Tausczik, Michelle L. Mazurek. In the IEEE European Symposium on Security and Privacy, 2021. [*Acceptance Rate: 32%*]
- C.10 Benefits and Drawbacks of Adopting a Secure Programming Language: Rust as a case study.
SOUPS '21 Kelsey R. Fulton, Anna Chan, **Daniel Votipka**, Michael Hicks, Michelle L. Mazurek. In the Symposium on Usable Privacy and Security, 2021. [*Acceptance Rate: 26.5%*].
- C.9 HackEd: A Pedagogical Analysis of Online Vulnerability Discovery Exercises.
IEEE S&P '21 **Daniel Votipka**, Eric Zhang, Michelle L. Mazurek. In the IEEE Symposium on Security and Privacy, 2021. [*Acceptance Rate: 12%*]
- C.8 Building and Validating a Scale for Security Software Development Self-Efficacy.
CHI '20 **Daniel Votipka**, Desiree Abrokwa, Michelle L. Mazurek. In the Conference on Human Factors in Computing Systems, 2020. [*Acceptance Rate: 24%*]
- C.7 An Observational Investigation of Reverse Engineers' Processes and Mental Models.
USENIX Sec '20 **Daniel Votipka**, Seth M. Rabin, Kristopher Micinski, Jeffrey S. Foster, and Michelle L. Mazurek. In the USENIX Security Symposium, 2020. [*Acceptance Rate: 16%*]
- C.6 Understanding Security Mistakes Developers Make: Qualitative Analysis from Build It, Break It, Fix It.
USENIX Sec '20 **Daniel Votipka**, Kelsey Fulton, James Parker, Matthew Hou, Michelle L. Mazurek, and Michael Hicks. In the USENIX Security Symposium, 2020. [*Acceptance Rate: 16%*] ***Distinguished Paper Award***
- C.5 Does Being Verified Make You More Credible? The Effect of Account Verification on Tweet Credibility.
CHI '19 Tavish Vaidya, **Daniel Votipka**, Micah Sherr, and Michelle L. Mazurek. In the Conference on Human Factors in Computing Systems, 2019. [*Acceptance Rate: 24%*]
- C.4 User Comfort with Android Background Resource Accesses in Different Contexts.
SOUPS '18 **Daniel Votipka**, Kristopher Micinski, Seth M. Rabin, Thomas Gilray, Michelle L. Mazurek, and Jeffrey S. Foster. In the Symposium on Usable Privacy and Security, 2018. [*Acceptance Rate: 23%*]
- C.3 Battle for New York: A Case Study Using Center of Gravity Theory for Digital Threat Modeling.
USENIX Sec '18 Rock Stevens, **Daniel Votipka**, Elissa M. Redmiles, Patrick Sweeney, and Michelle L. Mazurek. In the USENIX Security Symposium, 2018. [*Acceptance Rate: 19%*] ***Distinguished Paper Award***
- C.2 Hackers vs. Testers: A Comparison of Software Vulnerability Discovery Processes.
IEEE S&P '18 **Daniel Votipka**, Rock Stevens, Elissa M. Redmiles, Jeremy Hu, and Michelle L. Mazurek. In the IEEE Symposium on Security and Privacy, 2018. [*Acceptance Rate: 14%*]
- C.1 User Interactions and Permission Use on Android.
CHI '17 Kristopher Micinski, **Daniel Votipka**, Rock Stevens, Nikolaos Kofinas, Jeffrey S. Foster, and Michelle L. Mazurek. In the Conference on Human Factors in Computing Systems, 2017. [*Acceptance Rate: 25%*]

Workshop Proceedings

- W.5 WiP: Where's Eve? Evaluating Student Threat Modeling Performance and Perceptions.
WISW '22 Carson Powers, Nickolas Gravel, Maxwell Mitchell, and **Daniel Votipka**. In the Workshop on Security Information Workers, 2020.
- W.4 The Hackers' Viewpoint: Exploring Challenges and Benefits of Bug-Bounty Programs.
WISW '20 Omer Akgul, Taha Eghtesad, Amit Elazari, Omprakash Gnawali, Jens Grossklags, **Daniel Votipka**, and Aron Laszka. In the Workshop on Security Information Workers, 2020.
- W.3 On the Other Side of the Table: Hosting Capture-the-Flag (CTF) Competitions.
WISW '20 Benjamin Carlisle, Michael Reininger, Dylan Fox, **Daniel Votipka**, and Michelle L. Mazurek. In the Workshop on Security Information Workers, 2020.
- W.2 Toward a Field Study on the Impact of Hacking Competitions on Secure Development.
WISW '18 **Daniel Votipka**, Hongyi Hu, Bryan Eastes, and Michelle L. Mazurek. In the Workshop on Security Information Workers, 2018.
- W.1 All Your Droid Are Belong To Us: A Survey of Current Android Attacks. Timothy Vidas,
WOOT '11 **Daniel Votipka**, Nicolas Christin. In the USENIX Security Workshop on Offensive Techniques, 2011.

Selected Journals

- J.3 Dagstuhl Seminar 19231: Empirical Evaluation of Secure Development Processes. Adam Shostack, Matthew Smith, **Daniel Votipka**, Sam Weber, and Mary Ellen Zurko, eds. In **Dagstuhl Reports**, 2019.
- J.2 Applied Digital Threat Modeling: It Works! Rock Stevens, **Daniel Votipka**, Elissa M. Redmiles, Colin Ahern, Patrick Sweeney, and Michelle L. Mazurek. In IEEE Security and Privacy, 2019.
- J.1 Passe-Partout: A General Collection Methodology for Android Devices. **Daniel Votipka**, Timothy Vidas, Nicolas Christin. In the IEEE Transactions on Information Forensics and Security (TIFS), 2013.

Book Chapters

- B.1 ISR and Cyberspace. Robert Johnson, **Daniel Votipka**, Danielle Dye, Trevor Stutting, Jamie Blummer, Tiffany Harbour, Laura LeFevre, and Thomas Shew. In **The Cyber Threat and Globalization: The Impact on U.S. National and International Security**, 2018. Edited by Jack A. Jarmon and Pano Yannakogeorgos.

Media Coverage

Security Professionals:

- Covered by **TechBeacon**: 3 application security fundamentals every developer should know (<https://techbeacon.com/security/3-application-security-fundamentals-every-developer-should-know>)
- Covered by **TechBeacon**: How to defend enterprise apps with threat modeling: 4 lessons learned (<https://techbeacon.com/security/how-defend-enterprise-apps-threat-modeling-4-lessons-learned>)

Funding

Grants

- G.5 “SaTC: CORE: Medium: Resurrecting SymbolicExecution in Practical Use”, U.S. National Science Foundation Secure and Trustworthy Cyberspace (SaTC) CORE, **Co-PI**. (33% split equal to the other Co-PIs), PI: Tiffany Bao, Co-PIs: Yan Shoshitaishvili. \$1,200,000. (*In Submission*)
- G.4 “SaTC: CORE: Small: Understanding and Reducing Barriers to Entry and Participation in the Vulnerability Discovery Community”, U.S. National Science Foundation Secure and Trustworthy Cyberspace (SaTC) CORE, **PI**. \$599,999. 2023 (*Recommended for Funding*)
- G.3 “A Usable and Shareable Tool for Software Threat Modeling”, Cisco, **PI**. (50% split equal to the Co-PI), Co-PI: Johes Bater. \$100,000. 2023
- G.2 “Institute of Human-Agent Teaming for a Cybersecure Homeland (HATCH)”, U.S. National Science Foundation National Artificial Intelligence Research Institutes, **Co-PI** (\$597,000 over 5 years), PI: Kevin Butler, Co-PIs: Vincent Bindschaedler, Bonnie Dorr, Sebastian Galindo, Christina Gardner-McCune, Juan Gilbert, Prabhat Mishra, Patrick Traynor, Damon Woodard, Idalis Villanueva Alarcon, Kassem Fawaz, Somesh Jha, Timothy Rogers, Xiaojin Zhu, Lujo Bauer, Matt Fredrikson, Christian Lebiere, Patrick McDaniel, Idongesit Mpkong-Ruffin, Alina Oprea, Kamrul Hasan, Nicolas Papernot, Robert Thomson. \$20,000,000 (*In Submission*)
- G.2 “Medical Device Security and Threat Modeling Research”, MedCrypt Inc, **PI**. \$60,000. 2023.
- G.1 “Identifying and Reducing Barriers to Entry and Participation for Marginalized Populations in Vulnerability Discovery”, Google Research Scholar Award, **PI**. \$100,000. 2023.

Fellowships

- Symantec Graduate Research Fellowship Finalist, **Symantec** (2019, 2020)
- Facebook Research Fellowship Finalist, **Facebook** (2019, 2020)
- University of Maryland Summer Research Fellowship, **University of Maryland** (2019)
- University of Maryland Future Faculty Fellowship, **University of Maryland** (2018)
- Google Student Veterans Association Scholarship, **Google** (2018)

Awards and Honors

- Best Paper Honorable Mention, **ACM CHI** (2022)
- Outstanding Reviewer, **ACM CCS** (2021)
- John Karat Usable Privacy and Security Student Research Award, **SOUPS** (2020)
- Maryland Way Award for Research Excellence - Honorable Mention, **UMD HCIL** (2020)
- Distinguished Paper Award, **USENIX Security** (2018, 2020)
- Distinguished Poster Award, **SOUPS** (2018)
- Outstanding Graduate Assistant (**Top 2% of 4000**), University of Maryland (2018)
- NSA TAO Military Performer of the Year (**1 of 85**), National Security Agency (2015)
- Counterterrorism Analysis Team of the Year, **U.S. Intelligence Community** (2015)
- Maj. Gen Robert E. Sadler USAF Honor Award (**Top CS/ECE/EE AFROTC senior nationwide**), AFCEA (2010)

Presentations

Invited Talks

- Panel on Privacy and Security of Telehealth Systems. **Human Factors and Ergonomics Society Annual Meeting 2022.**
- Vulnerability Discovery for All: Reducing Barriers to Entry and Participation in Software Vulnerability Discovery. **Georgia Institute of Technology 2022.**
- Security Professionals are Users Too!: Human-Centered Security Research Beyond the End User. **Tufts University 2020.**
- Security Professionals are Users Too!: Human-Centered Security Research Beyond the End User. **Carnegie Mellon University 2020.**
- Security Professionals are Users Too!: Human-Centered Security Research Beyond the End User. **University of Nebraska 2019.**
- Hackers vs Testers: A Comparison of Vulnerability Discovery Processes. **Swiss Cyber Storm Conference 2019.**
- Understanding security mistakes developers make: Qualitative analysis from Build It, Break It, Fix It. **High Confidence Software and Systems Conference 2019.**

Conferences

- A Qualitative Evaluation of Reverse Engineering Tool Usability. **ACSAC 2022.**
- How Ready is Your Ready? Assessing the Usability of Incident Response Playbook Frameworks. **CHI 2022.**
- An Investigation of Online Reverse Engineering Community Discussions in the Context of Ghidra. **Euro S&P 2021.**
- HackEd: A Pedagogical Analysis of Online Vulnerability Discovery Exercises. **IEEE S&P 2021.**
- An Observational Investigation of Reverse Engineers' Processes and Mental Models. **USENIX Security 2020.**
- Understanding Security Mistakes Developers Make: Qualitative Analysis from Build It, Break It, Fix It. **USENIX Security 2020.**
- Building and Validating a Scale for Security Software Development Self-Efficacy. **CHI 2020.**
- Does Being Verified Make You More Credible? The Effect of Account Verification on Tweet Credibility. **CHI 2019.**
- User Comfort with Android Background Resource Accesses in Different Contexts. **SOUPS 2018.**
- Hackers vs Testers: A Comparison of Vulnerability Discovery Processes. **IEEE S&P 2018.**

Teaching and Mentorship

Instructor

Tufts University

CS 114 - **Network Security**. *Fall 2021, Spring 2023*

CS 152 - **Human Factors in Security and Privacy**. *Spring 2021-2022*

University of Maryland

CMSC 388N - **Build It, Break It, Fix It: Competing to Secure Software**. *Winter 2020.*

Georgetown University

COSC 235 - **Introduction to Network Security**. *Fall 2017.*

Research Advising

Doctoral

Carson Powers	<i>Fall 2021 - Present</i>
Samantha Katcher	<i>Fall 2021 - Present</i>
Sarah Radway (committee member, led by Susan Landau)	<i>Fall 2021 - Present</i>
Ronald Thompson	<i>Spring 2021 - Present</i>
James Mattei	<i>Spring 2021 - Present</i>

Undergraduate

Bisrat Yismashewa	<i>Spring 2023 - Present</i>
Cordelia Ludden	<i>Spring 2023 - Present</i>
Caroline Yang	<i>Fall 2022 - Present</i>
Katherine Quintanilla	<i>Summer 2022 - Present</i>
Santana Koring'ura	<i>Summer 2021 - Present</i>
Madeline McLaughlin	<i>Spring 2021 - Present</i>
Yijun Liu	<i>Summer 2022</i>
Gustavo Curioso	<i>Spring 2021 - Spring 2022</i>
Liana Wang	<i>Spring 2021</i>
Grant Versfeld	<i>Spring 2021</i>
Mary Punzalan (UMD)	<i>Fall 2019 - 2021</i>
Eric Zhang (UMD)	<i>Summer 2019 - 2021</i>
Desiree Abrokwa (UMD)	<i>Summer 2018 - 2021</i>
Seth Rabin (UMD)	<i>Fall 2017 - Spring 2019</i>
Matthew Hou (UMD)	<i>Spring 2018 - Spring 2019</i>
Jeremy Hu (UMD)	<i>Spring 2017</i>
Daniel Chen (UMD)	<i>Summer 2016 - Spring 2017</i>

Academic Advising

Masters - 4 CSPP students

Undergraduate - 20 students

Academic Service

Conference Organizing

Workshop on Security Information Workers, Organizing Committee (2018-2020)

Symposium on Usable Privacy and Security, Mentoring Co-chair (2020)

PC Membership

IEEE Symposium on Security and Privacy (2023)

Symposium on Usable Privacy and Security (2022)

Privacy Enhancing Technologies Symposium (2021-2022)

USENIX Security Symposium (2021-2023)

ACM Conference on Computer and Communications Security (2021) - **Outstanding review recognition** (2021)

Human Factors and Ergonomics Society (2019-2020)

Workshop on Security Information Workers (2018-2020)

Workshop on Cybersecurity Experimentation and Test (2019)

ACM Conference on Human Factors in Computing Systems (2017-2020) - **Outstanding review recognition** in 2018 and 2021.

Working Groups

Dagstuhl Seminar 23181 - Empirical Evaluation of Secure Development Processes (2023)
Dagstuhl Seminar 19231 - Empirical Evaluation of Secure Development Processes (2019)

Department Service

Graduate Student Visit Day Coordinating Committee, Member (2022)
Tenure Track Faculty Search Committee, Member (2021)
Admissions Committee, Member (2020-2021)
CSPP Governance Committee, Member (2020-2021)

DEIJ Efforts

- Tufts Visiting and Early Scholars Program (2022)**
- Mentored undergraduate Summer intern from underrepresented group in CS
- CRA Distributed Research Experiences for Undergraduates (2022)**
- Mentored undergraduate Summer intern from underrepresented group in CS
- Tufts Pedagogical Partnership Program (2022)**
- Worked with an undergraduate student to develop strategies for enhancing classroom student engagement, reflect on equity, and improve learning outcomes.
- #ShareTheMicInCyber Ally (2022)**
- Partnered with Black cybersecurity professional to raise awareness for the work done by Black practitioners in cybersecurity
- NSF/NSA GenCyber Career Panel (2022)**
- Raised awareness for cybersecurity careers among K-12 students
- SOUPS Mentoring (2020-2022)**
- Provided research and career guidance to PhD and undergraduate students from underrepresented group in CS at usable security conference
- GREPSEC Mentoring (2022)**
- Provided research and career guidance to PhD and undergraduate students from underrepresented group in CS at security conference

Employment

Tufts University Assistant Professor	<i>Jan 2021 - Present</i>
University of Maryland Research Assistant	<i>May 2016 - Dec 2020</i>
Georgetown University Adjunct Professor	<i>Aug 2017 - Dec 2017</i>
National Security Agency Mobile Technologies Lead	<i>Sep 2014 – Apr 2016</i>
U.S. Air Force Cyber Operations Officer	<i>May 2012 – May 2016</i>
National Security Agency Senior Watch Officer	<i>Jul 2013- Sep 2014</i>