

MCKENNA MCCALL

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RESEARCH INTEREST

My research is at the intersection of formal methods and usable security. I am interested in modeling provably secure systems and ensuring these systems are usable, even by non-experts. My focus is on reactive systems such as web applications and smart home automations.

EDUCATION

Carnegie Mellon University, PhD in Electrical and Computer Engineering. Thesis: Information Flow Control for Dynamic Reactive Systems. Advised by Limin Jia. 2023.

Carnegie Mellon University, MS in Electrical and Computer Engineering. 2022.

Kansas State University, Bachelor of Science in Computer Science and Mathematics, Minor in Women's Studies. Graduated Magna Cum Laude 2016.

ACADEMIC WORK EXPERIENCE

Carnegie Mellon University, Post-doctoral Researcher in the Software and Societal Systems Department. Supervised by Lujo Bauer and Lorrie Cranor. May 2023-Present.

OTHER WORK EXPERIENCE

Garmin International, Software Engineering Intern (Aviation). 2012-2016.

CONFERENCE PUBLICATIONS

McKenna McCall, Abhishek Bichhawat, and Limin Jia. *Tainted Secure Multi-Execution to Restrict Attacker Influence*. In *Proceedings of the ACM Conference on Computer and Communications Security (CCS)*, 2023.

McKenna McCall, Eric Zeng, Faysal Hossain Shezan, Mitchell Yang, Lujo Bauer, Abhishek Bichhawat, Camille Cobb, Limin Jia, and Yuan Tian. *Towards Usable Security Analysis Tools for Trigger-Action Programming*. In *Proceedings of the USENIX Conference on Usable Privacy and Security (SOUPS)*, 2023.

McKenna McCall, Abhishek Bichhawat and Limin Jia. *Compositional Information Flow Monitoring for Reactive Programs*. In *Proceedings of the IEEE European Symposium on Security and Privacy (Euro S&P)*, 2022.

Abhishek Bichhawat, McKenna McCall and Limin Jia. *Gradual Security Types and Gradual Guarantees*. In *Proceedings of the 2021 IEEE Computer Security Foundations Symposium (CSF)*, 2021.

McKenna McCall, Hengruo Zhang and Limin Jia. *Knowledge-based Security of Dynamic Secrets for Reactive Programs*. In *Proceedings of the 2018 IEEE Computer Security Foundations Symposium (CSF)*, 2018.

WORKSHOP PUBLICATIONS

McKenna McCall, Lay Kuan Loh and Limin Jia. *A Sequent Calculus for Counterfactual Reasoning*. In *Proceedings of the 2017 ACM Workshop on Programming Languages and Analysis for Security (PLAS)*, 2017.

INVITED TALKS

Towards Usable Security Analysis Tools for Trigger-Action Programming. At CyLab's Partner's Conference. 2023.

POSTER PRESENTATIONS

McKenna McCall, Eric Zeng, Faysal Hossain Shezan, Abhishek Bichhawat, Camille Cobb, Mitchell Yang, Limin Jia, Yuan Tian, Lujo Bauer. *Security and Privacy of Trigger-Action Programs (TAP) for Smart Home Devices: Toward Usable Analysis Tools*. At the CyLab Partners Conference. 2022.

HONORS AND AWARDS

CMU Graduate Student Association Reps Award, Fall 2021, Spring 2023.

IEEE Euro S&P 2022 Outstanding Presentation Award for *Compositional Information Flow Monitoring for Reactive Programs*

Shadow PC Distinguished Reviewer, IEEE S&P Oakland, 2021.

CyLab Presidential Fellowship, Carnegie Mellon University, 2020.

Putnam Scholarship, Kansas State University, 2011-2014.

Travel Grants

Euro S&P 2022 Student Grant, 7th IEEE European Symposium on Security and Privacy (Euro S&P), Genoa, Italy, 2022.

FLoC 2018 Travel Stipend, 31st IEEE Computer Security Foundations Symposium (CSF), Oxford, UK, 2018.

ACM CCS 2017 Workshops Student Travel Grant, 24th ACM Conference on Computer and Communications Security (CCS), Dallas, TX, 2017.

CSF 2017 Travel Scholarship, 30th IEEE Computer Security Foundations Symposium (CSF), UCSB, Santa Barbara, CA, 2017.

PROFESSIONAL SERVICE

Invited to NSF Secure and Trustworthy Cyberspace Vision 2.0 Workshop, 2023

Program Committees

PC member for Principles of Secure Compilation Workshop (PriSC): 2023-24

PC member for Workshop on Foundations of Computer Security (FCS): 2023

External Reviewer for IEEE Symposium on Security and Privacy (IEEE S&P, Oakland): 2023

Poster Committee for ACM Conference on Computer and Communications Security (CCS): 2022

PC member for IEEE Symposium on Security and Privacy (IEEE S&P, Oakland): 2022

External Reviewer for European Symposium on Security and Privacy (IEEE Euro S&P): 2022

External Reviewer for European Symposium on Programming (ESOP): 2022

Shadow PC for IEEE Symposium on Security and Privacy (IEEE S&P, Oakland): 2021

UNIVERSITY AND DEPARTMENT SERVICE

CyLab Mentor, Fall 2022

- Met with graduate students new to CyLab to answer questions about the lab, CMU, and Pittsburgh

PhD Student Panel at Graduate Student Orientation, Fall 2022

- Answered questions from incoming PhD students about grad school, living in Pittsburgh, CMU resources, and more

CMU Graduate Student Assembly (GSA) VP of Campus Affairs, Spring 2022

- Advocacy for issues relating to the CMU community; priorities this semester include developing a parental leave policy for grad students, advertising mental health care resources, and improving on-campus dining
- Managing GSA's partner and family advocates
- Leading GSA's Campus Affairs Committee whose activities include:

- Analyzing data from a survey about on-campus dining ran by GSA and Undergraduate Student Senate with more than 1800 student responses
- Developing a survey on student access to “basic needs” (e.g., preventative health care, mental health care, food, sanitary supplies, clothes)
- Reviewing and making revision plans for GSA’s strategic plan

CMU Graduate Student Assembly Partner and Family Advocate, Spring 2021-Fall 2021

- Advocating for issues related to students with partners and families (priorities including developing a parental leave policy, improving access to child care during the pandemic)
- Advertising existing on-campus resources
- Advertising/reviewing GSA child care grants (typically 25-30 \$500 grants per semester)

Partner and Family Panel at Graduate Student Orientation, 2019, 2021

- Provided information about CMU resources for graduate students with partners and families

Committees

Universal Access Committee and Facilities Working Group, Spring 2022-Spring 2023

- Focuses on several forms of accessibility, from ensuring that on-campus buildings are ADA compliant, to improving digital accessibility

GSA Campus Affairs Committee, Fall 2022-Spring 2023

- Works with GSA’s VP of Campus affairs to receiving feedback from graduate students and keep GSA up-to-date with university committees

Dining Student Advisory Council, Spring 2022-Spring 2023

- Collects feedback from students about their on-campus dining experiences

Family Care Advisory Committee, Spring 2021-Summer 2021, Fall 2023

- Focuses on child care accessibility for the CMU community and related on-campus facilities (e.g., lactation rooms, changing tables)

CIO Advisory Council, Summer 2022-Fall 2022

- Provides feedback and recommendations to CMU’s VPIT/CIO based on feedback from campus constituencies, including graduate students

Parking & Transportation Advisory Committee, Spring 2022

- Discusses issues related to parking and all modes of transportation

Led Chief of CMU PD Student Panel, Spring 2022

- Organized questions for the candidates and moderated the discussion

Advisory Committee for the CMU Student Academic Success Center Executive Director Search, Spring 2022

- Helped write the job posting, review applications, screen and interview candidates

ECE Diversity Committee, Spring 2021

- Helps ensure a welcoming and supportive environment for all; activities included developing diversity awards for students who demonstrate a commitment to DEI

TEACHING EXPERIENCE

Guest Lecture on Information Flow Control, Software Foundations of Security and Privacy, Carnegie Mellon University. Fall 2023

Teaching Assistant, Introduction to Information Security, Carnegie Mellon University. Fall 2021

Teaching Assistant, Introduction to Information Security, Carnegie Mellon University. Fall 2017

Undergraduate Teaching Assistant, Introduction to Computer Science, Kansas State University. Fall 2015