

Kaushal Kafle

Department of Computer Science and Engineering, University of South Florida

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EDUCATION

William & Mary, Williamsburg, VA

August 2017 – June 2024

PhD in Computer Science

Advisor: Dr. Adwait Nadkarni

Pulchowk Campus, Tribhuvan University, Nepal

Nov 2011 - Nov 2015

BE in Computer Engineering

PROFESSIONAL EXPERIENCE

University of South Florida, Tampa, FL

August 2024 – Present

Assistant Professor

Department of Computer Science and Engineering

Virginia Department of Education, Richmond, VA

May 2023 – Aug 2023

Commonwealth of Virginia Engineering and Science (COVES) Policy Fellow

Mentors: Keisha Tennessee (Virginia Computer Science Coordinator), Professor Anita Jones (UVA)

Mojo Vision, Tectus Corp., Saratoga, CA

Sep 2022 – Nov 2022

Graduate Research Intern, Mentor: Dr. Michael Grace

IBM Research, Yorktown Heights, NY

May 2022 – Aug 2022

Graduate Research Intern, Mentor: Dr. Kapil Singh

Graduate Research Assistant

Jan 2018 – Jun 2024

Secure Platforms Lab (SPL), Department of Computer Science, William & Mary

Mentor and Advisor: Dr. Adwait Nadkarni

Lead Graduate Student

Jun 2022 – Jun 2024

Secure Platforms Lab (SPL), Department of Computer Science, William & Mary

TEACHING EXPERIENCE

1. Instructor, **CIS 4930 Secure IoT**, University of South Florida – Fall 2024
2. Guest Lecturer, **CSCI 667 Concepts of Computer Security**, William & Mary – Spring 2022
 - Topic: “*Practical Integrity in the Smart Home*”
3. Guest Lecturer, **CSCI 445 Mobile Application Security**, William & Mary – Fall 2021
 - Topic: “*Ramifications of SSL Issues in Mobile Apps for the Smart Home*”
4. Guest Lecturer, **CSCI 680 IoT Security and Safety**, William & Mary – Spring 2021
 - Topic: “*Securing a Smart Home*”
5. Teaching Assistant, William & Mary, Aug 2017 – May 2019
 - **CSCI 141 Computational Problem Solving** – Taught labs and graded assignments
 - **CSCI 140 Programming for Data Science** – Taught labs and graded assignments
 - **CSCI 520 Mobile App Security** – Graded assignments
 - **CSCI 520 Mobile App Security** – Graded assignments

PUBLICATIONS

Conference Papers

- [1] **Kaushal Kafle**, Prianka Mandal, Kapil Singh, Benjamin Andow, and Adwait Nadkarni, “Understanding the Privacy Practices of Political Campaigns: A Perspective from the 2020 US Election Websites”, In *Proceedings of the 45th IEEE Symposium on Security and Privacy (IEEE S&P)*, CA, USA, 2024. [[Source Code](#)] [[Pre-print](#)]
- [2] **Kaushal Kafle**, Kirti Jagtap, Mansoor Ahmed-Rengers, Trent Jaeger, Adwait Nadkarni, “Practical Integrity Validation in the Smart Home with HomeEndorser”, In *Proceedings of the 17th ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec)*, Seoul, Korea, 2024. [[PDF](#)]
- [3] Xin Jin*, Sunil Manandhar*, **Kaushal Kafle**, Zhiqiang Lin, and Adwait Nadkarni. “Understanding IoT Security from a Market-Scale Perspective”. In *Proceedings of the 29th ACM Conference on Computer and Communications Security (CCS)*, Los Angeles, CA, USA, Nov 2022. *Co-first Authors. [[Source Code](#)] [[PDF](#)]
- [4] Sunil Manandhar, **Kaushal Kafle**, Benjamin Andow, Kapil Singh, and Adwait Nadkarni, “Smart Home Privacy Policies Demystified: A Study of Availability, Content, and Coverage”. In *Proceedings of the 31st USENIX Security Symposium (USENIX)*, Boston, MA, USA, 2022. [[Data](#)] [[PDF](#)]
- [5] Amit Seal Ami, Nathan Cooper, **Kaushal Kafle**, Kevin Moran, Denys Poshyvanyk, and Adwait Nadkarni, “Why Crypto-detectors Fail: A Systematic Evaluation of Cryptographic Misuse Detection Techniques,” in *Proceedings of the 43rd IEEE Symposium on Security and Privacy (IEEE S&P)*, 2022. [[Source Code](#)] [[PDF](#)]
- [6] Sunil Manandhar, Kevin Moran, **Kaushal Kafle**, Ruhao Tang, Denys Poshyvanyk, and Adwait Nadkarni. “Towards a Natural Perspective of Smart Homes for Practical Security and Safety Analyses.” In *Proceedings of the 41st IEEE Symposium on Security and Privacy (S&P)*, San Francisco, CA, USA, May 2020. [[PDF](#)]
- [7] **Kaushal Kafle**, Kevin Moran, Sunil Manandhar, Adwait Nadkarni, and Denys Poshyvanyk. “A Study of Data Store-based Home Automation.” In *Proceedings of the 9th ACM Conference on Data and Application Security and Privacy (CODASPY)*. Dallas, TX, USA, March 2019. **Best Paper Award** 🏆 [[PDF](#)] [[press coverage](#)]
- [8] Richard Bonett, **Kaushal Kafle**, Kevin Moran, Adwait Nadkarni, and Denys Poshyvanyk. “Discovering Flaws in Security-Focused Static Analysis Tools for Android using Systematic Mutation.” In *Proceedings of the 27th USENIX Security Symposium*. Baltimore, MD, USA, Aug 2018. [[Source code](#)] [[PDF](#)]

Journal Papers

- [9] Amit Seal Ami, **Kaushal Kafle**, Kevin Moran, Adwait Nadkarni, and Denys Poshyvanyk. “Systematic Mutation-based Evaluation of the Soundness of Security-focused Android Static Analysis Techniques”. In *ACM Transactions on Security & Privacy (TOPS)*, 2021. [[PDF](#)]
- [10] **Kaushal Kafle**, Kevin Moran, Sunil Manandhar, Adwait Nadkarni, and Denys Poshyvanyk. “Security in Centralized Data Store-based Home Automation Platforms- A Systematic Analysis of Nest and Hue.” In *ACM Transactions on Cyber-Physical Systems (TCPS)*, 2020. [[PDF](#)]

Tool Demo Papers

- [11] Prianka Mandal, Sunil Manandhar, **Kaushal Kafle**, Kevin Moran, Denys Poshyvanyk, and Adwait Nadkarni. “Helion: Enabling Natural Testing of Smart Homes”. In *Proceedings of the ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), Demonstration Track*, Dec 2023. [[Source Code](#)] [[PDF](#)]
- [12] Amit Seal Ami, Syed Yusuf Ahmed, Radowan Mahmud Redoy, Nathan Cooper, **Kaushal Kafle**, Kevin Moran, Denys Poshyvanyk, and Adwait Nadkarni. “MASC: A Tool for Mutation-based Evaluation of Static Crypto-API Misuse Detectors”. In *Proceedings of the ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), Demonstration Track*, Dec 2023. [[Source Code](#)] [[PDF](#)]

- [13] Amit Seal Ami, **Kaushal Kafle**, Kevin Moran, Adwait Nadkarni, and Denys Poshyvanyk. “Demo: Mutation-based Evaluation of Security-focused Static Analysis Tools for Android.” In *Proceedings of the 43rd IEEE/ACM International Conference on Software Engineering (ICSE’21), Formal Tool Demonstration*, May 2021, [[Source Code](#)] [[PDF](#)]

Posters

- [14] “Understanding the Privacy Practices of Political Campaigns”, at the *Network and Distributed System Security (NDSS) Symposium ’24*, San Diego, CA – Feb 2024 [[PDF](#)]
- [15] “Security and Privacy in the Smart Home Ecosystem”, at the *Annual Virginia Academy of Science, Engineering and Medicine (VASEM) Summit*, Richmond, VA – Oct 2023 [[PDF](#)]
- [16] “Expanding Computer Science Learning Opportunities in K-12 Instruction in Virginia Schools”, at the *Annual Virginia Academy of Science, Engineering and Medicine (VASEM) Summit*, Richmond, VA – Oct 2023 [[PDF](#)]
- [17] “Understanding the Privacy Practices of Political Campaigns”, at the *CCI Symposium ’23*, Richmond, VA – April 2023 – **Best Poster Award** 🏆 [[PDF](#)]
- [18] “Smart Home Privacy Demystified”, at the *CCI Symposium 2022*, Richmond, VA – April 2022 [[PDF](#)]
- [19] “A Study of Data Store-based Home Automation“, at *ACM CODASPY’19* , Dallas, TX – March 2019 [[PDF](#)]

CONFERENCE PRESENTATIONS, INVITED TALKS AND MEDIA OUTREACH

Conference Presentations

1. “*Helion: Enabling Natural Testing of Smart Homes*” at the **Foundations of Software Engineering (FSE’23), Demonstrations Track**, San Francisco, CA – December 2023
2. “*A Study of Data-store Based Home Automation*” at the **9th ACM CODASPY**, Dallas, TX – March 2019
3. “*A Study of Data-store Based Home Automation*” at the **18th Graduate Research Symposium**, William & Mary, Williamsburg – March 2019
4. “*Discovering Flaws in Security-Focused Static Analysis Tools for Android using Systematic Mutation*” at the **27th USENIX Security Symposium**, Baltimore – August 2018

Invited Talks and Outreach

5. “*Personal data and the privacy gaps of political campaigns*” – invited to discuss the findings of my research in **On the Ballot** podcast by **Ballotpedia** ([Episode Link](#)) – June 2024
6. “*Guest Post: A PhD Student’s Experience at the LiSPI Workshop*”, **Leadership in Science Policy Institute (LiSPI) workshop**, invited by *Computing Research Association (CRA)*, Washington DC – Nov 2023 [[Link](#)]
7. “*Understanding the Security of Smart Home Platforms*”, as part of the **Emerging Scholar Series**, Public Scholarship Initiative, Williamsburg Regional Library – March 2022
8. “*How hackable is your home?*”, invited as an expert on smart home security in **Which? Investigates** podcast ([Episode Link](#)) – October 2021
9. “*The Security of Smart Home Platforms*”, Research talk at the **Journal Club**, William & Mary, Williamsburg – September 2019
10. “*Enabling Safe and Secure Home Automation: Problems, Best Practices and Future Opportunities*”, William & Mary Developer Outreach to Williamsburg Developers Group, Williamsburg, VA, July 2019
11. *Outreach to High School Students*, invited by **Advanced Technology Center**, V. Beach, VA – April 2019
12. “*Hacking Your Smart Home*” podcast, invited to discuss my work on smart home security by **News Radio WINA** ([Link](#)) – December 2018

AWARDS & HONORS

1. Participant in the **Science Policy & Advocacy for Research Competition (SPARC) series**, *Universities Research Association (URA)*, 2024

2. **Commonwealth of Virginia Engineering & Science (COVES) Policy Fellow**, Selected by *Virginia Academy of Science, Engineering and Medicine (VASEM)*, Host office - *Virginia Department of Education*, 2023
3. **Best Poster Award**, CCI Symposium 2023, Richmond, VA, USA – April 2023
4. **Best Paper Award**, ACM CODASPY, Dallas, TX, USA - March 2019
5. **Graduate Studies Advisory Board (GSAB) Research Grant**, William & Mary - Fall 2021
6. **International Student Opportunity Award**, William & Mary - Spring 2020, Spring 2021
7. **Travel Award** – IEEE S&P (2024), WiSec (2024), NDSS (2024), Computing Research Association (2023), USENIX Security Symposium (2018)

PROFESSIONAL SERVICE

1. **Poster Session Chair** - NDSS 2025
2. **Conference Program Committee Member**
 - a. *NDSS* Program Committee - 2024
 - b. *USENIX Security Symposium (USENIX)* Artifact Evaluation Committee - 2021, 2022, 2023
 - c. *ACSAC* Artifact Evaluation Committee – 2023
 - d. *IEEE/ACM Workshop on Internet of Safe Things (SafeThings)* Program Committee - 2024
3. **Journal Reviewer**
 - a. *Transactions on Privacy and Security (TOPS)* – Jul 2024, Aug 2024
 - b. *Computing Survey (CSUR)* – May 2024
4. **Conference External Reviewer**
 - a. *Top-tier conferences* - NDSS (2020, 2021, 2022, 2024), USENIX (2019, 2021)
 - b. *Other conferences* - ACSAC (2022, 2023), ICISS (2019, 2022, 2023), ACNS (2024), CNS (2022)
5. **2024 COVES Fellow Selection Committee**, Virginia Academy of Science, Engineering and Medicine (VASEM) - 2024