

Kaushal Kafle

Room 101A, McGlothlin Street Hall, Williamsburg, VA-23187
kkafle@cs.wm.edu | +1 (757) 472-8662 | www.kaushalkafle.com

I am a PhD student in the Department of Computer Science at the College of William and Mary, being advised by [Dr. Adwait Nadkarni](#). My research interests lie in analyzing the security and privacy practices of modern operating systems as well as designing practical security frameworks for such systems. I work at the [Secure Platforms Lab \(SPL\)](#) at William & Mary. My work on the security analysis of smart home platforms has been featured in [multiple news outlets](#)!

EDUCATION

College of William and Mary <i>Advisor:</i> Dr. Adwait Nadkarni	PhD in Computer Science	August 2017 - Present
--	-------------------------	-----------------------

Pulchowk Campus, Tribhuvan University	Bachelor's in Computer Engineering	Nov 2011- Nov 2015
---------------------------------------	------------------------------------	--------------------

PUBLICATIONS

Conference Papers (Partial)

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** [\[PDF\]](#) [\[press coverage\]](#) 🏆

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. [\[Link\]](#)

Xin Jin, Sunil Manandhar, **Kaushal Kafle**, Zhiqiang Lin, and Adwait Nadkarni. "Understanding IoT Security from a Market-Scale Perspective." In *Proceedings of the 2022 ACM SIGSAC Conference on Computer and Communications Security (CCS)*, Los Angeles, CA, USA, 2022. [\[LINK\]](#)

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 *IEEE Symposium on Security and Privacy (IEEE S&P)*, 2022. [\[Link\]](#)

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, August 2018. [\[Source code\]](#) [\[PDF\]](#)

Journal Papers

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. [\[Link\]](#)

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. [\[Link\]](#)

WORK EXPERIENCE

Graduate Research Intern, Mojo Vision, Tectus Corp.

Sep 2022 – Nov 2022

- Understanding the security and privacy implications of AR Contact Lens
- Designing a new security framework for AR Contact Lens

Graduate Research Intern, IBM Research

May 2022 – Aug 2022

- Mapping the behavior of software code to data policies

Research Assistant, Department of Computer Science, William & Mary

Jan 2018 – Present

Ongoing Research Projects (partial)

- **Policy to Behavior tracking in software code (Project Lead)**
 - *Ongoing*
- **Understanding Privacy in Politics (Project Lead)**
 - *Under submission*

Completed Research Projects (partial):

- **Security of Data-Store Based Home Automation (Project Lead):**
 - Won the **Best Paper Award** in *ACM CODASPY '19*
 - A journal extension was accepted to *ACM TCPS'20*.
 - [Press coverage](#)
- **MASC (Mutation-based Analysis of Static Crypto-misuse detection techniques):**
 - *IEEE S&P '22*
- **MUSE (MUtation-based Soundness Evaluation):**
 - *USENIX '18*
 - A journal extension was accepted to *ACM TOPS'21*.

Teaching Assistant, Department of Computer Science, William & Mary

Aug 2017 – May 2019

Taught labs and graded assignments for the following classes:

- Computational Problem Solving (CSCI 141), Fall 2017 – *133 Students*
- Programming for Data Science (CSCI 140), Spring 2019 – *93 Students*

Graded assignments for the following classes:

- Mobile App Security (CSCI 520), Spring 2018 – *20 Students*
- Mobile App Security (CSCI 520), Fall 2018 – *12 Students*

CONFERENCE PRESENTATIONS & INVITED TALKS

- **Guest Lecture in Concepts of Computer Security (CSCI 667)** *Apr 28th, 2022*
 - “Towards Practical Integrity in the Smart Home”
 - William & Mary, Williamsburg, VA
- **Emerging Scholar Series**, Public Scholarship Initiative *Mar 3rd, 2022*
 - “Understanding the Security of Smart Home Platforms”
 - Hosted by Williamsburg Regional Library
- **Guest Lecture in Mobile Application Security (CSCI 445)** *Oct 7th, 2021*
 - Ramifications of SSL issues in mobile apps for the smart home
 - William & Mary, Williamsburg, VA
- **Guest Lecture in IoT Security and Safety (CSCI 680)** *Feb 7th, 2021*
 - “Securing a Smart home”
 - William & Mary, Williamsburg, VA
- **Journal Club** - William & Mary, Williamsburg, VA *Sep 26th, 2019*
 - “The Security of Smart Home Platforms”
- **9th ACM CODASPY** – Dallas, TX *Mar 25th, 2019*

- “A Study of Data-store Based Home Automation”
- **18th Graduate Research Symposium** – William & Mary, Williamsburg, VA *Mar 15th, 2019*
 - “A Study of Data-store Based Home Automation”
- **USENIX’18** – Baltimore, MD *Aug 17th, 2018*
 - “Discovering Flaws in Security-Focused Static Analysis Tools for Android using Systematic Mutation”

AWARDS & HONORS

- **GSAB Research Grant**, William & Mary - Fall 2021
- **International Student Opportunity Award**, William & Mary - Spring 2020, Spring 2021
- **Best Paper Award**, ACM CODASPY, Dallas, TX, USA - March 2019
- **USENIX Security Symposium Travel Award** - 2018

PROFESSIONAL SERVICE

- **Reviewer for Conferences**
 - USENIX Artifact Evaluation Committee 2021, 2022
- **Sub-reviewer for Conferences**
 - NDSS - 2020, 2021, 2022
 - Annual Computer Security Applications Conference (ACSAC) - 2022
 - USENIX Security Symposium (USENIX) - 2019, 2021
 - The International Conference on Information Systems Security (ICISS) - 2019

OTHER ACTIVITIES

- Invited to participate in *Which? Investigates* podcast on smart home security ([Link](#)), Oct 2021
- My work featured in various news outlets ([Links here](#))
- One of the founding members of Secure Platforms Lab at William & Mary ([Lab website](#))
- Volunteer, IOE Graduate Conference, Pulchowk, Lalitpur, Nepal 2015
- Volunteer, Latex Workshop at IOE Graduate Conference, Pulchowk, Lalitpur, Nepal 2015
- Organizer, Hackathon, Locus 2015
- Organizer, Yomari Codecamp, Locus 2015

REFERENCES

- *Dr. Adwait Nadkarni (PhD Advisor)*
Assistant Professor, Department of Computer Science
College of William and Mary, VA, USA
Contact: apnadkarni@wm.edu
- *Dr. Trent Jaeger (Collaborator)*
Professor, Department of Computer Science
Pennsylvania State University, PA, USA
Contact: trj1@psu.edu
- *Dr. Kapil Singh (Mentor at IBM Research)*
Principal Research Staff Member
IBM Research
Contact: kapil@us.ibm.com