

Margie Ruffin

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EDUCATION

Doctoral of Philosophy - Computer Science

- Advisors: Gang Wang & Kirill Levchenko

University of Illinois at Urbana-Champaign

August 2020 – Present

Bachelor of Science - Computer Science

- Advisor: Raquel Hill

Spelman College

August 2016 – May 2020

CERTIFICATIONS

Strategic Technology Management, University of Illinois Urbana-Champaign | *In Progress*

2024

Coursework: Lectures in Engineering Entrepreneurship, Technology Innovation and Strategy, Venture-Funded Startups, Technology Entrepreneurship

EXPERIENCE

Independent Contractor, Remote – *Website Developer & Maintainer*

FEBRUARY 2018 – PRESENT

- Designed, developed, and maintained responsive websites and web applications, ensuring a seamless user experience across multiple devices and browsers, for diverse clients and industries.
- Implemented content updates, including text, images, and multimedia elements, to keep the website's information current and relevant to visitors, for over 100 websites.

Grainger College of Engineering Diversity Ambassadors, Champaign, IL – *Diversity Ambassador*

AUGUST 2022 – PRESENT

- Orchestrated and executed semester-long and monthly student engagement initiatives, fostering a sense of community and inclusivity.
- Served as a valuable mentor and resource for graduate students at the University of Illinois, championing diversity and inclusion initiatives, with a particular emphasis on the recruitment and retention of minority engineering students

Connected Spaces, Champaign, IL – *STEM Engagement Instructor*

JANUARY 2023 – PRESENT

- Created comprehensive weekly lesson plans aimed at instructing middle and high school girls in introductory physical computing concepts, encompassing topics such as LEDs, sensors, and motors.
- Facilitated instruction, mentoring, and guidance for a consistent group of more than 10 girls on a weekly basis, guiding them through a semester-long STEM project focused on self-expression and identity, culminating in a final presentation.

International Business Machines (IBM), Yorktown Heights, NY – *Graduate Student Researcher*

MAY 2023 – AUGUST 2023

- Created and implemented a Python-based framework aimed at substantially minimizing the occurrence of false positives generated by Keylime, a remote attestation software utilized for establishing trust in Edge, Cloud, and IoT environments.
- Enhanced the Keylime community by crafting informative blog posts that highlighted the software's utility, features, and capabilities, in addition to updating the existing source documentation.

Lawrence Livermore National Lab, Livermore, CA – *Graduate Student Researcher*

JUNE 2020 – AUGUST 2021

- Contributed to research efforts focused on enhancing the cybersecurity of the nation's power grid.
- Utilized pre-existing code, databases, extensive Industrial Control System (ICS) PCAP data, and MatLab to detect and categorize faults within ICS transmissions.

Georgia Tech Research Institute, Atlanta, GA – *Student Researcher*

OCTOBER 2019 – MAY 2020

- Collaborated closely with GTRI researchers on designated projects, contributing to the development of a tool designed to analyze and assess known vulnerabilities within HTTP/2.
- Committed to ongoing professional development by actively participating in training sessions, continuing education programs, and shadowing experienced colleagues, further enhancing both technical and interpersonal skills.

Department of Defense – Department of Army, Washington, D.C. – *Summer Intern*

TS- Clearance

JUNE 2019 – AUGUST 2019

- Collaborated with the communications team to create a Java-based program that efficiently tracked thousands of telephone numbers, resulting in the identification and discontinuation of inactive numbers, yielding substantial cost savings in the millions of dollars.
- Contributed to the enhancement of the Legacy Linux system by assisting the communications team in its migration to a more efficient system, utilizing bash scripting and company software for a streamlined and optimized process.

Federal Bureau of Investigation, Houston/ Atlanta/ Dallas – *Student Workforce Trainee*

TS/SCI Clearance with Polygraph

JUNE 2017 – MAY 2019

- Supported the daily operations of the Cyber Squad by undertaking various responsibilities, including malware de-obfuscation, script writing, case brief preparation, and shadowing Bureau Computer Scientists.
- Contributed to intelligence threat mitigation efforts within the Counter Intel team, evaluating threat severity, identifying threat sources, and implementing appropriate mitigation strategies.

RESEARCH PROJECTS

Deepfakes on Downstream Disinformation Campaigns - University of Illinois at Urbana-Champaign, Champaign, IL

FEBRUARY 2022 – SEPTEMBER 2022 | *In Submission*

- Spearheaded a research team to design, execute, and analyze a large-scale user study involving 417 participants. This study aimed to systematically assess the influence of deepfake profiles on the effectiveness of disinformation campaigns. The survey was conducted using Qualtrics and Prolific platforms.
- Uncovered that profile type and level of authority play a significant role in perceived information accuracy and engagement with fake news.

Vault Application Analysis – University of Illinois at Urbana-Champaign, Champaign, IL

JUNE 2020 – AUGUST 2022 | *Published*

- Developed and applied a comprehensive three-layer analysis framework (Novice, Intermediate, and Advanced) to investigate potential side channels within Android privacy-preserving (vault) applications.
- Conducted a manual analysis to identify side channels across three distinct levels of examination

(Novice, Intermediate, and Advanced) within 20 Android applications. These examinations encompassed Android development tools, file systems, and application backups

Image Manipulation Detection & Explanation – University of Illinois at Urbana-Champaign, Champaign, IL JUNE 2020 – AUGUST 2022 | *Published*

- Carried out two extensive user studies involving 133 and 543 participants, respectively, to gain quantitative insights into users' proficiency in detecting manipulated images and their attitudes toward media manipulations. These surveys were distributed using Qualtrics and Amazon MTurk.
- Designed and constructed a Python-based tool and framework for the automated differentiation of image manipulations, discerning between benign and malicious purposes.

PUBLICATIONS

Ashita Bawankule, David Hopping, Mike Tissenbaum, Howard Weatherspoon, and **Margie Ruffin**. 2023. **Fostering Maker Identity and Collaboration: Affordances of the Connected Spaces Dashboard in Two Afterschool Makerspaces**. In Proceedings of the FabLearn 2023 - Annual Conference on Maker Education. Association for Computing Machinery, New York, NY, USA.

Margie Ruffin, Kirill Levchenko, and Gang Wang. 2023. Explaining Why Fake Photos are Fake: Does It Work? In 2023 ACM International Conference on Supporting Group Work (*GROUP*), 23 pages.

Margie Ruffin, Israel Lopez-Toldeo, Kirill Levchenko, and Gang Wang. 2022. Casing the Vault: Security Analysis of Vault Applications. In Proceedings of the 21st Workshop on Privacy in the Electronic Society (WPES '22), November 7, 2022, Los Angeles, CA, USA. ACM, New York, NY, USA, 6 pages

Nias, J., Hampton, L., Sampson, P. and **Ruffin, M.** 2020. To Appear. Decolonizing Technologies for Preserving Cultural and Societal Diversity. CHI 2020 Extended Abstracts, April 25 - 30, 2020, Honolulu, HI, USA.

Margie Ruffin, Jaye Nias, Kayla Taylor, Gabrielle Singleton, and Amber Sylvain. 2020. Character Development to Facilitate Retention in a Storytelling Robot. In 2020 ACM Southeast Conference (ACMSE 2020), April 2–4, 2020, Tampa, FL, USA. ACM, New York, NY, USA, 4 pages.
<https://doi.org/10.1145/3374135.3385315>

Jaye Nias and **Margie Ruffin**. 2020. CultureBot: A Culturally Relevant Humanoid Robotic Dialogue Agent. In 2020 ACM Southeast Conference (ACMSE 2020), April 2–4, 2020, Tampa, FL, USA. ACM, New York, NY, USA, 4 pages. <https://doi.org/10.1145/3374135.3385306>

SKILLS

Languages	Python, C++, Java, frontend (HTML/CSS, SQL, JavaScript, JSON)
Platforms	IntelliJ, MySQL, Firebase, Adobe Photoshop, Adobe Illustrator, Microsoft Office Suite,
Systems	Linux, OSX

SERVICE

Poster Juror

· [SOUPS] Symposium on Usable Privacy and Security 2022

External Reviewer

· [EAAMO] Equity and Access in Algorithms, Mechanisms, and Optimization 2023

Poster Juror

· [SOUPS] Symposium on Usable Privacy and Security 2022, 2023

Diversity Ambassador

· [Grainger College of Engineering] 2022-2025

RESEARCH TALKS/ PRESENTATIONS

Does it Matter Who Said It? Exploring the Impact of Deepfake Profiles on User Perception Towards Disinformation – Research Talk. 8th Annual Illinois Sloan UCEM Conference April 2023.

Casing the Vault: Security analysis of Vault Applications – Research Talk. University of Illinois Engineering Library Research Conversations, 2022.

Could it be Fake News: Combating Misinformation in the Media – Lightning Talk. *Illinois Sloan UCEM Showcase*, 2021.

Analyzing Data Sharing Practices of Mobile Apps on Android – Poster Show. *Cyber Education, Research, and Training Symposium (CERTS)*, 2020.

SPEAKING

Panelist, Society of Hispanic Professional Engineers (SHPE) Illinois' *Real Talk: A Guide to Grad STEM Programs*, April 2022

Guest Panelist, CMD-IT/ACM Richard Tapia Conference, *Navigating Your Advisor-Advisee Relationship*, September 2022

HONORS & AWARDS

NSF Graduate Research Fellowship Program	2022
Alfred P. Sloan Scholar	2020 – 2025
Grainger College of Engineering SURGE Fellow	2020 – 2025
UIUC Graduate College Fellowship	2020 – 2025
Magna Cum Laude, Spelman College	2020
Phi Beta Kappa, Spelman College	2020
Spelman College Dean's List	2017 – 2020
Spelman College Research Day, 1st place	2019
Upsilon Pi Epsilon Honor Society Inductee	2019