Margie Ruffin

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EDUCATION

Doctoral of Philosophy - Computer Science **University of Illinois at Urbana-Champaign**
Advisors: Gang Wang & Kirill Levchenko August 2020 – Exp. Grad. May 2025

Strategic Technology Management Certification August 2022 – Present
Coursework: Lectures in Engineering Entrepreneurship, Technology Innovation and Strategy, Venture-Funded Startups, Technology Entrepreneurship

Bachelor of Science - Computer Science **Spelman College**
August 2016 – May 2020

SKILLS

Languages	Python, C++, Java, SQL, frontend (HTML/CSS, JavaScript)
Platforms	AWS, GCP, MySQL, Firebase, Adobe Photoshop, Adobe Illustrator, Microsoft Office (PPT, Excel, Word), Qualtrics, Survey Monkey, Figma
Systems	Linux, OSX

RELEVANT RESEARCH EXPERIENCE

Pay to Play: Copyright and Cheating in the Document Sharing Ecosystem - University of Illinois at Urbana-Champaign, Champaign, IL
February 2023 – Present | *In Progress*

- Constructed and implemented multiple versions of Python web scrapers for conducting extensive internet measurements on three prominent document sharing websites frequented by university students for cheating.
- Managed, refined, and evaluated metadata from over 100,000 documents to support a comprehensive user-study involving over 1,000 faculty members whose content is shared on these platforms.

Human-Machine Learning Generation to Improve Deepfake Detection Ability– In Collaboration with Pennsylvania State University, Champaign, IL
February 2023 – Present | *In Progress*

- To determine if deepfake generation or training experience enhances ability to detect deepfakes, I generated using the StyleGAN3 model and labeled 5,000+ deepfake images using according to ethnicity, age, and gender.
- Aided in the development of a flask-based web application hosting the survey for the 3-phase short-term and long-term (2 day) user study. Implemented strategic features to test the increase in ability and confidence to detect deepfakes, including zoom-in/out, and time capture.

Deepfakes on Downstream Disinformation Campaigns - University of Illinois at Urbana-Champaign, Champaign, IL
February 2022 – September 2022 | *Accepted – ICWSM 2024*

- Steered a research team to design, execute, and analyze the data from 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
September 2021 – August 2022 | *Published – CCS WPES 2022*
- 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 – September 2022 | *Published - GROUP 2023*
- 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.

OTHER WORK EXPERIENCE

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 Research Intern*
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.
- Contributed 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 Research Intern*
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 Research Intern*
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.

Independent Contractor, Remote – *Website Developer & Maintainer*
February 2018 – February 2024
- 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.

PUBLICATIONS

Margie Ruffin, Haeseung Seo, Aiping Xiong, Gang Wang. 2024. **Does It Matter Who Said It? Exploring the Impact of Deepfake Profiles on User Perception Towards Disinformation**. In 2024 International AAAI Conference on Web and Social Media (ICWSM).

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. https://doi.org/10.1145/3567558

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) in conjunction with ACM Conference on Computer and Communications Security (CCS), November 7, 2022, Los Angeles, CA, USA. ACM, New York, NY, USA, 6 pages. https://doi.org/10.1145/3559613.3563204

Nias, J., Hampton, L., Sampson, P., **Ruffin, M**. 2020. **Decolonizing Technologies for Preserving Cultural and Societal Diversity**. ACM SIGCHI 2020 Race in HCI Workshop, 25 April 2020, virtual workshop.

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

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.

SPEAKING

Guest Lecturer, Morehouse College – Intro to Sociology, Virtual AI Lab: Practical Uses for AI, February 2024.

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*