

# COLLINS W. MUNYENDO

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## RESEARCH INTERESTS

Computer Security, Human-Centered Security and Privacy, Usable Authentication, Human-Computer Interaction (HCI)

## EDUCATION

### **The George Washington University**

*Ph.D., Computer Science*

Advisor: Adam J. Aviv

Committee: Sibin Mohan (GW), Gabriel Parmer (GW), Elissa M. Redmiles (GU), Yixin Zou (MPI-SP)

Washington, DC, USA

Aug, 2020 - Present

### **Carnegie Mellon University**

*M.S., Information Technology*

Pittsburgh, PA, USA

Jul, 2017 - Dec, 2018

### **Strathmore University**

*B.S., Business Information Technology*

Nairobi, Kenya

Jul, 2012 - May, 2016

## PUBLICATIONS

\* asterisks denote co-first authors

### **Conference Publications (Peer Reviewed)**

10. Mindy Tran\*, Collins W. Munyendo\*, Harshini Sri Ramulu\*, Rachel Gonzalez Rodriguez, Luisa Ball Schnell, Cora Sula, Lucy Simko, and Yasemin Acar. Security, Privacy, and Data-sharing Trade-offs When Moving to the United States: Insights from a Qualitative Study. In *Proceedings of the 45th IEEE Symposium on Security and Privacy (IEEE S&P '24)*, San Francisco, CA, USA. May 2024.
9. Collins W. Munyendo, Peter Mayer, and Adam J. Aviv. "I just stopped using one and started using the other": Motivations, Techniques, and Challenges When Switching Password Managers. In *Proceedings of the 30th ACM Conference on Computer and Communications Security (CCS '23)*, Copenhagen, Denmark. November 2023.
8. Daniel V. Bailey, Collins W. Munyendo, Hunter A. Dyer, Miles Grant, Philipp Markert, and Adam J. Aviv. "Someone Definitely Used 0000": Strategies, Performance, and User Perception of Novice Smartphone-Unlock PIN-Guessers. In *Proceedings of the European Symposium on Usable Security (EuroUSEC '23)*, Copenhagen, Denmark. October 2023.
7. Collins W. Munyendo, Yasemin Acar, and Adam J. Aviv. "In Eighty Percent of the Cases, I Select the Password for Them": Security and Privacy Challenges, Advice, and Opportunities at Cybercafes in Kenya. In *Proceedings of the 44th IEEE Symposium on Security and Privacy (IEEE S&P '23)*, San Francisco, CA, USA. May 2023.  
 **Distinguished Paper Award.**
6. Xiaoyuan Wu, Collins W. Munyendo, Eddie Cosic, Genevieve A. Flynn, Olivia Legault, and Adam J. Aviv. User Perceptions of Five-Word Passwords. In *Proceedings of the 38th Annual Computer Security Applications Conference (ACSAC '22)*, Austin, TX, USA. December 2022.
5. Collins W. Munyendo, Philipp Markert, Alexandra Nisenoff, Miles Grant, Elena Korkes, Blase Ur, and Adam J. Aviv. "The Same PIN, Just Longer": On the (In)Security of Upgrading PINs from 4 to 6 digits. In *Proceedings of the 31st USENIX Security Symposium (USENIX Security '22)*, Boston, MA, USA. August 2022.
4. Peter Mayer, Collins W. Munyendo, Michelle L. Mazurek, and Adam J. Aviv. Why Users (Don't) Use Password Managers at a Large Educational Institution. In *Proceedings of the 31st USENIX Security Symposium (USENIX Security '22)*, Boston, MA, USA. August 2022.
3. Collins W. Munyendo, Yasemin Acar, and Adam J. Aviv. "Desperate Times Call for Desperate Measures": User Concerns with Mobile Loan Apps in Kenya. In *Proceedings of the 43rd IEEE Symposium on Security and Privacy (IEEE S&P '22)*, San Francisco, CA, USA. May 2022.
2. Noel Warford, Collins W. Munyendo, Ashna Mediratta, Adam J. Aviv, and Michelle L. Mazurek. Strategies and Perceived Risks of Sending Sensitive Documents. In *Proceedings of the 30th USENIX Security Symposium (USENIX Security '21)*, Virtual Conference. August 2021.

1. Collins W. Munyendo, Miles Grant, Philipp Markert, Timothy J. Forman, and Adam J. Aviv. Using a Blocklist to Improve Security of User Selection of Android Patterns. In *Proceedings of the 17th Symposium on Usable Privacy and Security (SOUPS '21)*, Virtual Conference. August 2021.

### Workshop Publications (Lightly Reviewed)

1. Mindy Tran\*, Harshini Sri Ramulu\*, Collins W. Munyendo\*, Rachel Gonzalez Rodriguez, Luisa Ball Schnell, Cora Sula, Joseph Ogren, Karim Alami, Lucy Simko, Anna Lena Rotthaler, and Yasemin Acar. Security and Privacy Challenges and Concerns When Moving to the United States. In *Proceedings of the CHI'23 Workshop on Migration, Security & Privacy*, Hamburg, Germany. April 2023.

## POSTERS

### Workshop Posters (Lightly Reviewed)

1. Jaron Mink, Miranda Wei, Collins W. Munyendo, Kurt Hugenberg, Tadayoshi Kohno, Elissa M. Redmiles, Gang Wang. It's Trying Too Hard To Look Real: Deepfakes Moderation Mistakes and Identity-Based Bias (Poster). *Center for Privacy and Security for Marginalized and Vulnerable Populations Workshop*. Anaheim, CA, USA. August 2023.

## TALKS

### Conference Talks

5. "I just stopped using one and started using the other": Motivations, Techniques, and Challenges When Switching Password Managers. *30th ACM Conference on Computer and Communications Security (CCS '23)*, Copenhagen, Denmark. November, 2023.
4. "In Eighty Percent of the Cases, I Select the Password for Them": Security and Privacy Challenges, Advice, and Opportunities at Cybercafes in Kenya. *44th IEEE Symposium on Security and Privacy (IEEE S&P '23)*, San Francisco, CA, USA. May, 2023.
3. "The Same PIN, Just Longer": On the (In)Security of Upgrading PINs from 4 to 6 digits. *31st USENIX Security Symposium*, Boston, MA, USA. August, 2022.
2. "Desperate Times Call for Desperate Measures": User Concerns with Mobile Loan Apps in Kenya. *43rd IEEE Symposium on Security and Privacy (IEEE S&P '22)*, San Francisco, CA, USA. May, 2022.
1. Using a Blocklist to Improve the Security of User Selection of Android Patterns. *17th Symposium on Usable Privacy and Security (SOUPS '21)*, Virtual Conference. August, 2021.

### Invited Talks

10. "I just stopped using one and started using the other": Motivations, Techniques, and Challenges When Switching Password Managers. *Capital-Area Colloquium on Trustworthy and Usable Security/Privacy (CACTUS/P)*, Washington DC, USA. May, 2023.
9. "In Eighty Percent of the Cases, I Select the Password for Them": Security and Privacy Challenges, Advice, and Opportunities at Cybercafes in Kenya. Georgetown University, Washington, DC, USA. September, 2023.
8. "In Eighty Percent of the Cases, I Select the Password for Them": Security and Privacy Challenges, Advice, and Opportunities at Cybercafes in Kenya. *Security and Privacy Engineering Laboratory*, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland. July, 2023.
7. "In Eighty Percent of the Cases, I Select the Password for Them": Security and Privacy Challenges, Advice, and Opportunities at Cybercafes in Kenya. Paderborn University, Germany. June, 2023.
6. "In Eighty Percent of the Cases, I Select the Password for Them": Security and Privacy Challenges, Advice, and Opportunities at Cybercafes in Kenya. *Capital-Area Colloquium on Trustworthy and Usable Security/Privacy (CACTUS/P)*, College Park, MD, USA. May, 2023.
5. "The Same PIN, Just Longer": On the (In)Security of Upgrading PINs from 4 to 6 digits. *PasswordsCon*, Bergen, Norway. May, 2023.

4. Computer Security and Privacy at Cybercafes in Kenya. *Capital-Area Colloquium on Trustworthy and Usable Security/Privacy (CACTUS/P)*, Pittsburgh, PA, USA. December, 2022.
3. “Desperate Times Call for Desperate Measures”: User Concerns with Mobile Loan Apps in Kenya. *Security and Privacy Engineering Laboratory*, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland. November, 2022.
2. “Desperate Times Call for Desperate Measures”: User Concerns with Mobile Loan Apps in Kenya. *Capital-Area Colloquium on Trustworthy and Usable Security/Privacy (CACTUS/P)*, Washington DC, USA. May, 2022.
1. “Desperate Times Call for Desperate Measures”: User Concerns with Mobile Loan Apps in Kenya. *Security and Privacy Research Lab*, University of Washington, Seattle, WA, USA. May, 2022.

## **RELEVANT EXPERIENCE**

### **Max Planck Institute for Security and Privacy**

*Visiting Researcher*

Bochum, Germany  
May, 2023 – Aug, 2023

- Conducted research on the security and privacy needs of understudied groups with Yixin Zou and Elissa Redmiles.

### **Silensec Limited**

*Information Security Consultant*

Nairobi, Kenya  
Oct, 2018 – Jul, 2021

- Secured the digital infrastructure of the company and its clients’ by monitoring security events, alerts and incoming issues.
- Administered security training to both internal employees and the company’s customers through CYBER RANGES.

### **Leaf Global Fintech**

*Software Engineer Intern*

Evergreen, CO, USA  
Aug, 2018 – Dec, 2018

- Developed a USSD-to-blockchain system to enable refugees in Africa transfer value across borders when escaping adversity.

### **TeleTracking Technologies**

*Software Engineer Intern*

Pittsburgh, PA, USA  
May, 2018 – Aug, 2018

- Worked in a team to research and improve patient flow for Rwanda’s healthcare system through the development of a USSD scheduling application to reduce patient waiting.

### **Triple S Solutions**

*Technical Sales Intern*

Nairobi, Kenya  
Nov, 2016 – Apr, 2017

- Designed bio-metric security solutions for new and existing customers, and provided them with technical product support.

### **Kenya Web Limited**

*Network Engineer Intern*

Nairobi, Kenya  
Mar, 2015 – Jun, 2015

- Worked with other employees to set up and fix network problems for more than fifty customers.
- Revamped and repurposed faulty computers and other equipment in the technical department.

## **TEACHING EXPERIENCE**

### **Carnegie Mellon University**

- Graduate Teaching Assistant, Linux Programming (Fall 2019, 2020 and 2021)
- Graduate Teaching Assistant, First Year Seminar (Fall 2018 and Spring 2019)

## **PROFESSIONAL SERVICE**

### **Program Committee**

- ACM Asia Conference on Computer and Communications Security (AsiaCCS): 2024
- IEEE Workshop on Technology and Consumer Protection (ConPro): 2024
- European Symposium on Usable Security (EuroUSEC): 2023, 2024

### **Shadow Program Committee**

- IEEE European Symposium on Security and Privacy (EuroS&P): 2024

### **External Reviewing**

- ACM CHI Conference on Human Factors in Computing Systems (CHI): 2023, 2024
- ACM CHI Conference on Human Factors in Computing Systems Late Breaking Work (CHI LBW): 2022, 2023

- IEEE Transactions on Dependable and Secure Computing (IEEE TDSC): 2023

#### **Poster Jury**

- Symposium on Usable Privacy and Security (SOUPS): 2023

#### **Sub-Reviewing**

- Symposium on Usable Privacy and Security (SOUPS): 2023

#### **Institutional Service**

- Student Representative, GW Data Privacy Consultative Committee: 2023
- Member, GW Data Privacy Committee: 2022

### **STUDENT MENTORING**

#### **The George Washington University**

- Xiaoyuan Wu (Undergraduate)
- Eddie Cosic (Undergraduate)
- Elena Korkes (Undergraduate)
- Victoria Hennemann (Undergraduate)
- Miles Grant (Undergraduate)
- Alvin Isaac (Undergraduate)
- Darika Shaibekova (Masters)
- Adryana Hutchinson (PhD)

#### **Max Planck Institute for Security and Privacy**

- Jackie Hu (Research Intern)

#### **Carnegie Mellon University**

- Julius Mkumbo (Masters)
- Kizito Nyuytiybiy (Masters)

### **PRESS COVERAGE**

- Serving Understudied Communities Through Computer Security and Privacy Research (GW Engineering, 2023)
- Predatory Loan Apps in India Rake in Huge Fees, and Are Driving Some Users to Suicide (TechCrunch, 2022)
- How Android Unlocking Patterns Could Be Made More Secure (Tech Xplore, 2021)

### **HONORS AND AWARDS**

#### **Paper Awards**

- Distinguished Paper Award, IEEE Symposium on Security and Privacy (2023) for “In Eighty Percent of the Cases, I Select the Password for Them”: Security and Privacy Challenges, Advice, and Opportunities at Cybercafes in Kenya.

#### **Conference Grants and Travel Scholarships**

- ACM SIGSAC Conference on Computer and Communications Security (CCS), Copenhagen, Denmark - \$2,300 (2023)
- Annual Applications of Contextual Integrity (PrivaCI) Workshop, Toronto, Canada - All travel expenses (2023).
- Privacy Enhancing Technologies Symposium (PETS), Lausanne, Switzerland - \$1,000 (2023)
- Uptime Conference by Aiven. Amsterdam, Netherlands - All travel expenses (2022)
- Symposium on Usable Privacy and Security (SOUPS), Virtual - \$300 (2021)
- GREPSEC V Workshop. Virtual - Conference attendance costs (2021)
- DEVCON V Conference. Osaka, Japan - All travel expenses (2019)
- HashiConf Conference. Seattle, Washington - All travel expenses (2019)

#### **Other Awards and Recognitions**

- Cisco Cybersecurity Scholarship (2016)
- Dean’s List, Strathmore University (2015, 2016)
- Best Overall Student, Bumini Primary School (2008)

## **LEADERSHIP AND SERVICE**

### **The George Washington University**

- Student Leader, Bridges International (2022 - Present)

### **Carnegie Mellon University**

- CSO, Software Engineering Club (2018)
- President, Techy Talkers Toastmasters Club (2018)

### **Strathmore University**

- Volunteer, Community Outreach Program (2012 - 2016)
- Vice President, Strathmore University IT Students Association (2015 - 2016)

### **Mentorship and Volunteering**

- Mentor, iMentor Workshop (2023)
- Volunteer, Nipe Sauti Africa (2016 - Present)
- Mentor, Stellar Generation Kenya (2021 - Present)
- Mentor, Django Girls Kigali (2017 - 2020)