Lorenzo C. Neil

Doctoral Candidate - Department of Computer Science - North Carolina State University
Email: lcneil@ncsu.edu

EDUCATION

North Carolina State University, Raleigh NC — Expected Graduation Date: Fall 2023
Ph.D. (Doctor of Philosophy) in Computer Science, **GPA: 3.67/4.00** — NC State LSAMP Bridge to Doctorate Fellowship
Graduate Fellowship for Stem Diversity
Coursework: Computer and Network Security, Advanced Network Security, Human-Computer Interaction

University of Maryland, Baltimore County, Baltimore MD — Graduation Date: Spring 2019
Bachelor of Science in Computer Science, **GPA: 3.25/4.00** — UMBC Meyerhoff Scholar

RESEARCH EXPERIENCE

NIST Graduate Student Measurement Science and Engineering (GMSE) Fellowship Program Spring 2022 - Present
- Used qualitative coding methods and statistical analyses to investigate online cybersecurity definitions.
- Analyzed the prevalence and frequency of visual phishing cues in phishing emails from university phish bowls.
- Currently interviewing non-experts to promote better terminology for communicating cybersecurity.

Graduate Research Assistant, Wolfpack Security and Privacy Research (WSPR) Lab, NC State Fall 2021 - Present
- Used qualitative and mixed research methods to investigate how security advice writers produce security advice.
- Currently performing qualitative research into the quality of security advice.

Ph.D. Student Researcher, Wolfpack Security and Privacy Research (WSPR) Lab, NC State Fall 2019 - Fall 2021
- Pursuing supervised doctoral research in computer and network security with a focus in usable security.
- Qualitatively analyzed the coverage of account remediation advice from popular web services.

PUBLICATIONS

Conference Publications (Peer Reviewed)

1. *Who Comes Up with this Stuff? Interviewing Authors to Understand How They Produce Security Advice (Accepted)*
   Lorenzo Neil, Harshini Sri Ramulu, Yasemin Acar, Bradley Reaves
   Nineteenth Symposium on Usable Privacy and Security (SOUPS), Aug 2023

2. *Analyzing Cybersecurity Definitions for Non-experts*
   Lorenzo Neil, Julie Haney, Kerrianne Buchanan, Charlotte Healy
   Seventeenth IFIP International Symposium on Human Aspects of Information Security & Assurance (HAISA), July 2023

3. *What Challenges Do Developers Face About Checked-in Secrets in Software Artifacts?*
   *S*etu Basak, Lorenzo Neil, Bradley Reaves, Laurie Williams
   IEEE/ACM International Conference on Software Engineering, May 2023

4. *What are the Practices for Secret Management in Software Artifacts?*
   *S*etu Basak, Lorenzo Neil, Bradley Reaves, Laurie Williams
   IEEE Secure Development Conference (SecDev), Oct 2022

5. *Investigating Web Service Account Remediation Advice*
   Lorenzo Neil, Elijah Bouma-Sims, Evan Lafontaine, Yasemin Acar, and Bradley Reaves
   Seventeenth Symposium on Usable Privacy and Security (SOUPS), Aug 2021

6. *Mining Threat Intelligence about Open-Source Projects and Libraries from Code Repository Issues and Bug Reports*

Lorenzo Neil, Sudip Mittal, Anupam Joshi
IEEE International Conference on Intelligence Security Informatics (ISI), Nov 2018

Posters

1. *Peering into the Phish Bowl: An Analysis of Real-World Phishing Cues (Accepted)*
   Lorenzo Neil, Shanee Dawkins, Jody L. Jacobs, Julia L. Sharp
   Nineteenth Symposium on Usable Privacy and Security (SOUPS), Aug 2023
2. *Cybersecurity Definitions for Non-Experts (Accepted)*
   Lorenzo Neil, Julie Haney, Kerrianne Buchanan, Charlotte Healy
   Nineteenth Symposium on Usable Privacy and Security (SOUPS), Aug 2023
3. *Mining Cyber Threat Intelligence about Open Source Projects and Libraries*
   Lorenzo Neil, Sudip Mittal, Anupam Joshi
   UMD Louis Stokes Alliance Minority Participation Research Symposium (LSAMP), Dec 2018

PROJECTS

Analyzing Cybersecurity Definitions for Non-experts Fall 2022 - Present

- Novel analysis of terms and components frequently used to define cybersecurity
- Characterized definitions for cybersecurity non-experts are likely to encounter.
- Currently performing interviews with non-experts to evaluate appropriateness of current definitions for cybersecurity.

Analyzing the Saliency of Real-World Phishing Cues within Phishing Emails Fall 2022 - Present

- Identified the prevalence and frequency of visual cues in real-world phishing emails.
- Apply the NIST Phish Scale (NPS) to phishing emails from university phish bowls.
- Currently investigating people's ability to identify different types of visual phishing cues.

Interviewing Authors to Understand How They Produce Security Advice Fall 2021 - Fall 2022

- Performed 21 semi-structured interviews with authors of security advice to learn the full advice creation process, key decision making, and challenges for security advice writing.
- Identified external sources and motivations authors implement to draft, review, and publish security advice.
- Identified prevalent challenges in security advice content creation.

Investigating Web Service Account Remediation Advice Spring 2020 - Spring 2021

- Identified five key phases for online account compromise remediation.
- Collected help center pages for compromised user accounts from 57 U.S.-based online web services.
- Analyzed the coverage of web service account remediation advice based on the five key phases to analyze relevant themes for account remediation advice.

Blockers 2019- Analyzing Effectiveness of Robocall and Spam Blocking Software Applications Fall 2019

- Reverse engineered call blocking applications from the Google Play Store to determine their effectiveness against detecting and blocking robocalls and spam.
- Decompiled popular Android applications APK files and performed static analyses to investigate relevant API's, algorithms, classes, and libraries that handle incoming calls and store information.

Mining Cyber Threat Intelligence about Open-Source Projects and Libraries Summer 2018

- Mined threat intelligence about open-source systems from issue reports in GitHub public code repositories.
- Tracked library and project dependencies for installed software on a client machine.
- Represented all stored threat intelligence and software dependencies in a security knowledge graph.

- Graph can be queried and can issue alerts to developers where threat intelligence is found in linked libraries and projects utilized in their projects.

Information Retrieval: HTML Parser Project Spring 2018

- Given 503 HTML files, used HTML Parsing libraries and Python programming to tokenize and down case every word/character in all HTML documents.
- Created output directory which consisted of 503 corresponding text files each listing all tokens and their token types.

High-Performance Computing REU (Research Experience for Undergraduates) Summer 2017

- Worked with a team of three other undergraduates in researching "small-world" networks, characteristics as well as electrical interactions between beta-cells in pancreatic islets.
  - Small-world network is a type of mathematical graph with high degrees of local bonding and short path lengths between most nodes in a graph.
- Replicated simulations of pancreatic islets beta cells and their electrical bursting through MATLAB programs and high-performance computing.

PRESENTATIONS

IFIP International Symposium on Human Aspects on Information Security & Assurance Summer 2023

- Gave powerpoint presentation for research in "Analyzing Cybersecurity Definitions for Non-experts".

Capital-Area Colloquium on Trustworthy and Usable Security/Privacy (CACTUS/P) Spring 2022

- Gave powerpoint presentation for research in "Investigating how Experts write General Security Advice".

Symposium on Usable Privacy and Security (SOUPS) Summer 2021

- Gave powerpoint presentation for research in "Investigating Web Service Account Remediation Advice".

Who Are You?? Adventures in Authentication Workshop (WAY) Fall 2020

- Gave powerpoint presentation for research in "Investigating Web Service Account Remediation Advice".

UMD Louis Stokes Alliance Minority Participation Research Symposium (LSAMP) Fall 2018

- Gave poster presentation for research in "Mining Cyber Threat Intelligence about Open Source Projects and Libraries".

IEEE Intelligence and Security Informatics (IEEE ISI) 2018 Conference Fall 2018

- Gave powerpoint presentation for research in "Mining Cyber Threat Intelligence about Open Source Projects and Libraries".

UMBC Summer Undergraduate Research Festival (SURF) Summer 2017

- Gave poster presentation with three other undergraduate researchers in High-Performance Computing REU.

WORK EXPERIENCE

NIST Graduate Student Measurement Science and Engineering (GMSE) Fellowship Program Summer 2022 - Present

- Currently performing preliminary research into identifying what non-experts do and do not understand about existing cybersecurity terminology.
- Currently performing preliminary research into understanding how different phishing cues affect the difficulty of email phishing detection.

Exerceo, Technology Service Mentorship Program, Columbia, MD Fall 2017

- Mentored in website maintenance through completing weekly projects such as updating client website pages and fixing bug issues.
- Utilized PHP, HTML, and Java programming through Fedora and Linux-based operating systems.

HONORS & AWARDS

Dean's List	Fall 2017
UMBC Meyerhoff Scholar	Fall 2015 – Spring 2019
UMBC NSA Scholar	Fall 2015 – Spring 2019
NC STATE Bridges To Doctorate Fellowship Scholar	Fall 2019 - Fall 2021
NC STATE Black Graduate Student Association (BGSA) Treasurer	Fall 2020 - Fall 2022
Graduate Fellowship for Stem Diversity (GFSD) Recipient	Fall 2022 - Present
NIST Graduate Student Measurement Science and Engineering (GMSE) Fellowship Program	Summer 2022 - Present

EXPERTISE AND SKILLS

Programming	C, C++, Python, PHP, HTML, CSS, JavaScript, MATLAB, R, MYSQL.
Operating Systems	Windows, Fedora, Linux
Qualitative Research Methods	Qualitative Coding, Interviews
Tools	Nvivo Coding Software, Web Scraping, Virtual Machines, Microsoft Office
Technical Skills	Experience in Web Scraping, Android Application Reverse Engineering

ACADEMIC COURSEWORK

Information Retrieval	Software Engineering	Statistics	Operating Systems
Algorithms	Computer Data Structures	Assembly Language	Artificial Intelligence
Computer Security	Principles of Programming	Data Science	Computer Architecture

Computer and Network Security
Computer Networks
Human-Computer Interaction
Advanced Network Security
Foundations of Cryptography
Privacy
Advanced Cellular Security