CLIFTON PAUL ROBINSON

Cybersecurity Ph.D. Candidate

Boston, MA

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PROFILE

Dynamic and innovative Cybersecurity Ph.D. candidate at a leading research institution specializing in wireless network security. Extensive experience in academic research at the forefront of the field, with a focus on adversarial signals, signal processing, and detection leveraging deep learning techniques. Actively exploring the application of digital twin technology to enhance understanding and management of the wireless spectrum. Passionate about contributing to advancements in cybersecurity and wireless communication through rigorous academic inquiry and collaborative research efforts.

RESEARCH TOPICS

Network Security
Deep Learning-based Security Solutions
Adversarial Jamming Attacks & Mitigation
Digital Twins for the Wireless Spectrum
Cyber Law & Policy, specifically the Wireless Spectrum

EDUCATION

Northeastern University..... Sept. 2018 - Present
Ph.D. in Cybersecurity Boston, MA
M.S. in Cybersecurity GPA: 3.783
Researched AI-based spectrum sensing, wireless security, and wireless spectrum digital twins.

Bridgewater State University..... Sept. 2014 - May 2018
B.S. in Computer Science and Mathematics, with Honors Bridgewater, MA
Magna Cum Laude GPA: 3.723
Coursework and research in cybersecurity policy, digital forensics, and mathematical cryptography.

PROFESSIONAL EXPERIENCE

Research Assistant, Institute for the Wireless Internet of Things…….. Jan. 2021 - Present
Boston, MA

- Appointed at the Institute for the Wireless Internet of Things at Northeastern University.
- Conducted foundational research in wireless network security, deep learning-based spectrum sensing, and communication security, contributing novel insights and advancements through investigation, experimentation, and analysis.
- Helped in foundational research on digital twin applications within the wireless spectrum domain, enhancing spectrum sensing and resource management techniques through innovative strategies and experimental frameworks.
- Collaborated with interdisciplinary teams to address key challenges in wireless communication security, driving projects forward and contributing to the development of cutting-edge solutions.
- Demonstrated expertise in theoretical and practical aspects of wireless network security, deep learning implementations, and communication security through published research in reputable journals and conference proceedings.

Signal Analysis Graduate Intern, The MITRE Corporation……... May 2023 - Aug. 2023
Bedford, MA

- Specialized in Research and Development (R&D) and Signal Processing, I consistently sought out innovative methodologies and technologies to address complex challenges within these fields, leveraging my expertise to drive impactful solutions.
- With a specific focus on RF Fingerprinting and large-scale spectrum infrastructure deployment, I dedicated significant efforts to understanding and optimizing these critical aspects of wireless communication systems, aiming to enhance security, efficiency, and reliability in real-world deployment scenarios.
- In managing dual projects, I adeptly balanced individual research pursuits with collaborative team efforts, actively participating in research discussions to contribute valuable insights while ensuring alignment with project objectives and timelines. Through effective communication and coordination, I facilitated synergy between individual and team research endeavors, maximizing productivity and outcomes.

Instructor of Record, Khoury College of Computer Science…… Jan. 2023 - May 2023
Boston, MA

- As an instructor for the course CY 2550 - Foundations of Cybersecurity, I provided comprehensive guidance and instruction to students, ensuring they grasped fundamental concepts and principles essential for navigating the complex landscape of cybersecurity.
- I designed engaging lesson plans for CY 2550, leveraging real-world case studies to contextualize theoretical concepts and facilitate deeper understanding among students.
- To ensure the course material remained relevant and aligned with the rapidly evolving field of cybersecurity, continuously integrated current cyber trends and practices into the curriculum, equipping students with up-to-date knowledge and skills essential for success in the field.

Cybersecurity Research Consultant, Global Resilience Institute..…….. Aug. 2019 - June 2020
Boston, MA

- Critical Infrastructure Network (CINet) funded by the U.S. Department of Energy
- Offered insight and guidance on technical-related issues and solutions, drawing upon comprehensive knowledge and experience to provide effective problem-solving strategies and recommendations tailored to specific challenges.
- Emphasized a focus on uni-directional communication systems to avoid data breaches, recognizing the importance of implementing robust security measures to safeguard sensitive information and mitigate the risk of unauthorized access or interception.

Graduate Teaching Assistant, Khoury College of Computer Science..…… Sept. 2019 - Aug. 2020
Boston, MA

- CS 3700 - Networks & Distributed Systems, CS 5700 - Computer Networking
- Conducted regular office hours to provide personalized assistance to students, clarifying course materials, answering questions, and offering guidance on assignments and projects.
- Demonstrated strong organizational skills by efficiently managing grading responsibilities, and providing timely and constructive feedback to students.
- Developed comprehensive homework assignments and exams that effectively assessed students' comprehension of course material and promoted critical thinking and problem-solving skills.
- Maintained open communication with students and faculty, fostering a positive learning environment, and ensuring alignment between course objectives and student expectations.

RESEARCH / PUBLICATIONS

2024

D. Uvaydov, M. Zhang, **C. P. Robinson**, S. D'Oro, T. Melodia and Francesco Restuccia, "*Stitching the Spectrum*: Semantic Spectrum Segmentation with Wideband Signal," *INFOCOM 2024 - IEEE International Conference on Computer Communications*, Vancouver, Canada, 2024.

C. P. Robinson, D. Uvaydov, S. D'Oro, and T. Melodia, "*DeepSweep*: Parallel and Scalable Spectrum Sensing via Convolutional Neural Networks," *ICMLCN 2024 - IEEE International Conference on Machine Learning for Communication and Networking*, Stockholm, Sweden, 2024.

D. Villa, M. Tehrani-Moayyed, **C. P. Robinson**, L. Bonati, P. Johari, M. Polese, T. Melodia, "Colosseum as a Digital Twin: Bridging Real-World Experimentation and Wireless Network Emulation," in *IEEE Transactions on Mobile Computing*.

2023

C. P. Robinson, L. Bonati, T. van Nieuwstadt, T. Reiss, P. Johari, M. Polese, H. Nguyen, C. Wat- son, T. Melodia, “eSWORD: Implementation of Wireless Jamming Attacks in a Real-World Emulated Network”, *IEEE Wireless Communications and Networking Conference (WCNC)*, Glasgow, Scotland, March 2023.

C. P. Robinson, D. Uvaydov, S. D'Oro, and T. Melodia, "Narrowband Interference Detection via Deep Learning," *ICC 2023 - IEEE International Conference on Communications*, Rome, Italy, 2023.

2018

Robinson, Clifton Paul. (2018). The Key to Cryptography: The RSA Algorithm. In BSU Honors Program Theses and Projects. Available at: https://vc.bridgew.edu/honors_proj/268.

TALKS & PRESENTATIONS

2024

***DeepSweep*: Parallel and Scalable Spectrum Sensing via CNNs**..... May 2024
IEEE ICMLCN Stockholm, Sweden

2023

***eSWORD*: Implementation of Wireless Jamming Attacks in a Real-World Emulated Network (Poster)**..... May 2023
WIoT Industry Day 2023 Boston, MA

***eSWORD*: Implementation of Wireless Jamming Attacks in a Real-World Emulated Network**..... March 2023
IEEE Wireless Communications and Networking Conference (WCNC) Glasgow, Scotland

2018

The Key to Cryptography: The RSA Algorithm..... April 2018
National Conference on Undergraduate Research 2018 (NCUR) Edmond, OK

Cyber Law: Past, Present, and Future..... April 2018
Massachusetts Statewide Undergraduate Research Conference Amherst, MA

2017

The Comparison and Implementation of Two Encryption Techniques..... April 2017
Massachusetts Statewide Undergraduate Research Conference Amherst, MA

Academic Guest Lectures

CS 2550 - Foundations of Cybersecurity..... Fall 2023
Cyberlaw and Cybersecurity Ethics Boston, MA

CS 3700 - Networks and Distributed Systems..... Spring 2020
The OSI Model - The Physical Layer Boston, MA
The OSI Model - The Data Link Layer
The OSI Model - The Transport Layer
Intra-Domain and Inter-Domain Routing
Network Bridging and Subnetworks

TECHNICAL SKILLS & KNOWLEDGE

Coding and Machine Learning/Deep Learning:

Python……. *Proficient*
Java…….. *Fair*
TensorFlow *(ML/AI)*……... *Expert*
C++…….. *Fair*

Technologies:
Bash - security, networking, & scripting)
Markup (LaTeX, HTML)
Software (PyCharm, Eclipse, Microsoft Office, Photoshop)

Familiarity with Regulations/Frameworks:
U.S. Export Controls
General Data Protection Regulation (GDPR)
U.S. Privacy & Data Laws

Professional Skills:
Oral & written communications
Teamwork
Leadership
Public Speaking
Academic Writing
Quantitative and Qualitative Research
Cyber & Resilience Policy

ACHIEVEMENTS & AWARDS

NORTHEASTERN UNIVERSITY

IEEE WCNC Student Travel Grant…….. Spring 2023
KCCIS Graduate Fellowship…….. Fall 2018

BRIDGEWATER STATE UNIVERSITY

Dean's List……. All Semesters
Commonwealth Honors……... All Semesters
Computer Science Departmental Honors…….. Fall 2017
Mathematics Departmental Honors……... Fall 2017
Award for Student Excellence…… Spring 2018

PROFESSIONAL MEMBERSHIPS

IEEE Membership…….. Jan. 2023
The Institute of Electrical and Electronics Engineers is an American 501 professional association for electronics engineering, electrical engineering, and other related disciplines.

IEEE Communications Society……. Jan. 2023
The IEEE Communications Society (ComSoc) promotes the advancement of science, technology, and applications in communications and related disciplines.

IEEE Young Professionals……. Jan. 2023
IEEE Young Professionals is an international community of IEEE members and volunteers who have graduated with their first professional degree within the past 15 years. Focused on enhancing professional image, expanding global networks, connecting locally, and community engagement.

Pi Mu Epsilon (PME) | Gamma Chapter……. May 2018
The U.S. Honorary National Mathematics Society.

Upsilon Pi Epsilon (UPE) | Zeta Chapter……. May 2016
The first honor society dedicated to the discipline of the computing and information disciplines.