Ebuka Philip Oguchi Ph.D.

Contact Information

Address: Department of Computer and Information Sciences, Spelman College
Email: ebukaoguchi@spelman.edu
Website: https://ebukaoguchi.github.io
Google Scholar: https://scholar.google.com/citations?user=b1miVfEAAAAJ
GitHub: https://github.com/ebukaoguchi
LinkedIn: https://www.linkedin.com/in/ebukaoguchi/

Academic Appointment

Assistant Professor (Tenure Track)
Department of Computer and Information Sciences, Spelman College
January 2026 – Present

Research Interests

Cybersecurity and trust establishment for emerging wireless systems; message integrity and authentication; physical-layer security; location and RF fingerprinting; autonomous and vehicular networks; agricultural IoT; molecular and nano-scale communication security; applied machine learning for adversarial environments; Broadening Participation in Computing (Inclusive Curriculum Design).

Education

- **University of Nebraska–Lincoln**
  Ph.D. in Computer Science, 2025 GPA: 4.0/4.0
  Advisor: Prof. Nirnimesh Ghose
  Dissertation: *Authentication and Message Integrity Verification for Emerging Wireless Networks*

- **Changchun University of Science and Technology, China**
  M.S. in Computer Applied Technology, 2020
  Advisor: Prof. Fang Ming
  Thesis: *Smoke Recognition Using ResNet and GoogleNet*

- **Nnamdi Azikiwe University, Awka, Nigeria**
  B.Eng. in Electronic and Computer Engineering, 2016
  Project: *Biometric Course Register Using Fingerprint Authentication*

Publications

Journal Articles (Under Review)

1. Oguchi, E.; Ghose, N.; Vuran, M.C. *Soil-Assisted Trust Establishment for Underground Internet-of-Things.* IEEE Transactions on Wireless Communications.
2. Oguchi, E.; Anderson, M.; Duong, T.T.; Wisniewska, A.; Ghose, N. *Systematization of Knowledge for Security in Molecular and Nano-Communications.* IEEE Transactions on Molecular, Biological, and Multi-Scale Communications.

Peer-Reviewed Conference Papers

1. Oguchi, E.; Ghose, N.; Vuran, M.C. *STUN: Secret-Free Trust Establishment for Underground Wireless Networks.* IEEE INFOCOM Workshops, 2022.

2. Oguchi, E.; Ghose, N.; Vuran, M.C. *VET: Autonomous Vehicular Credential Verification Using Trajectory and Motion Vectors.* EAI SecureComm, 2023.

Research Experience

Research Assistant, University of Nebraska–Lincoln 2021–2025

- Agricultural IoT Security: Secure bootstrapping and authentication for underground sensor networks using physical-layer features.
- Autonomous Vehicle Security: Message integrity verification using trajectory, motion vectors, and Doppler effects.
- RF Fingerprinting: Machine-learning-based authentication for underground and OTA environments.
- Molecular Communication Security: Lightweight security protocols for nano-scale biological communication.

Research Support (via PI-Funded Projects)

- Ph.D. research supported through NSF-funded projects administered at the University of Nebraska–Lincoln (PIs: Prof. Nirnimesh Ghose and Prof. Mehmet C. Vuran), including CNS-2331191, CNS-2225161, CNS-1619285, and ECCS-2030272.
- Ph.D. research supported through projects administered at the University of Nebraska–Lincoln and funded by the Nebraska Center for Energy Sciences Research (NCESR) (PI: Prof. Nirnimesh Ghose).

Teaching Experience

- **Assistant Professor (Tenure Track), Spelman College** Spring 2026 – Present
  Department of Computer and Information Sciences
  CIS 216: Computer Organization (Lecture + Lab).
- **Teaching Assistant, Cryptography & Security (CSCE 477/877)** Fall 2022
  University of Nebraska–Lincoln
  Supported labs and assignments on block ciphers, RSA, hash functions, and network security protocols. Helped students implement cryptographic primitives and analyze protocol correctness.
- **Teaching Assistant, Introduction to Computer Architecture** Jan 2018 – May 2018
  D.S. Adegbenro ICT Polytechnic
  Delivered lectures, supervised labs, graded homework/exams, and supported foundational computer systems instruction.
- **Teaching Assistant, Introduction to Computer Software** Jan 2018 – May 2018
  D.S. Adegbenro ICT Polytechnic
  Taught introductory programming concepts, organized practical sessions, and supervised assessments.

Professional Service

- Reviewer: IEEE Transactions on Industrial Informatics; ACM Transactions on Cyber-Physical Systems; IEEE Transactions on Dependable and Secure Computing (2025).
- Reviewer: EAI SecureComm; ACM WiSec.
- Judge: UNL College of Engineering Poster Fair.

Mentorship

- Google CS Research Mentorship Program (CSRMP).
- Institute for African-American Mentoring in Computing Sciences (iAAMCS).
- Mentored Ph.D. and undergraduate researchers at UNL.

Awards

- Ph.D. Dissertation Award, University of Nebraska–Lincoln, 2025.
- Mary E. and Elmer H. Dohrmann Fellowship, 2023.
- Chinese Government Scholarship, 2018.

Skills

Machine learning (TensorFlow); Python, MATLAB, C; cryptographic protocol analysis; SDRs (USRP, GNU Radio); network security; incident response; Wireshark; adversarial ML; hardware and wireless experimentation.