

Dr. Ebuka Philip Oguchi Ph.D.

CONTACT INFORMATION
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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 verification; 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*

RESEARCH SUPPORT

- **Senior Personnel**, NSF Center for Distributed Confidential Computing (CDCC) 2026 – Present
A \$9,000,000 NSF Frontiers in Computing project focused on scalable and verifiable confidential computing. Multi-institutional flagship initiative in collaboration with IU Bloomington, CMU, Duke, Ohio State, and Yale.
- **Collaborator**, Google.org Cybersecurity Clinic Grant 2026 – Present
Supporting the establishment of the Spelman College Cybersecurity Clinic to provide pro-bono security services to under-resourced organizations. Involved in the integration of clinic operations into the new undergraduate Cybersecurity Curriculum Minor.

- **Research Support (Graduate)**, NSF-funded projects (PIs: Prof. N. Ghose and Prof. M.C. Vuran)
CNS-2331191, CNS-2225161, CNS-1619285, and ECCS-2030272.

PUBLICATIONS

Manuscripts Under Review

1. **Oguchi, E.**; Lado, H.; Evans, R.; Menon, A.; Wang, B.; Ghose, N. *LocaRadio: RF Fingerprint-Based Location Authentication for Wireless Networks*. Submitted to IEEE Conference on Communications and Network Security (CNS), 2026.
2. **Oguchi, E.**; Ghose, N.; Vuran, M.C. *Soil-Assisted Trust Establishment for Underground Internet-of-Things*. IEEE Transactions on Dependable and Secure Computing.
3. Anderson, M.*; Duong, T.T.*; **Oguchi, E.***; Wisniewska, A.; Ghose, N. *Systematization of Knowledge for Security in Molecular and Nano-Communications*. IEEE Transactions on Molecular, Biological, and Multi-Scale Communications.

*Anderson, Duong, and Oguchi contributed equally to this work.

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

- **STUN Protocol Development:** Authored the Secret-Free Trust Establishment for Underground Wireless Networks (STUN) protocol to secure bootstrapping in Agricultural IoT environments.
- **Autonomous Vehicle Security:** Developed message integrity verification systems using trajectory, motion vectors, and Doppler effects (VET protocol).
- **RF Fingerprinting:** Implemented machine-learning-based authentication for underground and over-the-air (OTA) environments.
- **Molecular Communication:** Investigated lightweight security protocols for nano-scale biological communication networks.

TEACHING EXPERIENCE

- **Assistant Professor (Tenure Track), Spelman College** Jan 2026 – Present
Department of Computer and Information Sciences
 - *SCIS 216: Computer Organization and Design* (Lecture)
 - *SCIS 216L: Computer Organization and Design Lab*
 - *SCIS 123: C++ Programming*
- **Teaching Assistant, Cryptography & Security (CSCE 477/877)** Fall 2022
University of Nebraska–Lincoln
Supported labs on RSA, hash functions, and network security protocols.
- **Teaching Assistant, Computer Architecture/Software** Jan 2018 – May 2018
D.S. Adegbenro ICT Polytechnic

PROFESSIONAL
SERVICE

- **Member**, Departmental Curriculum Review Committee 2026 – Present
Participated in the technical review and formal institutional approval of the *Cybersecurity Clinic Capstone (CIS 200/300)*.
- **Judge**, Spelman College Hack-A-Bot Competition April 2026
- Reviewer: IEEE Transactions on Dependable and Secure Computing (2026); IEEE Transactions on Industrial Informatics; ACM Transactions on Cyber-Physical Systems (2025).
- Reviewer: EAI SecureComm; ACM WiSec.
- Judge: UNL College of Engineering Poster Fair.

PROFESSIONAL
DEVELOPMENT

- **Fellow, ACS Teaching & Learning Workshop** June 2026
Rollins College, FL. Selected as faculty nominee representing Spelman College.
- **Faculty Onboarding and Mentorship Program** Jan 2026 – Present
Spelman College, Atlanta, GA.

MENTORSHIP

- Google CS Research Mentorship Program (CSRMP).
- Institute for African-American Mentoring in Computing Sciences (iAAMCS).

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, Keras); Python, MATLAB, C++, C, Assembly Language, MIPS; Software-Defined Radios (USRP, GNU Radio); Embedded Systems; Breadboard Prototyping; Electronic Circuit Design and Testing; Microcontroller Interfacing; Wireless Testbed Development; NIST Cybersecurity Framework; Incident Response; Inclusive Pedagogy.