

# MARY E. NWOSU

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## DS/ML/NLP/HCI PH.D. COMPUTER SCIENCE STUDENT (SPRING 2025)

XAI/XNLP • Computer/Data Science • EE/Digital Signal Processing • Marketing/Social Psychology

**Fake News Detection & Mitigation**  
**Explainable/Deep Learning Models**  
**Python / C / C++ Programming**  
**NumPy / Pandas / Matplotlib**  
**Large-Scale Data Analysis**  
**Inferential Statistics [R]**  
**PowerBI Data Visualization**  
**Quant/Qual Research Methodologies**  
**Casino & Marketing Operations**  
**Financial & Budget Analysis**  
**Digital Image & Speech Processing**

Innovative and data-driven 5<sup>th</sup> year **Computer Science (AI/ML)** Ph.D. student at Howard University with extensive experience leading marketing/academic projects that drive machine learning (ML) transformation, facilitate large-scale data analytic implementations, and deliver game-changing inferential and methodological solutions.

Analytical troubleshooter, professional/academic leader, and creative problem solver focused on engaging with marketing stakeholders, analyzing business operations as well as leading academic Ph.D. Proposal projects that quickly rectify logistical roadblocks while coordinating all aspects of the Ph.D. Dissertation technical/developmental cycle.

Influential communicator and effective leader committed to achieving professional excellence. Learning, *quickly* and *efficiently*, new technical systems and applications as well as completing complex digital marketing projects on-time and with distinction.

## EDUCATION

**HOWARD UNIVERSITY** • Washington, DC • **Doctor of Philosophy in Computer Science** (expected Dec 2026) • GPA: 3.8 / 4.0

**PINE TECHNICAL & COMMUNITY COLLEGE** • Pine City, MN • **Associate of Science in Computer Science** • GPA: 3.7 / 4.0

**UNIVERSITY OF SOUTHERN CALIFORNIA** • Los Angeles, CA • **PhD/MFA Candidate in Psychology(ABD)/CNTV** • GPA: 3.5 / 4.0

**TEMPLE UNIVERSITY** • Philadelphia, PA • **Master of Arts in African American Studies** • GPA: 3.9 / 4.0

**GEORGIA TECH (LORRAINE)** • Atlanta, GA (Metz, FRANCE) • **Master of Science in Electrical Engineering** • GPA: 3.1 / 4.0

**NORTH CAROLINA A&T STATE UNIVERSITY** • Greensboro, NC • **Bachelor of Science in Electrical Engineering** • GPA: 3.7 / 4.0

## PROFESSIONAL EXPERIENCE

**GRADUATE RESEARCH ASSISTANT** • **Howard University** (Washington, DC) • 20 hours/week Aug 2020 – May 2024

Developing technical and theoretical expertise in Natural Language Processing (NLP) and Explainable Artificial Intelligence (XAI) relating to traditional (classical) and **deep learning text-based classifiers** for **Fake News Detection and Mitigation on social media**. Liaising with the Howard University's (HU's) Center of Excellence in Artificial Intelligence (AI) & Machine Learning (ML), NLP Group, Affective Biometrics Lab, Psychology department, as well as the NAEP-HU & Evaluation Institute to conduct interdisciplinary, statistical, and methodological **Ph.D. Dissertation** research across **Computer/Data Science** and **Psychology**.

- **Fake News Detection:** Developing/implementing supervised ML classifier workflow (Python, Scikit-Learn) comparing nine classical ML models (KNN, SVM, LR, RF, XGB, PAC, MNB, LDA, DTC) to detect Fake News in text articles using NLP.
- **HCI/Affective Computing:** Led 5-student research team ("Sickle Cell Stories") in the design, development, and implementation of a human-computer interface (HCI) facial emotion recognition API / website prototype that explores the effects associated with the stories of microaggressions experienced by persons with Sickle Cell Disease within U.S. healthcare settings.

**1<sup>st</sup> Place:** 2021 CMD-iT Innovation Challenge.

**Invited Speaker:** TAPIA 2021 Conference "Tech Talk" Session Presenter.

**RESEARCH ASSISTANT** • **ARLIS** @ **University of Maryland** (College Park, MD) • 20 hours/week Jun 2021 – May 2024

- **Disinformation Campaigns:** Co-developed a codebook, initial datasheet, and scoping review of methodological research and technical approaches used for the creation of a public, searchable repository of Russian and Chinese disinformation campaigns related to disaster/crisis events.
- **Social Media Simulator:** Co-developed a 'social media simulator' web app (VS Code, GitLab Version Control, AWS EC2 Instance, MySQL, Docker) from an open-source Python Flask codebase and facilitated online deployment for researchers to conduct, monitor, and record several human-subject studies on the dissemination of disinformation on social media platforms.

**GRADUATE RESEARCH ASSISTANT** • **Los Alamos National Lab** (Los Alamos, NM) • 40 hours/week Jan 2022 – May 2022

- **Deep Learning (DL) Pipeline:** Created an interactive (human-in-the-loop), unsupervised (K-means clustering), DL (CNN) workflow (built from an open-source Python codebase and developed with Scikit-Learn on Jupyter Notebooks).
- **Morphological Signatures Project:** DL Pipeline used for image segmentation and morphological analysis of nuclear material.

**MARKETING / DATA ANALYST [CASINO HOST]** • Grand Casino Hinckley (Hinckley, MN) • 40 hours/week Aug 2012 – Apr 2020

- **Data Science:** Conducted large-scale data analyses of Player Development/Marketing programs to evaluate cost effectiveness.
- **Budget Review:** Played integral role in casino budget process, reported monthly trends and forecasts to the General Manager.
- **Cost Savings:** *Significantly reduced costs* of casino ticketing software by **37.1%** (year-over-year) by formulating asset management analyses and visualization (PowerBI) that *increased overall Marketing productivity*.

**ADJUNCT FACULTY** • Pine Technical & Community College (Pine City, MN) • 6 hours/week Jan 2015 – May 2016

- **Academic Course Creation:** Co-designed and instructed the *Computer Science* course, “Design of User Interfaces”.
- **User Interface (UI) & Usability Design:** Created academic material for layout techniques and usability issues in UI design.

## QUALIFICATIONS

**Explainable Machine Learning (XML):** Orchestrating the design, development, and implementation of a 2x2 factorial, between-participant, and experimental Ph.D. Dissertation to test the main and interaction effects on **Fake News Mitigation** (FNM) of *two components* embedded within a state-of-the-art, classical and deep learning hybrid **Fake News Detection** (FND) web app for an online social media platform. *Component I* is an Explainable Natural Language Processing-developed explanation of the FND’s decision (shown to user-participant) and *Component II* is a User-Behavioral Mitigation instruction for the user-participant to perform.

**Data Analytics:** Efficiently organized and facilitated casino finance and functional Budget Review meetings with the General Manager while providing visibility and transparency to Player Development/Marketing projects through large-scale data analytics/visualization.

### CERTIFICATIONS

Building Transformer-Based NLP Applications • **NVIDIA** • Mar 2023

Machine Learning Mastery Workshop • **Enthought** • Mar 2022

Python for Scientists and Engineers • **Enthought** • Feb 2022

Fundamentals of Deep Learning • **NVIDIA** • Oct 2021

### SKILLS

**Leadership:** Clinton Global Initiative University (2021 Cohort) • NIAID Grant Funded (2008) • GEM Fellowship • 3M-INROADS Scholarship • NSBE • Dale Carnegie Course • Engineer-In-Training (North Carolina) • TAU BETA PI • ETA KAPPA NU • PSI CHI  
**Technical:** Classical & Deep Learning text-based models/classifiers • Ethics in AI • HCI • Image Segmentation • Computer Vision • Data Analysis & Visualization • Inferential Statistics • Quantitative & Qualitative Research Methodology • TensorFlow • PyTorch • Scikit-Learn • NumPy • Pandas • XNLP • VS Code • Git Version Control • Python • Flask • C/C++ • MySQL (relational database development & management) • Power BI • Android App Development • TELEforms • Technical Writing • Psychology • Marketing

## PSYCHOLOGY RESEARCH

**PH.D. CANDIDATE** • University of Southern California (Los Angeles, CA) • 40 hours/week

May 2008 – Dec 2009

**THE YAAWAH PROJECT** • USC Psychology Department

Designed the study and intervention for the dissertation, **The YAAWAH Project: Young African American Women Annihilating HIV**. Funded by the VALENTINE Fellowship (USC Psychology Departmental Dissertation Award). Purpose of the study was to evaluate a standard-of-care 3-month HIV/STI (sexually transmitted infection) prevention intervention compared to a similar intervention, but including an *Interactive Media component* specifically targeting African American adolescent women.

- **Presented** full paper (meta-analytic preliminary research), “*Interactive Media in Health Communication Research*”, at the International Communication Association (ICA) Annual 2007 Conference [May 27, 2007 • San Francisco, CA].
- Designed, developed, and integrated the TELEforms [scans participant survey data] | MS Access database architecture schema.

**GRADUATE RESEARCH ASSISTANT** • University of Southern California (Los Angeles, CA) • 20 hours/week Aug 2004 – Dec 2006

**THE VIRTUAL SEX PROJECT** • USC Psychology Department • Project Investigators: Stephen Read, Lynn Miller

Led 4-student team in data collection, data entry, data analysis, and conference presentations of study results. NIAID funded, the purpose of the study was to evaluate a 3-month standard-of-care HIV prevention intervention for European American, Latinx, and African American men who have sex with men (MSM) compared to the same intervention that included an *Interactive Media component*.

- **Published** Socially Optimized Learning in a Virtual Environment, *Human Communication Research*, 32, 1-34, 2006 [4th author].
- **Co-presented** preliminary results at the ICA Annual 2005 Conference [May 28, 2005 • NYC, NY].
- Coordinated final phase of data collection, entry, parametric [SPSS], and non-parametric [S+ (precursor to R)] statistical analyses.
- Recruited, administered interviews, and conducted 1-on-1 interventions [Baseline, Immediate-Post, Follow-up] for eligible MSM.