

# OLANREWAJU MUILI

[Email](#) ♦ [GitHub](#) ♦ [LinkedIn](#) ♦ [PyPI](#) ♦ [Website](#)

## EDUCATION

### University of Southern Mississippi

Ph.D. Computer Science

Hattiesburg, MS

08/2026 – Present

- Research focus: trust-calibrated RL for adversarially robust multimodal agents.

### University of Colorado Boulder

M.S. Computer Science

Boulder, CO

10/2025

- GPA 3.97/4.0.

### Georgia State University

M.S. Geosciences (Geology)

Atlanta, GA

05/2022

- GPA 3.91/4.0.

- Advisor: Dr. Hassan Babaie. Thesis: Sinkhole susceptibility analysis using machine learning for West Central Florida.

### University of Ibadan

B.S. Geology

Ibadan, Nigeria

## PROFESSIONAL EXPERIENCE

### TraceVox AI

Lead ML Engineer

Remote

06/2024 – Present

- Lead research and engineering across LLM safety, adversarial evaluation, trustworthy AI, autonomous-agent assurance, and AI observability.
- Constructed a 625-prompt injection benchmark across 18 attack categories; hybrid guardrails achieved 98.9% recall with 0% false positives on the hard subset, versus 24.6% recall for regex-only filtering.
- Published TraceVox Research on PyPI for reproducible RL, trustworthy-AI, evaluation, and robustness experiments.

### Deep Anchor Solutions

Research Engineer — U.S. Department of Energy Marine Energy Fellowship

Remote

10/2025 – 08/2026

- Led development of reproducible 2D axisymmetric FEA workflows for Deeply Embedded Ring Anchors, studying soil plugging, load capacity, displacement, and soil–structure interaction.
- Automated parametric studies linking wave-energy-converter size, mooring loads, and anchor sizing, generating 5,000+ simulations for surrogate-modeling research.

### The Doe Run Company

Data Geoscientist & ML Researcher

Viburnum, MO

06/2022 – 09/2025

- Led development of end-to-end 3D mineral-exploration ML pipelines, benchmarking CNNs and GNNs against Random Forest/XGBoost with spatial cross-validation, calibration, and feature diagnostics.
- Partnered with mine engineers, geophysicists, and geochemists to translate model outputs into targeting decisions, reducing exploration-targeting effort by approximately 38%.

### Independent Research & Open-Source Systems

Research Engineer / Project Lead

Remote

2024 – Present

- Developed an autonomous speech-to-speech evaluator for AI receptionists using Twilio Media Streams and OpenAI Realtime, with real-call evidence capture, diarized transcripts, failure attribution, and TraceVox assurance.
- Built the Karst Intelligence Agent, combining susceptibility modeling, satellite/aerial imagery, natural-language validation, spatial cross-validation, and early-warning support.
- Built TerraGuard, an Azure-based geospatial ML hazard-prediction system awarded 2nd place in the Microsoft Innovation Challenge.

## SELECTED PUBLICATIONS

### Learning When To Trust: Training-Time Calibration for Reinforcement Learning under Adversarial Observation Corruption

[Olanrewaju Muili](#)

[View](#)

- Manuscript in preparation.

### Evaluating Hybrid Guardrail Architectures for Prompt Injection Defense in Large Language Models

[Olanrewaju Muili](#)

[View](#)

- SSRN preprint, 2026. DOI: 10.2139/ssrn.6246379.

### Sinkhole Susceptibility Analysis Using Machine Learning for West Central Florida

[Olanrewaju Muili](#) and Hassan A. Babaie

[View](#)

- Applied Computing and Geosciences 27 (2025), 100262.

## ACADEMIC SERVICE

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| <b>Reviewer</b>                                                                                                                                                                                                                      | 2025 – Present |
| <ul style="list-style-type: none"><li>◦ Rendiconti Online (2026)</li><li>◦ Transactions of the Kansas Academy of Science (2026)</li><li>◦ The Professional Geologist, American Institute of Professional Geologists (2025)</li></ul> |                |
| <b>State Competition Judge — Presidential AI Challenge</b>                                                                                                                                                                           | 2026           |
| <ul style="list-style-type: none"><li>◦ Evaluated student AI/ML projects using structured criteria for innovation, technical rigor, and real-world impact.</li></ul>                                                                 |                |
| <b>Science Lead — NASA NPWEE M.I.S.T. Proposal Team</b>                                                                                                                                                                              | 2025           |
| <ul style="list-style-type: none"><li>◦ Led development of the Science Traceability Matrix connecting science objectives, measurement requirements, and proposed technical capabilities.</li></ul>                                   |                |

## INVITED TALKS

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|-------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>XVII International Multidisciplinary Conference on Sinkholes — Conference Presentation</b>                                                   | 2023 |
| <ul style="list-style-type: none"><li>◦ Presented “Sinkhole Susceptibility Analysis Using Machine Learning for West Central Florida.”</li></ul> |      |

## TEACHING EXPERIENCE

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| <b>Teaching Assistant, Georgia State University</b>                                                                                                                                                                                                                                                                                                                                       | 2020 – 2022 |
| <ul style="list-style-type: none"><li>◦ Taught 100+ undergraduate students across three laboratory sections, providing hands-on instruction in geospatial interpretation using Google Earth and earth science datasets.</li><li>◦ Coordinated graduate teaching assistants through weekly meetings to align instruction, assignment expectations, grading, and student support.</li></ul> |             |

## AWARDS AND SCHOLARSHIPS

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| <b>Marine Energy Fellowship — U.S. Department of Energy</b>                                                                                                                                                                                                             | 2025 |
| <ul style="list-style-type: none"><li>◦ Selected for fellowship-supported research in marine energy systems.</li></ul>                                                                                                                                                  |      |
| <b>Presidential Management Fellows (PMF) Finalist</b>                                                                                                                                                                                                                   | 2024 |
| <ul style="list-style-type: none"><li>◦ Selected as a finalist by the U.S. Office of Personnel Management.</li></ul>                                                                                                                                                    |      |
| <b>Microsoft Innovation Challenge — 2nd Place</b>                                                                                                                                                                                                                       | 2024 |
| <ul style="list-style-type: none"><li>◦ Recognized for applied AI/ML innovation through the TerraGuard project.</li></ul>                                                                                                                                               |      |
| <b>Barry F. Beck Scholarship — The Sinkhole Conference</b>                                                                                                                                                                                                              | 2023 |
| <ul style="list-style-type: none"><li>◦ Recognized for research and scholarship in karst and sinkhole science.</li></ul>                                                                                                                                                |      |
| <b>BP America Inc. Early Career Scholarship</b>                                                                                                                                                                                                                         | 2021 |
| <ul style="list-style-type: none"><li>◦ Awarded during the BP Trading &amp; Shipping Sophomore Experience after developing an optimization model that achieved the highest simulated profit (\$34.76 million) in the program's hypothetical trading exercise.</li></ul> |      |
| <b>Best Graduating Student in Petrology — University of Ibadan</b>                                                                                                                                                                                                      |      |
| <ul style="list-style-type: none"><li>◦ Awarded at convocation as the top-performing graduating student in Petrology.</li></ul>                                                                                                                                         |      |

## TECHNICAL SKILLS

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- Programming Languages: Python, SQL, C++, Bash
- ML/AI: PyTorch, scikit-learn, XGBoost, Reinforcement Learning, Natural Language Processing, Generative AI, Multimodal AI, Adversarial ML
- Cloud & Systems: AWS, GCP, Linux, Docker, Networking, Security, CI/CD