

Toluwani Samuel Aremu

AI Researcher | Applied Scientist

[Google Scholar](#) • [Website](#) • [Medium](#) • [Email](#) • [LinkedIn](#) • [GitHub](#) • [Certifications](#)

KEY COMPETENCIES

- **Skills:** Research, Mathematics, Statistics, Machine Learning, Deep Learning, Data Science, Project Management, Programming, Writing.
- **Tools:** Python, VB.Net, PyTorch, Lightning, TensorFlow, Keras, Jax, Scikit-learn, NumPy, Matplotlib, Visual Studio, Visual Studio Code, PyCharm, Jupyter, Latex, Office 365, Google [Docs, Sheets, Slides].
- **General Research Interests:** Trustworthy AI, Responsible AI.

EDUCATION

- **Mohamed Bin Zayed University of Artificial Intelligence (MBZUAI), UAE** AUG 2023 – PRESENT
 - Doctor of Philosophy (PhD) in Machine Learning.
 - Research Areas: Robustness in Computer Vision, Responsible AI.
- **Mohamed Bin Zayed University of Artificial Intelligence (MBZUAI), UAE** JAN 2021 – DEC 2022
 - Master of Science (MSc) in Machine Learning.
 - Research Area: Privacy-Preserving ML.
- **University of Ibadan (UI), Nigeria** MAY 2018 – MAY 2020
 - Master of Science (MSc) in Computer Science.
 - Research Area: Cryptography and Data Security.
- **Adeleke University, Nigeria** OCT 2012 – JUL 2016
 - Bachelor of Science (BSc) in Computer Science.
 - Courses: Philosophy, Statistics, Mathematics, Operations Research, Numerical Analysis, Digital Logic, Hardware, Programming Languages, etc.

RESEARCH EXPERIENCE

- **Doctoral Student, MBZUAI, UAE** AUG 2023 – PRESENT
 - Research Project Areas: Federated Learning, Efficient Private Inference (PI), Adversarial Defense for Vision-Language Models (VLMs), etc.
- **Research Assistant, MCR Lab (Metaverse Center, MBZUAI), UAE** FEB 2023 – AUG 2023
 - Research projects: Video Action Recognition, AI for Optimized Scholarly Search, Responsible LLM for Mental Health and Climate Change.
- **Applied Science Intern, G42 (HealthCare), UAE** FEB 2023 – APR 2023
 - Streamlined the preprocessing of the NHANES dataset by building an end-to-end pipeline for downloading, retrieving, analyzing, and modeling.
 - Ensured that the pipeline generates a comprehensive TRIPOD report after use.
- **Graduate Research Assistant, SPriNT-AI Lab (MBZUAI), UAE** JAN 2021 – DEC 2022
 - Developed [PolyKervNets](#) to minimize reliance on ReLU activations and optimize latency in AI models during private inference.
 - Projects: Self-Supervised Racial Bias Mitigation in Face Recognition Systems, Accented Speech Recognition using Vector-Quantized Variational AutoEncoders (VQ-VAE), Gender Bias Mitigation in Word Embeddings.

TEACHING EXPERIENCE

- Teaching Assistant, Object Oriented Programming (OOP) [UI, Nigeria] 2019

VOLUNTEERING EXPERIENCE

- Graduate School Application Mentorship 2021 – PRESENT
- Associate Editor, MBZUAI Blog 2024 – PRESENT
- Peer Reviewer
 - IEEE Access 2023
 - Open Information Science 2023
 - NeurIPS 2024

SELECTED PUBLICATIONS

● Conferences

- N. Tastan*, S. Fares*, **T. Aremu***, S. Horvath, and K. Nandakumar, "Redefining Contributions: Shapley-Driven Federated Learning," 33rd International Joint Conference on Artificial Intelligence (IJCAI), Jeju, Korea, 2024.
- **T. Aremu*** and K. Nandakumar, "PolyKervNets: Activation-free Neural Networks For Efficient Private Inference," *2023 IEEE Conference on Secure and Trustworthy Machine Learning (SaTML)*, Raleigh, NC, USA, 2023, pp. 593-604, doi: 10.1109/SaTML54575.2023.00045.
- W. Y. Kang*, **T. Aremu***, Y. Balah, M. Nadeem, I. G. Navarette and A. E. Saddik, "ScholarFace: Scanning Faces, Discovering Minds," *2024 IEEE International Conference on Consumer Electronics (ICCE)*, Las Vegas, NV, USA, 2024, pp. 1-5, doi: 10.1109/ICCE59016.2024.10444350. [Patent Application Submitted]

● Preprints

- **T. Aremu**, "Regularized PolyKervNets: Optimizing Expressiveness and Efficiency for Private Inference in Deep Neural Networks," ePrint IACR, 2023. <https://eprint.iacr.org/2023/1917> (accessed Dec. 15, 2023).
- **T. Aremu** et al., "On the Reliability of Large Language Models to Misinformed and Demographically-Informed Prompts," Jan. 2024, doi: <https://doi.org/10.2139/ssrn.4699451>.

● Blog

- **T. Aremu**, "Accented Speech Recognition: The Inclusive Realm of Automatic Speech Recognition Systems," Medium, Jul. 03, 2023. <https://shorturl.at/oKLP8> (accessed Apr. 27, 2024).
- **T. Aremu**, "AI Text Detectors: Amazing Sleuths or WHAT?," Medium, Jun. 11, 2023. <https://medium.com/towards-artificial-intelligence/ai-text-detectors-amazing-sleuths-or-what-31e4e2ca7803> (accessed Apr. 27, 2024).

TALKS & TUTORIALS

- Ethical Perspectives of Artificial Intelligence, Department of Material Sciences, University of Denver, Virtual. (JUL 2022).

HONORS & AWARDS

- MBZUAI MSc & PhD Fully Funded Fellowship 2021-2027
- UAE Golden Visa for Talented Persons/Specialists in Science 2022

- MBZUAI Award of Appreciation for Iconic Representation and Student Hospitality 2022
- ProjectSet Innovation Challenge for Entrepreneurship (ICE-22) 2022
- Top 100, DeepLearning.AI Data-Centric AI Competition 2021
- NYSC-FRSC Award for the Most Creative Corp Member 2017
- 2015 AUE-NACOSS Award for the Best Programmer 2015

PROFESSIONAL DEVELOPMENT

- [Microsoft Azure](#)
- [Google Cloud](#)
- [Machine Learning](#)
- [Deep Learning](#)
- [IBM AI & Data Science](#)
- [MLOps](#)
- [Mind & AI](#)

REFERENCES

- Prof. Abdulmotaleb El Saddik - Enterprise Professor, MBZUAI & UOttawa - a.elsaddik@mbzuai.ac.ae.
- Prof. Kun Zhang - Professor, MBZUAI & Carnegie Mellon University - kun.zhang@mbzuai.ac.ae.
- Dr. Karthik Nandakumar - Associate Professor, MBZUAI - karthik.nandakumar@mbzuai.ac.ae.