

Toluwani Samuel Aremu

AI Safety | Trustworthy AI | Responsible AI

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

KEY COMPETENCIES

- **Skills:** Research, Mathematics, Statistics, Machine Learning, Deep Learning, Data Science, Project Management, Programming, Writing.
- **Tools:** Python, PyTorch, Lightning, TensorFlow, Keras, Jax, Scikit-learn, NumPy, Matplotlib, Visual Studio Code, PyCharm, Jupyter, etc.
- **Research Interests:** AI Safety, AI Security, Trustworthy AI, Responsible AI.

EDUCATION

- Doctor of Philosophy (PhD) in Machine Learning, **Mohamed Bin Zayed University of Artificial Intelligence (MBZUAI), UAE.** (AUG 2023 – PRESENT)
- Master of Science (MSc) in Machine Learning, **Mohamed Bin Zayed University of Artificial Intelligence (MBZUAI), UAE.** (JAN 2021 – DEC 2022)
- Master of Science (MSc) in Computer Science, **University of Ibadan (UI), Nigeria.** (MAY 2018 – MAY 2020)
- Bachelor of Science (BSc) in Computer Science, **Adeleke University, Nigeria.** (OCT 2012 – JUL 2016)
- Diploma (Grades 1-4) in Theory and Practice of Music, **Associated Board of the Royal Schools of Music (ABRSM).** (2012 – 2015)

RESEARCH EXPERIENCE

- **Doctoral Researcher, Trustworthy-ML Lab, MBZUAI.** (AUG 2023 – PRESENT)
 - **Research Areas:** Generative AI Security, Watermarking, Alignment, Adversarial Robustness, Policy.
- **Research Assistant, MCR-Lab, MBZUAI.** (FEB 2023 – AUG 2023)
 - **Research Areas:** Generative AI, AI in Smart Cities, AI Applications.
- **Graduate Student Researcher, SPiNT-AI Lab, MBZUAI.** (FEB 2023 – AUG 2023)
 - **Research Areas:** Homomorphic Encryption, Secure Multi-Party Computation, Private Inference, Privacy-Preserving ML.

WORK EXPERIENCE

- **Technical Co-Founder/Lead AI Engineer, Stealth (Incubated by a Fintech Company).** (MAY 2025 – PRESENT)
 - Serving as the founding technical lead at an AI-powered trading startup incubated as the research arm of a top-tier fintech company operating in Nigeria. Leading the design and implementation of our core AI trading algorithms, leveraging ML and NLP techniques. Also spearheading the integration of LLM-based fundamental and macro analysis into our overall strategy.
 - Working closely with the co-founder to define the product roadmap, conduct experimental research, and align general AI capabilities with financial market use-cases. Also contributing to the research incubation goals of our parent fintech company.
- **AI Platform Developer (Contract), Confidential Media Tech Company.** (MAY 2025 – JUL 2025)
 - Led the core development (80%) of an AI-driven platform for film production and financing, enabling producers, brands, and financiers to connect via an integrated digital-native workflow.
 - Built end-to-end backend services, API infrastructure, and intelligent automation for production pipelines.
 - Contributed to early product design and cloud-based deployment architecture.
- **Applied Scientist (Intern), G42 (M42 HealthCare), UAE.** (FEB 2023 – APR 2023)
 - Developed an end-to-end pipeline for efficiently downloading and preprocessing the [NHANES](#) dataset, ensuring streamlined data preparation.
 - Integrated AutoML capabilities to automate analysis, training, and evaluation of statistical models while allowing flexibility for custom configurations.
 - Engineered a feature which generates a comprehensive [TRIPOD](#) report post-evaluation, providing structured insights for model assessment and transparency.
- **Data Analyst, State Government of Osun, Nigeria.** (JAN 2018 – DEC 2018)
 - Carried out exploratory data analysis (EDA) on survey data gotten from the State's workers.
 - Used insights from the analysis helped in the Government's decision-making processes, improving workers' satisfaction and increasing the half year internal revenue by 27.7%.
- **IT Support Engineer, Government of Ekiti State, Nigeria.** (NOV 2016 – NOV 2017)
 - Installed, configured, and maintained softwares, computer systems and workstations for the State's Ministry of Finance.
- **Hardware Engineer (Intern), Lautech Teaching Hospital, Nigeria.** (JUN 2015 – NOV 2015)
 - I managed and monitored all installed systems and infrastructure. I also installed, configured, tested and maintained operating systems, application software and system management tools, and ensured the highest levels of systems and infrastructure availability.
- **Network Engineer (Intern), OAU-INTECU, Nigeria.** (JUN 2014 – NOV 2014)
 - I was tasked with monitoring data generated from the network usage across the university to check for anomalies, downtimes, and bandwidth usage to ensure the optimal use of the network. I also generated weekly reports which showed anomalies like bandwidth wastage and downtimes and presented them to the Network Administrators alongside possible solutions.

SELECTED PUBLICATIONS (* denotes equal contribution)

- **Aremu, T.,** Hussein, N., Nwadike, M., Poppi, S., Zhang, J., Nandakumar, K., ... & Lukas, N. (2025). Mitigating Watermark Stealing Attacks in Generative Models via Multi-Key Watermarking. arXiv preprint arXiv:2507.07871.
- Diaa, A., **Aremu, T.,** & Lukas, N. (2025). Optimizing adaptive attacks against content watermarks for language models. *The Forty-second International Conference on Machine Learning (ICML)[Spotlight]*.
- **Aremu, T.,** Akinwehinmi, O., Nwagu, C., Ahmed, S., Orji, R., Amo, P., & Saddik, A. (2025). On the reliability of Large Language Models to misinformed and demographically informed prompts. *AI Magazine (AAAI)*, 46(1), e12208.
- Nwadike, M., Iklassov, Z., **Aremu, T.,** Hiraoka, T., Bojkovic, V., Heinzerling, B., Alqaubeh, H., Takač, M., & Inui, K. (2025). RECALL: Library-Like Behavior In Language Models is Enhanced by Self-Referencing Causal Cycles. *The 63rd Annual Meeting of the Association for Computational Linguistics (ACL)*.

- Fares, S.*, Ziu, K.*, **Aremu, T.***, Durasov, N., Takač, M., Fua, P., Nandakumar, K., & Laptev, I. (2024). Mirrorcheck: Efficient adversarial defense for vision-language models. *arXiv preprint arXiv:2406.09250*.
- Tastan, N., Fares, S., **Aremu, T.**, Horvath, S., & Nandakumar, K. (2024). Redefining contributions: shapley-driven federated learning. *In Proceedings of the Thirty-Third International Joint Conference on Artificial Intelligence (pp. 5009-5017)*.
- **Aremu, T.**, & Nandakumar, K. (2023). Polykervnets: Activation-free neural networks for efficient private inference. *In 2023 IEEE Conference on Secure and Trustworthy Machine Learning (SaTML) (pp. 593-604)*. IEEE.

PATENTS

- Kang, W.Y., **Aremu, T.**, Balah, Y., El Saddik, A., Nadeem, M. and Navarrete, I.G., Mohamed bin Zayed University of Artificial Intelligence, (2025). System and method for scanning faces and discovering scholarly information. U.S. Patent Application 18/672,708.
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OTHER EXPERIENCE

- **Projects**
 - **Accent Speech Recognition, MBZUAI.** (AUG 2021 – DEC 2021)
 - o Implemented VQ-VAE to disentangle style and content features in the latent space of ASR systems.
 - o Accuracy on accented speech improved by 3.8%.
 - **Racial Bias Mitigation in Self-Supervised Face Recognition Architecture, MBZUAI.** (JAN 2021 – MAY 2021)
 - o Implemented various preprocessing and model-centric methods such as downsampling, GANs, weighted sampling, etc, to reduce racial biases in detecting faces.
 - o Improved face recognition of people of color in SIM-CLR by up to 20%.
 - **Gender Bias Mitigation in Word Embeddings, MBZUAI.** (JAN 2021 – MAY 2021)
 - o Investigated several data-centric methods proposed to mitigate gender bias in GloVe.
 - o Concluded that most of these methods often lead to new forms of biases in NLP systems they are used in.
 - **Teaching**
 - Teaching Assistant, Introduction to AI (AI1010), **MBZUAI.** (AUG 2025 – DEC 2025)
 - Teaching Assistant, Mathematical Foundations of AI (MTH701), **MBZUAI.** (AUG 2024 – DEC 2024)
 - Teaching Assistant, Object Oriented Programming (OOP), **University of Ibadan.** (JAN 2019 – MAY 2019)
 - **Certifications**
 - Available [here](#).
 - **Talks/Presentations**
 - "Mitigating Watermark Stealing Attacks in Generative Models via Multi-Key Watermarking", presented at **MBZUAI Research Showcase, UAE.** (OCT 2025)
 - "Literature Review and Research Methodologies", presented at **LyngualLabs, Nigeria.** (MAY 2025)
 - "Optimizing Adaptive Attacks against Content Watermarks for Language Models", presented at **ICLR-WMARK, Singapore.** (APR 2025)
 - "SSIVD-Net: A Novel Salient Super Image Classification and Detection Technique", presented at **SAI, UK.** (JUN 2024)
 - "PolyKervNets: Activation-free Neural Networks For Efficient Private Inference", presented at **IEEE SaTML, USA.** (FEB 2023)
 - "Ethical Perspectives of AI", presented at the **Department of Material Sciences, University of Denver, USA.** (JUL 2022)
 - **Reviewing**
 - **Conferences:** [NeurIPS](#) | [ICLR](#) | [ICML](#) | [AISTATS](#) | [AAAI](#) | [DLJ](#)
 - **Workshops:** [HRAIM@NeurIPS](#) | [SafeGenAI@NeurIPS](#) | [WMark@ICLR](#)
 - **Journals:** [IEEE Access](#) | [OSJ](#) | [CHBAH](#) | [AI Magazine](#) | [IEEE TPAMI](#)
 - **Leadership/Volunteering**
 - Resident Life Assistant, "**MBZUAI Undergraduate Student Life**". (AUG 2025 – MAY 2026)
 - Volunteering Member, "**EVOLVE-MBZUAI**". (AUG 2024 – PRESENT)
 - Co-founding Member, "**Spruce Up Your Space**". (AUG 2024 – PRESENT)
 - Associate Editor, **ML Department Research Blog.** (JAN 2024 – PRESENT)
 - Student Editor, **MBZUAI Research Blog.** (JAN 2024 – PRESENT)
 - Mentor, **AI Research/Graduate School Mentorship for Africans.** (JAN 2021 – PRESENT)
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HONORS & AWARDS

- MBZUAI Conference Travel Scholarship. (APR 2025, JUL 2025)
 - MBZUAI PhD Fully Funded Fellowship. (AUG 2023)
 - MBZUAI MSc Fully Funded Fellowship. (JAN 2021)
 - UAE Golden Visa for Talented Persons/Specialists in Science. (OCT 2022)
 - MBZUAI Award of Appreciation for Iconic Representation and Student Hospitality. (AUG 2022)
 - ProjectSet Innovation Challenge for Entrepreneurship (ICE-22). (MAY 2022)
 - Top 100, DeepLearning.AI Data-Centric AI Competition. (AUG 2021)
 - NYSC-FRSC Award for the Most Creative Corp Member. (OCT 2017)
 - 2015 AUE-NACOSS Award for the Best Programmer. (JUL 2015)
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REFERENCES

- Available on request