

OMOYEMI OMOTAYO EMMANUEL (MSc, MBCS)

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PROFESSIONAL SUMMARY

AI researcher and innovator specializing in **multilingual and multimodal systems** for accessibility, health, and education. My work spans **speech and gesture recognition, large language models, and responsible AI design**, with outputs including **peer-reviewed publications (ACM, WJARR)**, international conference presentations (ICSIE, Aarhus), and **deployed prototypes** for real-time translation and clinical decision support.

In addition to research, I am a **technical author with freeCodeCamp**, where I make complex AI and computing concepts accessible to global audiences. Example: [Create a Real-Time Gesture-to-Text Translator](#).

My career is driven by a vision to design **human-centered, ethical, and scalable AI systems** that break communication barriers and align with Cohere's mission to scale intelligence responsibly.

EDUCATION

University of Derby, United Kingdom

July 2024

Masters of Science (M.Sc.) in Information Technology

Specialization: [Machine Learning, Natural Language Processing, Artificial Intelligence and Software Engineering]

TECHNICAL SKILLS AND COMPETENCES

- **Deep Learning & LLMs:** PyTorch, TensorFlow, Transformer models (BERT, GPT), fine-tuning, instruction tuning.
- **Multimodal AI:** MediaPipe, OpenCV, vision-language integration.
- **Evaluation & Interpretability:** SHAP, LIME, error analysis pipelines.
- **Web & Prototyping:** Flask, REST APIs, Streamlit, real-time gesture tracking.
- **Languages:** Python (proficient), JavaScript, C#.
- **Research Tools:** SAS (statistical analysis), reproducibility frameworks, responsible AI principles.

RESEARCH EXPERIENCE

Automatic Translation from Makaton to English (MSc Thesis, 2024)

- Built a multimodal translation system integrating **gesture recognition + sequence-to-sequence NLP**.
- Achieved real-time gesture capture with MediaPipe, PyTorch models, and Flask-based APIs.
- Designed an interactive web UI for live translation with user feedback.
- Published in ACM Digital Library and presented at **ICSIE 2024**.
- Github link: <https://github.com/tayo4christ/makaton-gesture-recognition>

Apraxia of Speech Detection and Robust AAC Systems (Ongoing, 2025)

- Developed multimodal LLM prototype combining **speech + gesture input** for clinical decision support.
- Addressed **fairness, resilience to input variability, and interpretability** in clinical settings.
- Live prototype deployed on **Streamlit** for real-time testing:
<https://auraapraxiaaaca8qejouwasagequrhetbfw.streamlit.app/>

- **Presented findings as a Position paper at the Aarhus 2025 Decennial Conference (Workshop Session)**, focusing on inclusive and responsible AI for clinical use.
- Github link: <https://github.com/tayo4christ/aura-apraxia-aac/tree/master>

Collaborative Learning and AI (2025)

- Investigating how LLMs can scaffold **pair programming and collaborative learning**.
- Focus on **human-centered AI design** to support equitable participation.

MEDIA RECOGNITION

Punch Nigeria (Most Widely Read Newspaper) – [2025]

- I was featured for developing an AI solution to address speech challenges.
- Highlighted as an innovator in assistive technology for speech-impaired individuals.

Link to Article: <https://punchng.com/nigerian-creates-ai-to-address-speech-challenges/>

The Guardian Nigeria (Print Media) – [2024]

- I was featured for pioneering predictive AI tools aimed at inclusive communication for individuals with speech and language impairments.
- Recognized for advancing the future of inclusive tech through research in gesture and speech-based AI systems.

Link to Article: <https://guardian.ng/news/predictive-communication-for-all-the-future-of-inclusive-tech-is-here/>

CONFERENCE PRESENTATION

• **International Conference on Software Information Engineering (ICSIE)**

Title: Designing a Tool that Automatically Translates Makaton Signs from Live Video Streams into Written English
Date: 2-4 December 2024, **Derby, United Kingdom** *Role:* Presenter

Aarhus 2025 Decennial Conference

Title: Gesture as Code: Rethinking Programming Through Multimodal Interaction with AI for Apraxia Therapy
Date: 19 August 2025, Aarhus, Denmark
Type: Position Paper presented in Workshop Session

PUBLISHED PAPERS

ACM Digital Library – In **Proceedings of the 2024 8th International Conference on Software and Information Engineering (ICSIE)**.

Title: Designing a Tool that Automatically Translates Makaton Signs from Live Video Streams into Written English. Co-authored: S.Karkalas, Omotayo, O. (2024) Link: <https://dl.acm.org/doi/10.1145/3708635.3708647>

Omotayo, O. **Machine Learning for Predictive AAC: Improving Speech and Gesture Based Communication Systems**. World Journal of Advanced Research and Reviews (WJARR).

Omotayo, O. **Ethical Implications of AI-Driven AAC Systems: Ensuring Inclusivity and Equity in Assistive Technologies.** World Journal of Advanced Research and Reviews (WJARR).

Omoyemi, O., "Automated Error Detection and Correction in Augmentative and Alternative Communication (AAC) Systems Using NLP," World Journal of Advanced Research and Reviews (WJARR).

Omotayo, O. and Adefisayo, O (2024). *Personalized Learning through AI in Educational Platforms.* Published on **ResearchGate**. <https://www.researchgate.net/publication/390582802>

Citation Metrics (as of May 2025):

- **Google Scholar:** 15+ citations https://scholar.google.com/citations?user=cFw_hV0AAAAJ&hl=en&oi=ao
- **ResearchGate:** RG Score: 23.2 | 530+ reads | 20+ citations | https://www.researchgate.net/profile/Omotayo-Omoyemi?ev=hdr_xprf

PEER REVIEW SERVICE

- Journal of Medical Internet Research (JMIR)
- Journal of Community Engagement and Higher Education (JCEHE)
- Research and Scientific Innovation Society (RSIS)

LEADERSHIP & VOLUNTEERING EXPERIENCE

Team Lead and Convener, (Techworld Academy) Lagos, Nigeria

August 2019 - Present

- Led the planning and execution of a 3-day IT training program for over 100 youths and teenagers, focusing on skills development in website development, 3D Animations, Python programming, Graphic design, and video editing.
- Coordinated a team of instructors and volunteers, ensuring the smooth delivery of training modules and hands-on sessions.
- Developed the curriculum and training materials, tailoring content to meet the diverse needs of participants and fostering an inclusive learning environment.
- Successfully enhanced participants' technical skills, with post-training surveys showing a 90% increase in confidence among attendees in applying IT skills.
- Authored training materials and walkthrough guides for coding workshops.
- Led regular feedback sessions with trainees and collaborators to evaluate learning effectiveness and iterate on content delivery.
- Developed and delivered training materials and walkthrough guides on Python, data analysis, and machine learning models, demonstrating ability to **embed knowledge and upskill teams**

CERTIFICATIONS

Google IT Support Professional Certificate (Google)

March 2023

Eight-month IT support Certification program, developed by Google, that covers troubleshooting, customer service, networking, operating systems, system administration, and security, and includes hands-on labs

Data Science Nigeria (DSN)

Skills Acquired: Machine Learning, Python Programming, Data Analysis, AI Model Development, Problem-Solving with AI Techniques, and Applied AI Concepts.

PROFESSIONAL-MEMBERSHIPS

Fellow of the (FISIE) Institute of STEM Innovation and Excellence

Awarded in 2025 in recognition of advancements in STEM innovation and professional leadership.

Ref: ISIE/FAE/058/2025

• ***Fellow of the Royal Society of Arts (FRSA)***

Elected as a Fellow in 2025 for innovation in inclusive technology and significant contributions to educational and assistive AI systems.

Membership No.: 8412515

• ***Professional Member, British Computer Society (MBCS)***

Admitted as a Professional Member in 2024 in recognition of technical expertise, ethical practice, and leadership in computer science education and accessibility-focused innovation. Membership No.: 995142234

• ***Senior Level Member, Institute of Electrical and Electronics Engineers (IEEE)***

Joined in 2025 to collaborate on advancing technology for humanity and contribute to IEEE's global community of technical innovators.

Membership No.: 99324990 / United Kingdom and Ireland Section

REFERENCES

Available upon request