

OMOYEMI OMOTAYO EMMANUEL (MSc, MBCS)

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PROFESSIONAL SUMMARY

Innovative AI researcher and computing educator with over 10 years of experience in software development, machine learning, and human-computer interaction (HCI). Proven expertise in computer vision, real-time systems, and accessibility-driven AI (e.g., speech technology featured in Punch Nigeria). Published researcher (ACM Digital Library) with hands-on proficiency in Python, PyTorch, and OpenCV. My research also extends into **speech recognition**, and the development of **secure, accessible AI applications** for inclusive communication and learning.

EDUCATION

The University of Derby, United Kingdom
Masters of Science (M.Sc.) in Information Technology

July 2024

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

TECHNICAL SKILLS AND COMPETENCES

- Computer Vision:** PyTorch, OpenCV, real-time object/hand tracking, gesture recognition
- Deep Learning:** Transformer models (BERT, GPT), CNN architectures, TensorFlow
- AI for Accessibility:** Speech recognition, assistive human-computer interaction (HCI)
- Languages:** Python (proficient), C#, JavaScript
- Backend/Frameworks:** Flask, RESTful APIs, modular design
- Testing & Reliability:** Unit testing, risk-based testing for mission-critical systems
- Data Modeling:** SAS, statistical analysis, performance benchmarking
- Secure Deployment:** Authentication, encryption, cloud/edge hosting
- Research Tools:** MATLAB, Jupyter, Git
- Educational Tech:** Moodle, blended learning environments (highlighting HCI experience)

RESEARCH EXPERIENCE

Independent Research (MSc Thesis)

University of Derby, 2024

Project Title: Automatic Translation from Makaton to English

Technologies: MediaPipe (Gesture Recognition), Python, PyTorch, Flask

- Implemented real-time hand tracking and pose estimation using MediaPipe to capture Makaton signs from live video input.
- Processed 2D/3D landmark data to classify gestures with a custom deep learning model, optimized for low-latency performance.
- Developed an intuitive web-based UI with a live video feed, translation display, and interactive feedback panel.
- Designed a responsive front-end (HTML/CSS/JavaScript) that visualizes detected gestures and translated text in real time.
- Incorporated user-friendly controls for calibration, sensitivity adjustment, and error reporting.
- Connected MediaPipe's gesture recognition to a Flask backend via REST API for seamless sign-to-text processing.
- Enabled multi-user support with session management for educational and accessibility applications.

- Led a team of 5 in a research project focused on **Cloud Computing** and **cryptography**, specifically analyzing **Microsoft Azure** and **Amazon Web Services (AWS)**.
- Conducted comprehensive **literature reviews** on cloud architectures, security protocols, and encryption techniques used in cloud environments.
- Oversaw the collection and analysis of data related to **cloud performance**, **cost efficiency**, and **scalability** across different cloud service models (IaaS, PaaS, SaaS).
- Performed data analysis using **Statistical Analysis System (SAS)** to evaluate cloud adoption trends, security vulnerabilities, and compliance with **data protection regulations**.
- Developed insights on **cloud security** best practices, focusing on **data encryption**, **access control**, and **disaster recovery strategies**, with practical recommendations for improving cloud security frameworks.
- Conducted in-depth analysis of **cloud security protocols**, including encryption, access control, and vulnerability management on AWS and Azure.
- Delivered technical recommendations aligned with best practices for protecting sensitive data and ensuring compliance with data protection standards.
- Gained foundational exposure to **cybersecurity systems**, **risk assessment**, and systems architecture resilience—highly relevant to the development of secure AI applications.

Web Development

- Designed and developed a comprehensive **School Management Portal** using **WordPress** and **PHP**, integrated with **MySQL** for database management.
- Implemented features such as **student information systems**, **attendance tracking**, and **grade management**, ensuring a user-friendly interface for teachers, students, and administrators.
- Conducted on-site visits to 3 local schools in Derby to interview IT administrators, gaining insights into their web infrastructure, security requirements, and preferred hosting platforms.
- Integrated secure **user authentication**, role-based access control, and **data encryption** to ensure the confidentiality and integrity of student and staff data.
- Ensured the portal was scalable and optimized for **mobile devices**, enabling users to access the system on various platforms.

Ongoing Research – Apraxia of Speech Detection (2025)

In collaboration with Dr. Rachel K. Johnson (2025)

- Researching adversarial noise effects on AI detection of apraxia of speech using multimodal data.
- Involves analysis of LLM response deviation under perturbed audio inputs—a direct exploration of robustness in foundation models.

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/>

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

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).

Omoiyemi, 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 | 19+ citations | https://www.researchgate.net/profile/Omotayo-Omoiyemi?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)

TEACHING EXPERIENCE

Computer Science Teacher

Derby Cathedral School, United Kingdom

September 2023 – To date

- Deliver Computer Science instruction to IGCSE and A-Level students, focusing on core computing concepts, programming, and problem-solving.
- Design and implement engaging lesson plans that align with curriculum standards and learner needs.
- Incorporate hands-on activities and real-world examples to promote active learning and deepen student understanding.
- Leverage diverse teaching strategies to support learners with varying abilities and backgrounds.
- Provide ongoing academic and pastoral support to foster student development in a safe and inclusive learning environment.

Computer Science Teacher

Landau Forte College, Derby, United Kingdom

March 2023 – July 2023

- Responsible for the teaching of ICT Computer Science for key stages 3 and 4, including tracking and Assessing students' work
- Support to develop and refine the ICT curriculum to ensure that the curriculum area provides a range of teaching which complements the school's strategic objectives is relevant to the needs of Students and examining and awarding bodies.

- Manage classes effectively, using approaches that are appropriate to students' needs in order to inspire, motivate, and challenge students
- Provide full learning experience in Robotics and coding to Key stages 3 and 4

Head ICT Department

Karis School, Lagos Nigeria

September 2019 – February 2023

- Drew and implemented an ICT grade improvement plan for students in Key Stage 3 and Key Stage 4
- Reviewed and tailored government-approved curriculum to meet the needs of budding learners
- Provide full learning experience and support for students beyond set classes, working with pupils experiencing barriers to learning across the academic range and facilitated Python programming classes for Key Stage 3 students.
- Deployed online learning mediums such as Class Dojo and Zoom for school during the COVID-19 lockdown
- Chaired examination questions vetting and reviewing examination questions before printing
- Led digital transformation strategy and online learning deployment.

Computer Science Teacher

Bellina College Akoka, Lagos Nigeria

January 2019 – September 2019

- Increased learners' participation in ICT class using technology and science game resources
- Prepared students' using the ICT curriculum for the West African Examination Council Senior Secondary Certificate Examinations (WASSCE).
- Taught WASSCE-level ICT and mentored winning students for national competitions.
- Provided pastoral care and support to children, and a secure environment for learning
- Observed, assessed, and recorded students' progress and shared knowledge with both practitioners and colleagues as required.

INDUSTRIAL EXPERIENCE

IT Support Specialist

Synergy Insight Limited, Victoria Island, Lagos, Nigeria

June 2018 – December 2018

- Installed, configured, and maintained computer hardware, software, and network systems to ensure optimal performance and functionality.
- Conducted system upgrades and maintained existing IT infrastructure to enhance system efficiency and reliability.
- Diagnosed and resolved hardware and software issues, delivering timely and effective technical support to end-users.
- Administered user accounts, permissions, and access rights to uphold security protocols and support operational needs.
- Participated in network and system upgrades, improving system scalability and data integration across departments.
- Developed SOPs and provided IT training for staff to support knowledge transfer and operational continuity.
- Maintained enterprise IT systems, networks, and end-user support.

LEADERSHIP & VOLUNTEERING EXPERIENCE

Team Lead and Convener, (Techworld Academy) Information Technology Training, 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**

Volunteer IT Coding Instructor, Schools Computer Club Initiative (SCCI), Lagos, Nigeria

August 2013 – Present

- Delivered coding and programming instruction to students across 20 primary and secondary schools in Lagos State, emphasizing foundational skills in Html/CSS, JavaScript, Python and Scratch programming.
- Designed and implemented interactive coding workshops, which increased student engagement and improved their problem-solving abilities.
- Collaborated with other educators to integrate coding into the broader school curriculum, contributing to a 50% rise in students pursuing further IT-related education.
- Mentored students in coding competitions, with several participants achieving top placements at regional levels.
- Currently conducting online coding classes via Zoom and Microsoft Teams for secondary school and A-level students, ensuring continued education and skill development despite geographical barriers.

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

Artificial Intelligence & Python Programming Masterclass

December 2019

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

British Computer Society

- Professional Member (MBCS)
- Date Joined: [January 2024]
- Membership Number: [995142234]

Institute of Electrical and Electronics Engineers

- Associate Member (IEEE)
- Date Joined: [2025]
- Membership Number: [99324990]
- United Kingdom and Ireland Section

Royal Society of Art

- Fellow Member (FRSA)
- Date Joined: [2025]
- Membership Number: [8412515]

REFERENCES

Available upon request