Oluwadara (Dara) Adedeji

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PROFILE

Final-year PhD candidate whose research areas are human-centered and applied AI in mental health and finance, with experience across AI research, engineering and teaching. In my side quests, I build LLM-powered, RAG and agentic systems, exploring everything from inference optimisation to clinician-in-the-loop decision support. I'm also interested in human–AI interaction, trust, oversight, and the ethics and governance of these systems.

SKILLS AND CERTIFICATIONS

- **Programming:** Python (advanced, model training, evaluation pipelines, agent development), Bash, SQL, Java, Scala, C/C++
- **LLMs and Generative AI:** prompt engineering, retrieval-augmented generation (RAG), LLM-as-judge evaluation, agentic systems, tool calling, Model Context Protocol (MCP)
- **Machine Learning and Deep Learning:** PyTorch, TensorFlow, scikit-learn, Hugging Face Transformers, time series, model evaluation
- **Evaluation and Research Methods:** experimental design, dataset construction and benchmarking, data annotation design, statistical analysis, participatory research methods, ethics and data governance
- **MLOps and LLMOps:** NumPy, Pandas, Apache Spark, Databricks, FastAPI, Flask, Docker, Terraform, MLflow, Weights & Biases, CI/CD, Grafana, pre-commit hooks, ONNX runtime
- **Systems and Tools:** Git, GitHub, GitLab, VS Code, Conda, uv, Linux command line, cloud platforms (AWS, Azure, GCP), PostgreSQL, DynamoDB, Claude Code, Codex
- **Project Management and Communication:** Trello, Agile/Scrum, Hills, Epics and User Stories, stakeholder and participant engagement, multi-disciplinary collaboration, technical writing, blogging (love it!)
- **Certifications:** AWS Certified Machine Learning – Specialty; Microsoft Azure Fundamentals; DataTalksClub bootcamps in LLM Engineering, MLOps, ML Engineering and Data Engineering; Anthropic courses in Claude Code, MCP

EDUCATION

PhD, Machine Learning · University College Dublin · **Sep 2023 – Aug 2027** (expected)

- **Thesis:** Passive Assessment of Mental Health Using Financial Data via Machine Learning. Supervisor: Associate Professor Mark Matthews.

MSc, Engineering Artificial Intelligence · Carnegie Mellon University · **2021 – 2023**

- **CGPA** 3.95/4.0. Mastercard Foundation Scholar. **Selected Coursework:** Deep Learning, Applied Machine Learning, Data Analytics, AI System Design, Natural Language Processing, Computer Vision, Robotics.

BSc, Electrical and Electronic Engineering · University of Ibadan, Nigeria · **2014 – 2019**

- **First Class Honours** (6.2/7.0), **top 3% of 7,000+** graduating students in the university.

EXPERIENCE

PhD Researcher · University College Dublin, ML-Labs · **Sep 2023 – present**

- Designed and implemented data pipelines for collecting and processing qualitative interview, financial and mental health data, ensuring data integrity, privacy, and compliance with ethical and DPIA requirements.
- Implemented NLP methods (speech to text) using WhisperX and GPU to translate and transcribe interview data and for speaker diarization, reducing processing time by 90% and enabling downstream analysis.
- Formulating and developing time-series machine learning models (including anomaly detection and change point detection) to identify abnormal financial behavioural patterns from financial data indicative of symptomatic mood states in people with bipolar disorder.

Data Science Intern · HealthRhythms, Palo Alto, USA (remote) · **May – Jul 2024**

- Harnessed Databricks for mental health inferencing and actively contributed insights in weekly team meetings.
- Supported patient onboarding for a mental health product, working through incomplete and messy data.

Research Associate · CyLab Africa / Upanzi Network, Carnegie Mellon University Africa · **Jan – Aug 2023**

- Built ML models to identify cattle from muzzle images, while working in an Agile/Scrum environment.
- Developed a signature verification model using Siamese CNNs for identity authentication.
- Engineered features and ML models to detect smishing in SMS messages for fraud prevention.

Teaching Assistant · University College Dublin · **Sep 2023 – present**

- Demonstrator for 14 modules in the School of Computer Science, spanning AI (including time series), multi-agent systems, data science, software engineering, cloud computing and information visualisation **(Python, Java, Scala, AWS, Git/GitHub, Tableau).**
- **ML System Deployment (COMP41860):** supervised three student teams building LLM applications (a course enquiry assistant, a healthcare referral decision support system and a social therapy app) with RAG pipelines,

vector databases and open- and closed-source LLMs. Mentored them through Agile cycles on model selection, system design, deployment and data storytelling.
- **Earlier:** Graduate Teaching Assistant for a Data Analytics course, **Carnegie Mellon University (2022).**

SELECTED PROJECTS

LLM Inference Optimization · *1st Place, Huawei Tech Arena Ireland **2025***
- Built an end-to-end LLM inference system balancing latency and accuracy, using GPU serving, batching, speculative decoding, quantisation and vLLM.
- Improved accuracy through prompt design, chain-of-thought and deterministic decoding, sweeping Qwen3, Llama and Gemma models to find the best trade-off.

Financial Analysis AI · *Hobby Project* · GitHub
- Built an LLM application for analysing Nigerian company annual reports, combining keyword, semantic and hybrid retrieval with an agent that uses RAG, table lookup, calculation and web search tools. Evaluated the system on a curated benchmark.
- Applied LLMOps practices with PostgreSQL and pgvector, evaluation and testing, CI/CD, Docker, and Grafana monitoring of performance, cost and latency.

Tus-Aite: Agentic Waiting List Prioritisation · *TechIreland National AI Challenge **2026*** · GitHub
- Built a multi-tool agent that scores clinical urgency (NEWS2) and ward capacity, re-ranks outpatient referrals and checks national compliance rules, storing ranked lists and evidence in a knowledge graph.
- Generated plain-language, evidence-cited explanations for each ranking, keeping the clinician in control to accept or override.

Mental Health MLOps: Stress Prediction from Multimodal Inputs · *Hobby Project* · GitHub
- Implemented the full MLOps lifecycle with Terraform, MLflow, Mage orchestration, and Flask, AWS Lambda and Kinesis deployment.
- Added monitoring with Evidently and Grafana, plus unit and integration tests, pre-commit hooks and automated checks.

AWARDS AND SELECTED PUBLICATIONS

- **Best Paper Award**, European Alliance for Innovation (EAI) PervasiveHealth Conference **2026.**
- **1st Place**, Huawei Ireland Tech Arena – European University Challenge **2025 (**LLM inference optimisation), out of **19 finalist** teams and **300+ students** in Ireland**.**
- **Finalist**, UCC AI Quest **(2023)** on vegetation patch segmentation.
- **Highest-Ranking Team in Rwanda**, Umoja-Hack machine learning competition **(2022)**
- **Full Scholarships:** Research Ireland Centre for Research Training in Machine Learning **(2023–27);** Mastercard Foundation Scholarship at Carnegie Mellon Africa **(2021–23).**
- **12 Awards and Scholarships During My Undergraduate Degree in Nigeria:** including the Dean's Award for First Class Students **(5x),** the MTN Foundation Scholarship **(top 3.8% of over 13,000 applicants),** the Etisalat National Merit Award **(2x)**, NNPC/Total National Merit Award, Agbami Medical and Engineering Scholarship, and winner of the Etisalat Innovation Moment Challenge **(2016).**

Publications

1. Adedeji, O., et al. **(2026).** Money and Mental Health: A Scoping Review of Financial Variables, Data Sources, and Analytical Methods. ***Frontiers in Public Health*****,** 14:1812845.
2. Adedeji, O., et al. **(2026).** Manifestations of Mood in Money: Unravelling Financial Behaviours for Passive Assessment in Bipolar Disorder. ***EAI PervasiveHealth 2026*** (in press, **Best Paper).**
3. Adedeji, O., et al. **(2026).** A Computational Ethical Framework for Financial Digital Phenotyping for Mental Health. ***Computational Intelligence Methods for Bioinformatics and Biostatistics* (*CIBB 2026)*** (in press).
4. Adedeji, O., et al. **(2025).** Money and Mental Health: Spending as a Mental Health Indicator. *Future Money Workshop, **ACM CHI 2025.***

Also: other research published on satellite image augmentation and 6G smart infrastructure (Sensors, 2021).
Full publication list on website: darasi.me.

LEADERSHIP EXPERIENCE AND COMMUNITY DEVELOPMENT SERVICE

- **Support and Self-Care Group Facilitator**, Aware Ireland **(2026 – present):** facilitating peer support groups for people experiencing depression, bipolar disorder and related mood disorders.
- **Team Lead, Data Science Club**, CMU-Africa **(2022 – 2023):** led the highest-ranking team in Rwanda at Umoja-Hack, Africa's inter-university machine learning competition, and took part in the 2022 UN Big Data Hackathon.
- **Head of Programs**, Mentally Aware Nigeria Initiative **(2018 – 2021):** led mental health outreach programmes, including walks, conversation cafes and workshops, reaching **300+** community members.
- **Public Relations Officer**, Society of Electrical and Electronic Engineering Students, University of Ibadan **(2016 – 2017)**: kept a department of about **250** students informed and revived the society's blog.
- **Memberships:** Artificial Intelligence Association of Ireland; Nigerian Society of Engineers (graduate member).