Yusuf Abdulle

London, England, United Kingdom
yabdulle@icloud.com | LinkedIn | GitHub

Education

King's College London, PhD - Biostatistics and Health Informatics **-** ***London, UK*** **2024 – 2028**

- Thesis: Exploiting the electronic health records and multimodal data to model patterns of onset and progression in Motor Neuron disease (MND/ALS)

University College London, MSc Clinical Neuroscience – Merit **-** ***London, UK*** **2020 – 2021**

University of Brighton, BSc (Hons) Biomedical Science – First Class Honours **-** ***Brighton, UK*** **2017 – 2020**

Research Experience

Research Assistant | ***University College London*** **Sep 2023 – Sep 2024**

London, UK

- Conducted machine learning research on vision-language models and large language models for healthcare applications, including systematic benchmarking of model performance; disseminated findings in peer-reviewed venues such as ACL 2024 and IJCAI 2024.
- Investigated AI-induced health disparities across four demographic dimensions (race, sex, age, socioeconomic status) and developed quantitative frameworks and metrics for measuring and characterizing these disparities.
- Provided academic mentorship and supervision for undergraduate researchers and research interns, including project design, methodological guidance, and support for dissemination of results.

Translational Data Scientist | ***BioCorteX*** **Oct 2022 – Apr 2023**

London, UK

- Contributed to the design of first-principles computational simulations to systematically characterize potential clinical trial failure modes related to the gut microbiome, elucidating previously unrecognized interaction networks between microbial communities and host physiological processes.
- Engineered and productionised an automated benchmarking pipeline for DNA sequence classification against curated reference databases, resulting in quantifiable improvements in internal model prediction accuracy and performance metrics.

Research Assistant | ***University College London*** **Sep 2021 – Oct 2022**

London, UK

- Designed and implemented Graph Neural Network architectures using PyTorch Geometric and Deep Graph Library to classify MRI-derived structural connectivity (adjacency) matrices for automated detection of Frontotemporal Dementia and ALS.
- Developed a scalable AWS-based data processing pipeline leveraging EC2 and S3 for high-throughput processing of 3T MRI datasets, substantially reducing end-to-end computation latency.
- Collaborated with external industry stakeholders (Haleon) to formulate and validate stochastic models (Monte Carlo simulation and Markov chains) for quantitative optimisation of patient flow across complex healthcare pathways.

Publications

Under Review

- Dong, H., Vasu, R., **Abdulle, Y.**, et al. " A Large Language Model based Framework for Dementia Related Hypothesis Generation" *(*2026)
- **Abdulle, Y.**^, Wu, J.^, Budhdeo, S., et al. "Characteristics and Early Diagnosis of Motor Neuron Disease (MND) in 67 million individuals in England: a comparative study on phenotyping models derived by AI, Knowledge Graphs and the MND Association" - *medRxiv* (2025).
- Budhdeo, S., Zhang, J., **Abdulle, Y.**, et al. "Scoping review of knowledge graph applications in biomedical and healthcare sciences" - *Wellcome Open Research* (2025).

Journal Articles

- Spears, S. D. J., **Abdulle, Y. F.**, Lester, T., et al. "Understanding neck collar preferences and user experiences in motor neuron disease: A survey-based study" - *Disability and Health Journal* (2024).
- Spears, S. D. J., **Abdulle, Y. F.**, Korovilas, D., et al. "Neck collar assessment for people living with motor neuron disease: Are current outcome measures suitable?" - *Interactive Journal of Medical Research* (2023).

Conference Papers

- Kim, Y., **Abdulle, Y.**, Wu, H. "BioHopR: A Benchmark for Multi-Hop, Multi-Answer Reasoning in Biomedical Domain" - *Findings of ACL*, Vienna, Austria (2025).

- Kim, Y., Wu, J., **Abdulle, Y.**, Wu, H. "MedExQA: Medical Question Answering Benchmark with Multiple Explanations" - *BioNLP Workshop, ACL* (2024).
- Kim, Y., Wu, J., **Abdulle, Y.**, Gao, Y., Wu, H. "Human-in-the-Loop Chest X-Ray Diagnosis: Enhancing Large Multimodal Models with Eye Fixation Inputs" - *TAI4H, Springer LNCS* (2024).
- Kim, Y., Wu, J., **Abdulle, Y.**, Gao, Y., Wu, H. "Enhancing human-computer interaction in chest x-ray analysis using vision and language model with eye gaze patterns" - *MICCAI* (2024).
- Groves, E., Wang, M., **Abdulle, Y.**, et al. "Benchmarking and Analyzing In-context Learning, Fine-tuning and Supervised Learning for Biomedical Knowledge Curation" - *VLDB Workshops* (2023).

Conference Abstracts

- Budhdeo, S., **Abdulle, Y.**, Sharma, N., Cosco, T. "Meta-analysis of cerebrospinal fluid immune markers in frontotemporal dementia patients compared to healthy controls" - *European Journal of Neurology* (2023).
- Budhdeo, S., **Abdulle, Y.**, Kaczmarczyk, I., Sharma, N. "Using a PET atlas to probe neurotransmitter-disease associations in Mild Cognitive Impairment and Alzheimer's disease" - *European Journal of Neurology* (2023).

Presentations

Conference Presentations & Posters

- **International Symposium for ALS/MND 2025** (San Diego): "Characteristics and early diagnosis of MND in 67 million individuals in England: A comparative study on phenotyping models derived by AI, Knowledge Graph and the MND Association Red Flags tool."
- **International Symposium for ALS/MND 2025** (San Diego): "Characterising Clinical Patterns and Progression in Motor Neuron Disease Using Unstructured EHR Data: A Retrospective Cohort Study with NLP and Unsupervised Clustering."
- **ACL 2025** (Vienna): "BioHopR: A Benchmark for Multi-Hop, Multi-Answer Reasoning in Biomedical Domain."
- **HealTAC 2025** (Glasgow): "Can GPT-4 be a good red flagger for MND?"
- **HealTAC 2025** (Glasgow): "A Large Language Model based Framework for Dementia Related Hypothesis Generation."
- **ENCALS 2025** (Turin): "Early ALS Phenotyping and COVID-19 Survival Analysis Using EHR Data."
- **MICCAI 2024** (Marrakesh): "Enhancing human-computer interaction in chest x-ray analysis using vision and language model with eye gaze patterns."
- **MICCAI 2024** (Marrakesh): Organiser, Foundation Models For Medical Imaging Workshop (FOMMIA).
- **TAI4H 2024** (Jeju Island): "Human-in-the-Loop Chest X-Ray Diagnosis: Enhancing Large Multimodal Models with Eye Fixation Inputs."
- **BioNLP Workshop 2024** (Bangkok): "MedExQA: Medical Question Answering Benchmark with Multiple Explanations."
- **OHBM 2023** (Vancouver): "Using a PET neurotransmitter atlas to probe associations in Alzheimer's disease and MCI."
- **EAN Congress 2023** (Budapest): "Using a PET atlas to probe neurotransmitter-disease associations in Mild Cognitive Impairment and Alzheimer's disease."

Teaching and Tutorials

- **Graduate Teaching Assistant** - Department of Biostatistics and Health Informatics, King's College London.
  - 7PAVITHI - Introduction to Health Informatics, 2024–2025, 2025–2026
  - 7PAVMALE - Machine Learning for Health and Bioinformatics, 2024–2025, 2025–2026
- **Tutorial on Multimodal Large Language Models for Healthcare** - University of Glasgow, November 24th 2025.

Technical Skills

- **Programming:** Python, R, Bash.
- **Libraries:** PyTorch, TensorFlow, Scikit-Learn, NumPy, Pandas, Matplotlib, Seaborn, PyTorch Geometric, NetworkX.
- **Technologies:** Git, PostgreSQL, AWS (EC2, S3), GCP.
- **Languages:** English, Somali.

Honors & Awards

- EPSRC Centre for Doctoral Training in Data-Driven Health (DRIVE-Health) Fellowship (2024).
- Santander Summer Studentship (2019).