Mike Nsubuga

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Education

2023 – 2027 **University of Bristol**, UK **Doctor of Philosophy**
Research: Using machine learning to trace gastrointestinal disease outbreaks and antimicrobial resistance. Supported by **MRC Ph.D. Fellowship.**

2020 – 2022 **Makerere University**, Uganda **Master of Science in Bioinformatics (First Class Honors)**
Dissertation Title: A machine learning approach to predict *E. coli* antibacterial resistance using whole-genome sequencing data in Uganda. Supported by **NIH-Fogarty M.Sc. Fellowship.**

2016 – 2019 **Makerere University**, Uganda **Bachelor in Information Technology (First Class Honors)**

Work Experience

2023 – PRESENT **Jean Golding Institute of Data Science,** University of Bristol, U.K
Part-time Data Scientist

2023 – 2023 **Division of Human Genetics,** University of Cape Town, S.A
Research Fellow

2020 – 2023 **Infectious Diseases Institute (IDI), African Center of Excellence in Bioinformatics (ACE),** Makerere University
Research Fellow & Bioinformatics Trainee

2020 – 2022 **Supporting African Math Initiatives (SAMI),** U.K
Software Developer (Volunteer to SAMI Math Charity)

2020 – 2020 **Statistics for Sustainable Development (STATS4SD),** Reading, UK
Programming Intern

2018 – 2019 **Department of Computer Science,** Makerere University
C & Java programming tutorial assistant

Publications

Peer-Reviewed Publications

Nsubuga, M., Galiwango, R., Jjingo, D., & Mboowa, G. (2024). Generalizability of machine learning in predicting *E. coli*: A multi-country case study in Africa. *BMC Genomics*, *25*(1), 287. https://doi.org/10.1186/s12864-024-10214-4

Please, H., Narang, K., Bolton, W., **Nsubuga, M.,** Luweesi, H., Richards, N. B., Dalton, J., Tendo, C., Khan, M., Jjingo, D., Bhutta, M. F., Petrakaki, D., & Dhanda, J. (2024). Virtual reality technology for surgical learning: Qualitative outcomes of the first virtual reality training course for emergency and essential surgery delivered by a UK–Uganda partnership. *BMJ Open Quality*, *13*(1). https://doi.org/10.1136/bmjoq-2023-002477

Buyego, P., Katwesigye, E., Kebirungi, G., **Nsubuga, M.,** Nakyejwe, S., Cruz, P., McCarthy, M. C., Hurt, D., Kambugu, A., Arinaitwe, J. W., Ssekabira, U., & Jjingo, D. (2022). Feasibility of virtual reality based training for optimising COVID-19 case handling in Uganda. *BMC Medical Education*, *22*(1), 274. https://doi.org/10.1186/s12909-022-03294-x

Other Scholarly Works

Nsubuga, M. (2023). *A machine learning approach to predict E. coli antibacterial resistance using whole-genome sequencing data* [Thesis, Makerere University]. http://makir.mak.ac.ug/handle/10570/13162

Poster & Conferences

Nsubuga M, Yi Ling Tam, Malaka de Silva, James Hall, Lauren Cowley, Claire Jenkins, Kate Baker, Sion Bayliss. (2024). Mapping the distribution of AMR in *Shigella sonnei*. NIHR HPRU in Gastrointestinal Infections, Birmingham

Professional recognition and key awards, grants

2024 - **Travel Award:** Awarded a travel grant by the Medical Research Council (MRC) to attend the 2024 Computational Genomics Summer Institute at the University of California, Los Angeles (UCLA).

2023 - **Ph.D. Studentship:** Awarded a Studentship from the Medical Research Council (MRC) to undertake a 4-year Ph.D. at University of Bristol.

2022 - **Travel Award:** Awarded a travel scholarship from the Open Science Grid (OSG) funded by the National Science Foundation (NSF) to attend OSG school at the University of Wisconsin-Madison.

2021 - **M.Sc. Fellowship:** Awarded a Fellowship under EANBIT project from the National Institutes of Health (NIH) Fogarty to undertake a 2-year Master's degree program in Bioinformatics at Makerere.

2020 - **Dissertation Award**: Graduated top of undergraduate class, 2019, with a CGPA 4.71/5.0

Invited Talks and Presentations

23/08/2023 - Empowering low middle income countries against antimicrobial resistance with AI and Whole-Genome Sequencing, AMR Force, University of Bristol

23/07/2022 - Ugandan AI COVID-19 chatbot for automated and personalized symptom assessment in Luganda & English. University of Wisconsin, U.S – Open Science Grid (OSG) Summer School, US

04/03/2022 - End to end AI and data systems for targeted surveillance and management of COVID-19 and future pandemics affecting Uganda (COAST), Uganda

08/04/2022 - Optimizing the SickleInAfrica Registry Data Collection Workflow Using Site-specific Clinical Processes, Sickle in Africa consortium meeting, South Africa

26/04/2022 - Virtual Reality in Medicine and Surgery Conference (VRiMs), Uganda

01/05/2022 - Teaching Assistant - H3ABioNet and Wellcome Connecting Science NGS course 2022, Virtual

01/05/2021 - Teaching Assistant - H3ABioNet and Wellcome Connecting Science NGS course 2021, Virtual

Ongoing and completed research projects

2021 – 2025 **Data Scientist**

Open Data Science Platform (ODSP) – Funded by National Institutes of Health (NIH), Data Science Initiative Africa (DSI)

2021 – 2023 **Junior Data Scientist**

End to end AI and data systems for targeted surveillance and management of COVID-19 and future pandemics affecting Uganda (COAST). Sub-theme: Artificial Intelligence based COVID-19 chatbot for Uganda – Funded by IDRC and Makerere University

2021 – 2022 **Lead Software Developer**

An Epilepsy Self-Management and Resilience Technical application for Adolescents and their community – Funded by Epilepsy Foundation in collaboration with Duke University

2021 – 2025 **Lead Developer**

Sickle Pan- African Research Consortium (SPARCO) Uganda: Strengthening Capacity for Clinical Care, Research and Training in Sickle Cell Disease– Funded by NIH/NHLBI and UCT

2020 – 2021 **Lead Software Developer**

Virtual Reality Technology for Optimizing Safety and Competence in Management of Patients with COVID-19 disease – Makerere University Research & Innovation Fund and NIH/NIAID/Office of Cyber Infrastructure and Computational Biology (OCICB)

2020 – 2021 **Lead Software Developer**

Virtual Reality Technology for Surgical Learning – Makerere University and Global Anesthesia, Surgery and Obstetrics Collaborative (GASOC)

2020 – 2020 **Software Developer**

SAMI Math Club App (A collection of mathematical problems and puzzles to support mathematical thinking, problem solving and love of mathematics, used in 5 African countries during Maths Camp) – Funded by SAMI

2020 – 2021 **Lead Software Developer**

Card Deck – A web and mobile application together with a printed card deck featuring unique activities, engaging participants in games, puzzles or fun mathematical facts – Funded by IDEMS International & SAMI

2020 – 2021 **Junior Developer**

Parenting for Lifelong Health (PLH) – An open source and evidence based parenting app to support parents and caregivers during the COVID-19 pandemic and beyond – Funded by UNICEF, Newton Fund, UK Research & Innovation, University of Oxford, the LEGO foundation, End Violence Against Children, The Human Safety Net and AK Foundation