

Mike Nsubuga

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EDUCATION

2023 – 2027

University of Bristol, UK Ph.D.

Research: Using machine learning to trace gastrointestinal disease outbreaks and antimicrobial resistance. Supported by **MRC Ph.D. Fellowship**.

Supervisors: Sion Bayliss, Lauren Cowley, Andrew Dowsey, and Kristen Reyher

2020 – 2022

Makerere University, Uganda M.Sc. 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**.

Supervisors: Daudi Jjingo and Gerald Mboowa

2016 – 2019

Makerere University, Uganda B.Sc. in Information Technology (First Class Honors)

RESEARCH EXPERIENCE

2023 – PRESENT

Jean Golding Institute of Data Science, University of Bristol, UK

Research Data Scientist

2023 – 2023

Division of Human Genetics, University of Cape Town, South Africa

Research Fellow, Sickle in Africa Consortium

2022 – 2023

Department of Entomology, Uganda Virus Research Institute, Uganda

Research Fellow, Open Data Science Platform - eLwazi

2020 – 2023

Infectious Diseases Institute, African Center of Excellence in Bioinformatics, Makerere University, Uganda

Research Fellow & Bioinformatics Trainee

AWARDS, HONORS AND FELLOWSHIPS

2024 – **Travel Award:**

Awarded a travel grant by the Medical Research Council (MRC) to attend the 2024 Computational Genomics Summer Institute at University of California, Los Angeles

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 by Open Science Grid funded by 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

PUBLICATIONS

Peer-Reviewed Publications

Nsubuga, M., Galiwango, R., Jjingo, D., & Mboowa, G. (2024). Generalizability of machine learning in predicting antimicrobial resistance in *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/bmjopen-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 (Posters)

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 [Poster]. <https://bit.ly/3VsEKX4>

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>

INVITED TALKS

- 20/03/2024 – Utilising Machine Learning for tracing gastrointestinal outbreaks and antimicrobial resistance, MRC GW4 DTP, UK
- 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-Madison, Open Science Grid 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

TEACHING EXPERIENCE

- 2021 – 2022 **Next Generation Sequencing course**, H3ABioNet and Wellcome Connecting Science
Bioinformatics teaching assistant
- 2018 – 2019 **Department of Computer Science**, Makerere University
C & Java programming tutorial assistant

WORK EXPERIENCE

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

MENTORSHIP

Rebecca Nakitandwe, MSc in Health Informatics, Makerere University, 2023 – 2025

Henry Mutegeki, MSc in Computer Science (Google DeepMind Scholar), Makerere University 2022 – 2024

Sandra Babirye, MSc in Bioinformatics (MakDarta Fellow), Makerere University, 2022 – 2024

SERVICE & OUTREACH

Work done under Supporting African Maths Initiatives (SAMI), a UK-based charity dedicated to improving access to and quality of mathematics education in Africa.

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

OTHER PREVIOUS PROJECTS

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