

Mike Nsubuga

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Website: <https://mikensubuga.github.io/>

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 EANBIT 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

Ask-JGI 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/bmjog-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>

Submitted (In review)

Nsubuga, M.*, Mutegeki, H.*, Jjingo, D., Munube D., Namazzi, R., Opoka, R., Hume, H., Morrice, J., Jonas, M., Nembaware, V., Wonkam, A., Kiguli, S. (2024). The Ugandan Sickle Pan-African Research Consortium Registry: Design, Development and Lessons

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

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| 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 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

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| 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) – <https://mathsclub.samicharity.co.uk/>

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 – <https://cards.virtualmathscamp.com/>

2020 – 2021

Junior Developer

UNICEF 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

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