Mike Nsubuga

Email: mike.nsubuga@bristol.ac.uk

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. Studentship**
	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

Mboowa, G., Kakooza, F., Egesa, M., Tukwasibwe, S., Kanyerezi, S., Sserwadda, I., Kidenya, B. R., Kabahita, J. M., Namaganda, M. M., **Nsubuga, M.,** Nabisubi, P., Ayitewala, A., Kebirungi, G., Nakafu, E., & Akwii, N. P. (2024). The rise of pathogen genomics in Africa (13:468). F1000Research. https://doi.org/10.12688/f1000research.147114.1

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

Accepted

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. BMC Medical Informatics and Decision Making

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]. http://hprugi.nihr.ac.uk/media/f1uc4ayb/mike-nsubuga.pdf

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 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

2024 –	**School of Engineering Mathematics & Technology,** University of Bristol
	Teaching assistant – EMATM0047, Data Science Project
	Teaching assistant – EMATM0067, Introduction to AI & Text Analytics
	Teaching assistant – EMATM0048, Software Development: Programming & Algorithms
2021 – 2022	H3ABioNet and Wellcome Connecting Science
	Teaching assistant – Next Generation Sequencing short course
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

Florence Nakabiri, MSc in Bioinformatics, Makerere University, 2022 – 2024

SERVICE, OUTREACH AND LEADERSHIP

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 – An open source and evidence-based parenting app to support parents and caregivers during the COVID-19 pandemic and beyond

Work done under PICSA, a method developed by researchers at University of Reading, UK that combines climate data with African farmers' insights to enhance informed agricultural decision-making through participatory methods.

| 2022 – 2023 | **Technical Lead** |
| | Conducted field digital training and workshops of approaches for farmers in Malawi and Zambia on implementation of the PICSA approach - https://picsa.app/ |

OTHER PREVIOUS PROJECTS

2023 – 2023	**Web Developer** AI for Health Equity: Transforming Pandemic Preparedness in Uganda (HEAL) using Large Language Models– Funded by Bill & Melinda Gates Foundation - https://heal.aceuganda.org/
2021 – 2023	**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 https://github.com/aceuganda/epilepsy-smart-app
2021 – 2022	**Junior Data Scientist** AI-based COVID-19 chatbot for Uganda – Funded by International Development Research Centre (IDRC)
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 in collaboration with UCT