[Long CV]

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

PUBLICATIONS

Published

2025

Lujumba, I., Adam, Y., Ziaei Jam, H., Isewon, I., Monnakgotla, N., Li, Y., Onyido, B., Fredrick, K., Adegoke, F., Emmanuel, J., Adeyemi, J., Ibitoye, O., Owusu-Ansah, S., Akanle, M. B., Joseph, H., **Nsubuga, M**., Galiwango, R., Okitwi, M., Magdalene, N., … Adebiyi, E. (2025). A practical guide to identifying associations between tandem repeats and complex human traits using consensus genotypes from multiple tools. Nature Protocols, 1–19. https://doi.org/10.1038/s41596-025-01231-y

Gregorova, M., Santopaolo, M., Garner, L. C., Hayati, R. F., Diamond, D., Ramamurthy, N., Tran, V. T., Nguyen, N. M., Heesom, K. J., Nguyen, V. L., Jones, E., **Nsubuga, M**., Luscombe, C., Vo, H. T. M., Ho, C. Q., Nguyen, C. T. X., Dong, T. T. H., Huynh, D. T. L., Cao, T. T., … Rivino, L. (2025). Early NK-cell and T-cell dysfunction marks progression to severe dengue in patients with obesity and healthy weight. Nature Communications, 16(1), 5569. https://doi.org/10.1038/s41467-025-60941-9

Please, H., **Nsubuga, M.,** Kintu, T. M., Bakesiga, A., Stewart, K., & Navarro, S. (2025). 462 Powering Precision Medical Education Through AI-Generated Country-Specific Global Surgery Podcasts: A Low-or-Middle-Income-Country Case Study. *British Journal of Surgery*, https://doi.org/10.1093/bjs/znaf128.052

Kintu, T., **Nsubuga, M.,** Bakesiga, A., Please, H., Stewart, K., & Navarro, S. M. (2025). 369 Precision education and generative AI in surgery utilization study: A framework for global surgical education. *Journal of Clinical and Translational Science*, 9(s1), 114–114. https://doi.org/10.1017/cts.2024.994

Bolton, W., Nathani, P., Please, H., Philomen, J., Kahar, N. A., Aruparayil, N., Bandyopadhyay, S., Boodhoo, V., Magoha, **M., Nsubuga,** M., Mishra, A., Jani, P., Burke, J., Mathew, R., & Culmer, P. (2025). Accelerating innovation by integrating artificial intelligence into a global surgery hackathon. *International Health Trends and Perspectives, 5(1), Article 1. https://doi.org/10.32920/ihtp.v5i1.2332*

Nsubuga, M., Kintu, T. M., Please, H., Stewart, K., & Navarro, S. M. (2025). Enhancing trauma triage in low-resource settings using machine learning: A performance comparison with the Kampala Trauma Score. *BMC Emergency Medicine*, 25(1), 14. https://doi.org/10.1186/s12873-025-01175-2

Nabisubi, P., Kanyerezi, S., Kebirungi, G., Sserwadda, I., **Nsubuga, M.,** Kisitu, G., Nahirya, P. N., Mulindwa, B., Akabwai, G. P., Nantongo, S., Kekitiinwa, A., Kigozi, E., Luutu, N. M., Katabazi, F. A., Kalema, L., Katabalwa, A., Jjingo, D., & Mboowa, G. (2025). Beyond the fever: Shotgun metagenomic sequencing of stool unveils pathogenic players in HIV-infected children with non-malarial febrile illness*. BMC Infectious Diseases*, 25(1), 96. https://doi.org/10.1186/s12879-025-10517-1

2024

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

Babirye, S. R., **Nsubuga, M**., Mboowa, G., Batte, C., Galiwango, R., & Kateete, D. P. (2024). Machine learning-based prediction of antibiotic resistance in Mycobacterium tuberculosis clinical isolates from Uganda. BMC Infectious Diseases, 24(1), 1391. https://doi.org/10.1186/s12879-024-10282-7

Nsubuga, M., Mutegeki, H., Jjingo, D. *et al.* The Ugandan sickle Pan-African research consortium registry: design, development, and lessons. *BMC Med Inform Decis Mak* **24**, 212 (2024). https://doi.org/10.1186/s12911-024-02618-9

Gregorova, M., Santopaolo, M., Garner, L. C., Diamond, D., Ramamurthy, N., Vi, T. T., Nguyen, N. M., Vuong, N. L., Jones, E., **Nsubuga, M.,** Luscombe, C., My, H. V. T., Chanh, H. Q., Chau, N. T. X., Tam, D. T. H., Le, D. H. T., Tam, C. T., Klenerman, P., Yacoub, S., & Rivino, L. (2024). Early NK-cell and T-cell dysfunction marks progression to severe dengue in patients with obesity and healthy weight (p. 2024.09.06.611687). bioRxiv. https://doi.org/10.1101/2024.09.06.611687

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

2022

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

Galiwango et al., (2025) Ten Simple Rules for Building and Maintaining Sustainable High Performance Computing Infrastructure for Research in Resource Limited Settings. *PLOS Computational Biology*

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 Conference, Birmingham, UK [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

Nsubuga M, Kristen Reyher, Andrew Dowsey, Lauren Cowley, Marie A. Chattaway, Sion Bayliss. (2025). Characterising regionally associated AMR lineages from a decade of genomic surveillance in *Salmonella* enterica serovar Enteritidis. I3S Congress(International Symposium on Salmonella and Salmonellosis), Saint-Malo, France [Poster].

INVITED TALKS

Upcoming Keynotes

17 - 21/04/2026 – Is AI the key to acceleration of Antimicrobial Stewardship in LMICs? ESCMID Global, Germany

12/11/2025 – What can we expect from AI to better survey and control AMR particularly in LMICs, AMR, a one health challenge course by Fondation Mérieux, France

Completed

30/05/2025 – Utilizing Machine Learning for tracing gastrointestinal outbreaks, UKHSA PhD Student Day, Harwell Science & Innovation Campus, UK

13/04/2024 – Combatting AMR using AI in low resource settings, AMR, a one health challenge course by Fondation Mérieux, France

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

POSTER PRESENTATIONS

2025 –	Characterising regionally associated AMR lineages from a decade of genomic surveillance in *Salmonella* enterica serovar Enteritidis Genome Science, Newcastle, UK
2025 –	Characterising regionally associated AMR lineages from a decade of genomic surveillance in *Salmonella* enterica serovar Enteritidis I3S Congress (International Symposium on Salmonella and Salmonellosis), Saint-Malo, France
2024 –	Mapping the distribution of AMR in *Shigella sonnei*, NIHR HPRU in Gastrointestinal Infections Conference, Birmingham, UK
2024 –	Mapping the distribution of AMR in *Shigella sonnei*, NIHR HPRU genomics and Enabling Data Conference, London, UK

TEACHING EXPERIENCE

2024 –	**School of Engineering Mathematics & Technology,** University of Bristol Teaching Assistant – EMATM0047, Data Science Project Teaching Assistant – SEMT20003, Methods of Artificial Intelligence Teaching Assistant – EMATM0048, Software Devt: 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

CO-SUPERVISION

Juliet Nabateesa, MSc in Bioinformatics, Makerere University, 2023 – 2026
Mansi Chandra, MSc in Bioinformatics, University of Bristol, 2024 – 2025

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 the DataFace, a UK schools-based programme designed by the Cheltenham Festivals that empowers students to explore real-world issues through the lens of data.

2024 – 2025 **DataFace Programme – Cheltenham Festivals**
Participated in the creation of training video content for the DataFace programme, a UK-wide schools initiative run by Cheltenham Festivals that empowers students to explore real-world issues through data. Featured in video segments designed to build their confidence in understanding, interpreting and communicating effectively through visual storytelling. Also served as a judge at the programme's final competition - https://www.cheltenhamfestivals.org/our-projects/dataface

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