

[Long CV]

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. 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

2026 – 2026

MRC Centre for Global Infectious Disease Analysis, Imperial College London

Research Assistant as part of **MRC Broadening Horizons PhD Placement**

Research: Development, benchmarking, and evaluation of machine learning methods for antimicrobial resistance prediction.

Supervisors: Leonid Chindelevitch

2023 – 2024

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

- Galiwango, R., Whalen, C. J., Kebirungi, G., Atwine, M. T., Kimera, R., Ssekagiri, A., Kimbowa, T. W., Lukyamuzi, E., **Nsubuga, M.**, Odsp, eLwazi, Ssentongo, L., Mutegeki, H., Fonner, J. M., Wuethwein, F., Berman, A., Okalebo, L. B., McCarthy, M., Kramer, V. S., Quinones, M., ... Jjingo, D. (2025). Ten simple rules for building and maintaining sustainable high-performance computing infrastructure for research in resource-limited settings. *PLOS Computational Biology*, 21(9), e1013481. <https://doi.org/10.1371/journal.pcbi.1013481>
- 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., ... Adebisi, 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>

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/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>

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