

Maryam Alka

57 Hope Street, B5 7EW

☎ +44 77778 716 888 ✉ mxa1541@student.bham.ac.uk

Professional Summary

An applied mathematician and data scientist with research interests spanning uncertainty quantification, mathematical and computational modelling, and data-driven approaches in healthcare. Currently a PhD researcher developing deterministic and stochastic models of tumour dynamics under hypoxia, integrating chemotherapy effects, microenvironmental influences, and experimental data. Appointed as a Data Analyst at the Biomedical Science Research and Training Centre (BioRTC), contributing to data analysis, modelling, and visualisation for biomedical and health-related research projects. Experienced in sensitivity analysis, Bayesian parameter estimation, model validation, and applied machine learning, including health AI and optimisation methods. Committed to developing robust, interpretable, and ethically grounded quantitative tools to support personalised medicine, evidence-based decision-making, and innovation in healthcare and digital technology.

Skills and Competencies

Technical Skills:

- Mathematical Modelling
- Optimisation (Convex Optimisation, Reinforcement Learning, Machine Learning)
- Radiation Treatment Planning (Fluence Optimisation, Dose Distribution Analysis)
- Programming: Python, MATLAB, LaTeX, SPSS, R
- Data Analysis & Visualisation: Microsoft Excel, Power BI, Tableau
- Research Tools: Statistical Analysis, Sensitivity Analysis, and Dynamical Analysis
- Project & Database Management: Access, Audit Command Language, SQL

Soft Skills:

- Critical Thinking and Problem Solving
- Effective Communication and Presentation
- Leadership and Mentoring
- Team Collaboration and Coordination
- Time Management and Attention to Detail
- Adaptability and Resilience

Education and Certification

University of Birmingham

African University of Science and Technology

African University of Science and Technology

National Open University

Bayero University, Kano

Ph.D. Applied Mathematics (In view)

Professional Diploma in Data Science, 2023

M.Sc. Pure and Applied Mathematics, 2020

M.Sc. Information Technology (First Class), 2016

B.Sc. Mathematics (2:1), 2007

Memberships: American Mathematical Society (AMS), European Women in Mathematics (EWM), Society for Mathematical Biology (SMB), Nigerian Statistical Association (NSA), Project Management Institute (PMI)

Awards

- LANDAHIL Grant, 2025
- LMS Early Career Researchers Travel Grant, 2025
- Cell and Developmental Biology Subgroup Travel Grant, Society for Mathematical Biology, 2025
- PTDF OSS PhD Scholarship, 2022/2023
- PhD African Development Scholarship, 2019/2020
- AUST MSc Scholarship, 2019/2020
- National Mathematical Centre Secondary School Award

Publications

- **Alka, M., et al.** *LLM-Assisted Auditing of Human Translations for Low-Resource Languages*. Manuscript under peer review, **ACL Rolling Review (ARR)**, January 2026 cycle. Focus: human-in-the-loop natural language processing, large language models, and evaluation systems for low-resource languages.
- **Hanga, K. M., Alka, M., & Garba, A. A.** *AI-Driven Adaptive Voxel Importance Prediction for Efficient Radiation Treatment Planning*. Peer-reviewed conference paper, **1st International Conference on Science and Health Research**, Azman University Kano, Nigeria, November 2025. Focus: application of artificial intelligence and data-driven optimisation in healthcare systems.
- **Alka, M., Okonko, O. J., Aminu, R. K., Matinja, Z. I., Musa, Z. A., & Umar, U. K.** (2025). *A Framework for Security Management in Internet of Medical Things (IoMT)*. *International Journal of Research Publication and Reviews*, 6(10), 4506–4513. Focus: security architecture, risk management, and data protection in connected healthcare systems.
- **Matinja, Z. I., Musa, Z. A., Aminu, R. K., Okonko, O. J., Alka, M., & Umar, U. K.** (2025). *Blockchain-Driven Security and Privacy Mechanisms in IoT: A Systematic Review*. Peer-reviewed journal article. Focus: blockchain-based security, privacy preservation, authentication, and secure digital infrastructure in IoT systems.
- **Umar, U. K., Shitu, F., Idris, I. Y., Aminu, R. K., Okonko, O. J., & Alka, M.** (2025). *PSO_KAN: A Hybrid Particle Swarm Optimisation and Kolmogorov–Arnold Network for Detection of DDoS Attacks in Wireless Sensor Networks*. *International Journal of Scientific Research and Technology*. Focus: application of optimisation and neural network models for cybersecurity and intrusion detection.
- **Alka, M.** (2022). *Self-adaptive forward–backward splitting algorithm for the sum of two monotone operators in Banach spaces*. *Fixed Point Theory and Algorithms for Sciences and Engineering*, 25 (2022). Available at: SpringerLink.
- **Alka, M.** (2021). *Effects of Large Class Size on the Method of Teaching Applied Mathematics*. Conference paper presented at the **5th National Conference on Emerging Innovations in Contemporary Technology: Implication for Sustainable Development**, Aminu Saleh College of Education, Azare, Nigeria, March 2021.
- **Alka, M.** (2020). *MSc Thesis: Modified Forward–Backward Splitting Method Without Cocoercivity for the Sum of Two Monotone Operators in Banach Spaces*. African University of Science and Technology. Available at: AUST Repository.

Conference Presentations

- **Paper Presentation:** Retreat for Women in Applied Mathematics, Vietnam — August 2025
- **Poster Presentation:** British Mathematical Colloquium / British Applied Mathematics Colloquium (BMC–BAMC), Exeter, UK — 2025
- **Poster Presentation:** Society for Mathematical Biology (SMB) Annual Meeting, Edmonton, Canada — 2025
- **Paper Presentation:** 1st International Conference on Science and Health Research, Azman University Kano, Nigeria — November 2025 *Title: AI-Driven Adaptive Voxel Importance Prediction for Efficient Radiation Treatment Planning*
- **Talk:** Local Applied Mathematics Seminar (LAMS), University of Birmingham, UK — 2024, 2025
- **Talk:** Southern Africa Mathematical Sciences Association (SAMSA) Conference — 2021

Work Experience

University of Birmingham

Postgraduate Teaching Assistant

Dec 2023–Present

- Provided individualised support to students, addressing academic needs and guiding assignments.
- Assisted in grading and invigilated exams, ensuring fairness and adherence to regulations.

Biomedical Science Research and Training Centre (BioRTC), Nigeria

Data Analyst

Jul 2025–Present

- Appointed as Data Analyst to support Prof. Mahmoud Bukar Maina’s Wellcome Trust Career Development Project at BioRTC, an independent research centre affiliated with Yobe State University.
- Support data collection, cleaning, processing, and analysis for experimental and clinical research datasets.
- Develop and apply mathematical and statistical models to analyse biomedical data.
- Produce data visualisations and dashboards using Python, R, Power BI, and Tableau to support research reporting and presentations.
- Assist with research database management, ensuring data accuracy, integrity, confidentiality, and ethical data handling.
- Collaborate with Imaging and Microscopy, Open Hardware, and ICT Units to integrate computational and analytical tools into research workflows.
- Provide quantitative input for grant proposals and research design, and support training of interns and junior staff in data management and visualisation techniques.

Lecturer (Mathematics and Computing)

QA Higher Education (QAHE), UK

Jan 2026 – Present

- Deliver lectures and seminars in quantitative methods, mathematics, and computing-related subjects to undergraduate and foundation-level students.
- Support the development of analytical, computational, and problem-solving skills aligned with data science and digital technology applications.
- Integrate real-world datasets and technology-driven examples into teaching to enhance applied learning.
- Provide academic mentoring and support to students, fostering digital literacy and critical thinking in a data-driven environment.

- Contribute to the development of future talent in the UK digital and technology workforce through teaching and skills development.

Tutor, Mathematics Support Centre

Jan–Mar 2024; Oct 2025–Present

- Delivered one-on-one and group tutoring sessions to strengthen students' mathematical understanding.
- Supported learners across various mathematical disciplines, from foundational to applied mathematics.
- Encouraged independent learning and confidence through guided problem-solving sessions.

CrackerJack Training College

Maths Lecturer

Oct 2024–Jan 2025

- Taught Functional Skills Levels 1 & 2, GCSE, and apprentices in mathematics.
- Delivered engaging lessons tailored to diverse learning needs and levels.
- Assessed student progress and provided constructive feedback to support academic growth.
- Developed lesson plans and instructional materials to enhance understanding.

African University of Science and Technology

Graduate Assistant

Mar–Aug 2023

- Taught intensive courses on General Mathematics and Vector Calculus to first-year students.
- Participated in research activities and contributed to grant acquisition.

Federal Inland Revenue Service (FIRS)

Manager PRS / Head of Monitoring and Evaluation Unit

Sept 2010–Present

- Facilitated corporate planning and budgeting processes, ensuring comprehensive evaluations.
- Produced quarterly reports on Key Performance Indicators (KPIs) and managed a reference library for research initiatives.

Standard Organization of Nigeria

Standard Officer, Planning Reporting and Information Management System

2009–2010

- Developed training materials for Systems Certification Training.
- Performed revenue analysis from various regions on registrations.
- Maintained system integrity through software installation and management.

Securities and Exchange Commission (SEC)

Information Technology Officer

2008–2009

- Coordinated the setup of training, seminars, and conferences.
- Conducted system repairs and maintenance, ensuring operational efficiency.
- Installed productivity software to support various teams.

Volunteer Experience

Standards Working Group – Volunteer Secretary, IST AI

2025–Present

- Manage inbox communications and correspondence for standards-focused committees.
- Coordinate meeting logistics, scheduling, and documentation.
- Support collaborative activities and maintain organised records to ensure effective standards development.

NHS Royal Voluntary

Nov 2023–Present

- Provided companionship to patients and supported vaccination sites.
- Assisted with over 2.6 million tasks, including Check In and Chat calls and Community Response tasks.

Islamic Help

Dec 2023

- Supported charity event setup and fundraising efforts for sustainable solutions.
- Directed attendees at the main event.

Training Attended

- UK Graduate School, Isaac Newton Institute (INI), Cambridge — September 2025
- Graduate Training Workshop for Mathematical Sciences, Newton Gateway to Mathematics — February 2025
- KE Hub Programme — January 2025
- Field's Institute Graduate Course in Mathematical Oncology — September 2024 to January 2025
- International Financial Reporting Standards
- Time Management
- Statistical Analysis Techniques in Revenue Forecasting
- Computer-Based Management Information System
- Microsoft Productivity Tools
- Project Management Essentials
- Database Management
- Strategic Thinking
- Research Methods