MUHAMMAD ALIYU

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EDUCATION

PhD., Entrepreneurship and Innovation, KU Leuven   **Sept 2025 – Present**
Specialization: Entrepreneurship Ecosystem, Mapping Startup Growth, Founder Mobility & Innovation Policy. Research on Connected entrepreneurial ecosystems and (unbounded) innovative entrepreneurship supervised by **Rene Belderbos**, and **Prof. Erik Stam**.

MSc., Information Technology, Carnegie Mellon University   **July 2023 – May 2025**
Specialization: IT-Entrepreneurship, Innovation Ecosystem, Deep Technology and Research Commercialization
Research on African Entrepreneurship Ecosystem, supervised by **Prof. Erik Stam**, **Prof. Joao Barros**, and **Prof. Jesse Thornburg**.

MBA, Leadership and Management, Valar Institute   **April 2023 – April 2024**
Master of Business Administration (MBA) in Leadership & Management
Coursework includes Finance & Accounting, Data Analytics, Operations Management. **Capstone Project**: Consulted for '**The Last Taboo**' on expansion strategy, focusing on financial modelling, market research and analysis, and operational scaling recommendations.

B.Tech., Computer Science, Federal University of Technology Minna   **July 2015 – September 2021**
Bachelor of Technology in Computer Science
Final Year Thesis: ***"Innovative Courseware Content Conversion for E-Learning Platforms"*** View Thesis

RESEARCH EXPERIENCE

Project Manager, Mobile Edge AI Lab, Carnegie Mellon University
Business Process Automation, Data Analytics and AI for CMU-Africa's Operations   **June 2025 – Present**
- Lead a team of four interns to drive digital transformation across CMU-Africa's operations, designing and implementing AI-powered solutions that streamline workflows and enhance institutional efficiency.
- Conduct cross-departmental stakeholder interviews to map existing processes and identify automation opportunities; prioritized a pipeline of over 60 projects, completing 4 high-impact initiatives within six weeks.
- Oversee opportunity scoping, task planning, and project execution, ensuring each initiative aligns with strategic goals and delivers measurable improvements in operational performance.

Research Associate, Mobile Edge AI Lab, Carnegie Mellon University
Generative AI in African Policy, Development and Entrepreneurship Unit   **June 2025 – Present**
- Conducting literature review and ecosystem analysis to evaluate why Silicon Valley's VC-backed startup model often fails in African contexts, particularly in Egypt, Nigeria, Kenya, and South Africa.
- Designing a research framework that leverages Generative AI and Retrieval-Augmented Generation (RAG) to extract insights from ecosystem case studies, and policy documents.
- Contributing to the development of an AI-enabled, service-oriented entrepreneurship model tailored to African realities, with potential applications in policy, consulting, and development strategy.

Graduate Research Assistant, Mobile Edge AI Lab, Carnegie Mellon University
Generative AI in African Policy, Development and Entrepreneurship Unit   **January 2025 – May 2025**
- Finalized a research paper draft on Retrieval-Augmented Generative AI (RAG) for analyzing entrepreneurial journeys in Africa, currently under review by academic supervisors. **View Pre-print**
- Explored LLM evaluation and optimization techniques to refine the proposed RAG methodology for contextual business insight extraction.
- Designed and deployed the "African AI & ICT Strategies Chatbot", a conversational RAG system enabling real-time policy engagement with national strategies from (*Kenya, Nigeria, and Rwanda*) supporting policymakers, researchers, and technologists in extracting and comparing actionable insights. **Demo**

Graduate Research Assistant – Internship, Mobile Edge AI Lab, Carnegie Mellon University
Generative AI in African Policy, Development and Entrepreneurship Unit   **June 2024 – August 2024**
- Explored methodological approaches for analyzing unstructured biographical data on African startup founders; defined inclusion/exclusion criteria to focus on 6 of 8 African-owned unicorns headquartered on the continent.
- Co-developed a Retrieval-Augmented Generation (RAG) pipeline using OpenAI API, covering data sourcing (from YouTube, Podcasts and Industry Reports), preprocessing, and embedding for founder journey analysis.
- Conducted ecosystem analysis on innovation-driven enterprises, identifying common patterns in business models, market entry, and scale strategies across top-tier African startups.

Research Fellow and Project Manager, Federal University of Technology Minna
Advanced Engineering Innovation Research Group (AEIRG)   **November 2019 – April 2022**
- Led a multidisciplinary 4-person team on an Intelligent Mining Surveillance System (IMSS) project, overseeing technical execution, logistics, progress and project reporting and delivering results presented at the 2020 AI4CE Symposium.
- Managed project operations for a Royal Academy of Engineering-funded AI for Clean Energy initiative (£155,465), coordinating cross-functional teams, stakeholder reporting, and development of over 200 communication/LMS course assets.
- Co-developed the award-winning STEM e-Literacy Platform for Kaduna State Government, supporting UX/UI design for an oil pipeline monitoring systems, organizing grant workshops, and contributing to high-impact digital infrastructure for education.

PUBLICATIONS

- **Aliyu, M.**, Malum, S., & Abdulkarim, M. (2025). *Empowering Student Entrepreneurs: An International Collaborative Network*. Case Studies in International Education, 6(1). Link
- Esibe, R. N., **Aliyu, M.**, Thornburg, J., Barros, J., & Stam, E. (2025). *Generative AI Methodology for Uncovering Entrepreneurial Journeys in Africa*. SSRN [pre-print]. https://ssrn.com/abstract=5184838
- Underdue Murph, Y., Sullelman, M., & **Aliyu, M.** (2024). *Graduate engineering students navigate cultural differences to design a mobile prenatal care app for rural Africa*. Case Studies in International Education, 5(1). Link
- **Aliyu, M.**, Issah, S., Abdulrrahman, A., Bakare, Z. O., & Aibinu, M. A. (2021). *Learning Management System – Review on the Adoption of Collaborative Tools for Learning*. West African Journal of Open and Flexible Learning, 9(2), 129–140. Link
- Aibinu, A. M., Yusuf, H. U., Olatunji, D. E., **Aliyu, M.**, Folorunso, T. A., & Bala, J. (2021). *Orientation and its Significance on Skill Development: A Case Study of AcadoPreneurship Industry Immersion Programme for Students (IIP4S)*. 5th International Conference on Future Networks & Distributed Systems (ICFNDS), 293–298. https://doi.org/10.1145/3508072.3508116

WORK EXPERIENCE

European Network for AI Safety (ENAIS)   Remote
AI Governance Facilitator   **April 2025 – Present**
- Delivered weekly (**12-weeks**) lectures on AI ethics, governance challenges, and policy tools, achieving a **95%** participant satisfaction rate based on post-course surveys and feedback forms.

Carnegie Mellon University   US/Rwanda
Graduate Teaching Assistant (TA)   **August 2024 – December 2024**
- Supported course delivery under **Prof. Jesse Thornburg** by teaching 3 sessions, grading assignments, preparing tutorial materials, and responding to student queries.
- Led supplementary tutorial sessions and office hours to support students with complex exercises and business model development.
- Co-hosted a guest session with a 3X founder and ex-Googler, Majd Alaily, to enhance student understanding of startup ideation and entrepreneurship in emerging markets.

Summit University Offa   Nigeria
Acting Head, Training & Capacity Development   **April 2022 – November 2022**
- Piloted and delivered **20+** tailored training programs for over **200** learners, boosting enrollment by **30%** and improving academic outcomes.
- Organized **20+** professional development workshops and a financial literacy seminar attended by **500+** students and **150** corps members.
- Co-led the "Reaching the Summit" virtual fundraising campaign, designing **80%** of outreach materials and securing **₦175.2M (~$421K)** to support scholarships, ICT infrastructure, and learning initiatives.

Vorbtech Innovative Solutions   Nigeria
Project Manager & Human Resources Manager   **January 2019 – July 2023**
- Oversaw end-to-end execution of 2+ cross-functional projects, aligning delivery with client goals and increasing team output by over 50% through agile methodologies.
- Led stakeholder communication across product development, tech integration, and final delivery phases, ensuring transparency and client satisfaction.
- Built and executed HR strategies covering recruitment, onboarding, and team development; introduced performance systems that boosted retention and engagement.

LEADERSHIP ACTIVITIES

Africa Innovators Society (AIS)
Founding President   **August 2023 – December 2024**
- Founded and scaled AIS into a dynamic innovation hub at CMU-Africa, bridging academic research with real-world commercialization pathways. Facilitated connections for over 20 student entrepreneurs with investors, coaches, and industry experts through workshops, hackathons, and access to significant events.
- Secured **$45,000** in sponsorships; supported **15+** student-led solutions, engaging over **300** students across CMU-Africa.
- Forged strategic partnerships with **CMU-Africa IIL, Jasiri, GIZ, FlutterFlow, and BPN Rwanda** to support early-stage innovation [Full impact report], [News Mention].

Nigerian University of Technology and Management (NUTM)
Project Lead   **October 2022 – July 2023**
- Led a team of **3** to successfully establish the NSP library, employing agile planning and stakeholder mapping for effective project execution from concept to launch.
- Secured **124 books (121 unique titles) and ₦245,000** in financial donations through targeted fundraising and outreach efforts for the NSP library.
- Effectively managed communications with all key stakeholders, including donors and NUTM leadership, to ensure project transparency, maintain alignment, and foster continued support.

PROJECTS

Ignite Research Academy   Nigeria/Remote
Founder & Program Lead   **January 2021 – December 2024**
- Founded a pan-African platform to build research capacity among **25M** students by 2032, with a focus on multidisciplinary STEM advancement.

- Conceptualized and led **10+** graduate school prep webinars, attracting **~200** participants across Africa and establishing a knowledge-sharing pipeline.
- Grew a vibrant online community of **280+** members, curating **3,000+** learning resources and sharing **200+** research and funding opportunities.

SabiMoni Financial Literacy Platform (FUTMinna & GIZ/CBN Partnership)   Nigeria
Instructional Designer & Content Contributor   **June 2019 – September 2021**
- Supported the design and delivery of educational content for a national financial literacy platform co-developed with FUTMinna, GIZ, and the Central Bank of Nigeria.
- Designed **75%** of infographics and built interactive storyboards using Figma, Articulate Rise360, and Storyline to simplify financial concepts for diverse audiences.
- Collaborated with GIZ and CBN stakeholders to ensure content accuracy, alignment with financial education goals, and successful platform deployment.

STEM e-Literacy Platform
Kaduna State Government (KDSG)/Federal University of Technology Minna   Nigeria
Design & Content Contributor   **January 2021 – December 2024**
- Key contributor to Kaduna State's STEM e-Literacy initiative for secondary education, focused on digital learning access.
- Produced 70% of project infographics, simplifying STEM concepts into engaging visuals for students.
- Enhanced comprehension and accessibility of STEM content for thousands of secondary school learners across the state.

HONORS, AWARDS & RECOGNITION

- 1st Place – NUTM NSP Hackathon (Introduction to Programming): Recognized for outstanding performance in a competitive, problem-solving hackathon at the Nigerian University of Technology and Management (2023)
- 3rd Place – Global Challenge (Education Category Winner): CMU-Africa Innovation Summit, Industry Innovation Lab – Led a solution addressing educational challenges using AI and innovation (Jan 2024)
- Silver Medal – DOME Research Exhibition: Artificial Intelligence for Clean Energy (AI4CE) – Recognized for research contributions and poster presentation (Aug 2021)
- SICT Award for Development: School of Information and Communication Technology, FUT Minna – Honored for contribution to applied technology initiatives and research (Dec 2021)
- Ambassador of the Month: Ingressive for Good – Acknowledged for exemplary leadership and community engagement (Feb 2021)
- Winner – Kaduna State Government Research Grant: Co-recipient for the STEM e-Literacy Platform project under AEIRG, targeting secondary education transformation in Nigeria (Feb 2021)

TECHNICAL & PROFESSIONAL SKILLS

Programming Languages: Python, C, C++, JavaScript

AI & Machine Learning: OpenAI API, Gemini API, Claude API, ChatGPT, ClaudeAI, LangChain, Retrieval-Augmented Generation (RAG), Pandas, NumPy, Scikit-Learn, Matplotlib, Seaborn, LM Studio, NotebookLM

Web Development: HTML, CSS

Developer Tools & Environments: Git, GitHub, Linux, Ubuntu, LaTeX, LM Studio, Ollama, Hugginface

Data & Analytics: Power BI, Tableau, Microsoft Excel, Airtable, Google Workspace

Design & UI/UX: Figma, Canva

Project & Product Tools: Notion, Asana, Trello, Jira, Calendly, Substack, Mailchimp

Databases: MySQL, MongoDB

Soft Skills: Adaptability, Integrity, Leadership, Communication & Presentation, Collaboration, Creativity, Stakeholder Management

Business & Strategy: Entrepreneurial Finance & Strategy, Data Analytics & Decision-Making, Consulting & Expansion Strategy

Languages: English (fluent, spoken and written), Nupe, Hausa and Yoruba

PROFESSIONAL AFFILIATIONS

- Nigeria Computer Society (NCS) – Member
- Advanced Engineering Innovation Research Group (AEIRG) – Research Member
- Nigeria Association of Computing Students (NACOS) – Former National Director, Welfare & Membership Services
- Association for Computing Machinery (ACM) – Member
- International Communication Association (ICA) – Member
- ForbesBLK – Member
- European Network for AI Safety (ENAIS) – AI Governance Facilitator
- Savvy Fellowship – Fellow
- Ingressive for Good (I4G) – Former Campus Ambassador

SELECTED CERTIFICATIONS

- AI Governance – BlueDot Impact, May 2025
- Intro to Transformative AI – BlueDot Impact (Dec 2024)
- Introduction to Management Consulting – Emory University / Coursera (Jan 2024)
- Product Strategy Micro-Certification (PSC™) – Product School (Aug 2023)
- AI for Product Management – Pendo.ai (Jul 2023)
- Digital Disruption – Universidad de Palermo (Oct 2023)
- Product Masterclass: How to Build Digital Products – (2022)
- Product Led Growth – Udemy (Jul 2022)
- The Community MBA – CMX Academy (Jun 2022)
- Managing Culture in Product Teams – Product School (Nov 2021)
- How to Build Digital Products – Product School (Apr 2020)
- Writing in Plain Language – LinkedIn Learning (Sept 2022)
- McKinsey Forward Program – McKinsey & Co. (2022)
- The Article Publishing Process – Elsevier Academy (Jun 2020)

Volunteer: Local Organizer – African Entrepreneurship Ecosystem Summit, Mentor – Africa to Silicon Valley, Ingressive for Good – Campus Ambassador (FUTMinna Circle).