

DAHIRU ALIYU ADAMU

Computer Information and Science Department, Universiti Teknologi PETRONAS,
32610 Seri Iskandar, Perak, Malaysia

Email: dahirualiyuadamu2@gmail.com | dahirualiyuadamu@gmail.com

Phone: +234 814 614 9773

Google Scholar Profile: [Dahiru Adamu Aliyu](#)

Personal Statement

Results-driven researcher and software engineer with over 8 years of experience building intelligent systems that integrate machine learning with robust software engineering practices. I recently completed an MSc (by research) in Information Systems at Universiti Teknologi PETRONAS, where my work focused on personalized asthma prediction using reinforcement learning. My expertise spans model validation, explainable AI, and predictive analytics, supported by full-stack development and deployment of real-time systems across healthcare and industrial domains. I am especially passionate about engineering AI solutions that are testable, maintainable, ethically aligned, and ready for production. My research and professional journey reflect a strong commitment to software quality, DevOps-driven delivery pipelines, and interdisciplinary innovation.

Education

MSc (By Research), Information Systems

Universiti Teknologi PETRONAS, Malaysia — July 2025

- **Thesis:** Personalized Asthma Exacerbation Prediction using Proximal Policy Optimization
- **Focus:** Reinforcement Learning, Clinical Decision Support, Personalized AI Systems
- **Key Result:** Published 3 journal articles and 2 conference papers during the study period
- Graduation on Time Award

B.Tech, Information Management Technology (First Class Honours)

Modibbo Adama University of Technology, Yola, Nigeria — 2021

- **Project title:** Design and Implementation of Tricycle Record Management System
- **Focus:** Information Systems Design, Software Engineering, Database Management
- **Achievement:** Best graduation student, Department of Information Technology and Faculty of Management Sciences.

Research Publications

A. Journal Publications

1. Aliyu, D. A. et al. (2025) A Reinforcement Learning Approach to Personalized Asthma Exacerbation Prediction Using Proximal Policy Optimization. *IEEE Access*, 13, 103373 – 103384, <https://doi.org/10.1109/ACCESS.2025.3579198>
2. Aliyu, D. A. et al. (2024). Optimization Techniques for Asthma Exacerbation Prediction Models: A Systematic Literature Review. *IEEE Access*, 12, 110862-110890. <https://doi.org/10.1109/ACCESS.2024.3440502>
3. Aliyu, D. A. et al. (2024). A Conceptual Framework for Personalized Early Prediction of Asthma Exacerbation Attacks Using Proximal Policy Optimization. *JOIV: International Journal on Informatics Visualization*, 8(4), 2462--2471. <https://doi.org/10.62527/joiv.8.4.2944>
4. Saidu, Y., Aliyu, D. A., et al. (2025). Convergence of Blockchain, IoT, and AI for Enhanced Traceability Systems: A Comprehensive Review. *IEEE Access*, 13, 16838-16865. <https://doi.org/10.1109/ACCESS.2025.3528035>
5. Yalli, J. S., Aliyu, D. A., et al. (2025). A Systematic Review for Evaluating IoT Security: A Focus on Authentication, Protocols and Enabling Technologies. *IEEE Internet of Things Journal*. <https://doi.org/10.1109/JIOT.2025.3545737>
6. Yahaya, M. S., Aliyu, D. A. et al. Exploration and Exploitation Mechanism in Pairwise Test Case Generation: A Systematic Literature Review. *IEEE Access*. <https://doi.org/10.1109/ACCESS.2025.3566163>
7. Saidu, Y., Aliyu, D. A., et al. (2025). Exploring Blockchain–IoT Convergence for Logistics Traceability: A Systematic Review and Future Outlook. *IEEE Access*, 13, 112390 – 112416, <https://doi.org/10.1109/ACCESS.2025.3583927>

B. Conference Proceedings

1. Aliyu, D. A. et al. (2024). Optimization Techniques in Reinforcement Learning for Healthcare: A Review. In *8th International Conference on Computing, Communication, Control and Automation (ICCUBEA)*, pp. 1-6. <https://doi.org/10.1109/ICCUBEA61740.2024.10774698>
2. Yalli, J. S., Aliyu, D. A., et al. (2024). Internet of Things (IoT): Trends, Challenges, Simulators, Emulators and Test-beds. In *8th International*

Conference on Computing, Communication, Control and Automation (ICCUBEA), pp. 1-6. <https://doi.org/10.1109/ICCUBEA61740.2024.10775126>

3. Saidu, Y., Aliyu, D. A., et al. (2024). Charting the Course: A Bibliometric Exploration of Blockchain Traceability Systems. In *International Conference on Technological Solutions for Smart Economy (SmartEco)*, p. 338.

C. Under Review

1. Kurah, I. M., Aliyu, D. A. et al. Deep Learning-Based Hyperparameter Optimization for Enhanced Segmentation of RGB Images in Oil Spill Detection within Port Environments. *Submitted to IEEE Access. Fourth Revision*

Research Interests

1. Reinforcement Learning in Healthcare and Industrial Optimization
2. Predictive Modeling for Complex Systems (Medical and Engineering Domains)
3. Machine Learning for Process Yield Estimation and Quality Control
4. Data-Efficient Deep Learning across Health and Energy Applications
5. AI Deployment in Real-Time and Sensor-Driven Environments
6. Statistical Modeling for Decision Support in Health and Industry

Technical Skills

1. **Programming:** Python (8+ yrs), PyTorch, PHP, C++, JavaScript
2. **Frameworks:** Django, Flask, React, Laravel, .NET Framework
3. **Tools & Platforms:** Git, GitHub Actions, Jupyter, Docker, AWS, Azure
4. **Software Engineering:** REST APIs, SDLC, Testing Pipelines, Model Validation
5. **Databases:** PostgreSQL, MySQL, SQLite, MS SQL Server, Firebase
6. **Concepts:** OOP, Predictive Modeling, Predictive Modelling, RL (PPO), Software maintainability

Research, Internship & Industry Experience

1. **Graduate Research Assistant (2023 – Present)**
Universiti Teknologi PETRONAS, Malaysia
 - a) Contributing to ongoing research in AI-driven systems
 - b) Supporting publication writing, dataset analysis, and experimental design for machine learning-based predictive models

- c) Teaching and assisting in academic instruction and supervision of undergraduate students in computer science and information systems courses
- d) Delivering lab sessions, grading assignments, and mentoring students in Python, AI, and software development
- e) Graded assignments, supervised practicals, and supported student mentorship.
- f) **Courses Taught:**
 - *Sep–Dec 2023:* **TEB1013** – Structured Programming, and **TEB1213** Knowledge Discovery
 - *Jan–Apr 2024:* **TEB3313** – Business Intelligence and **TEB3113** Data Analytics
 - *May–Aug 2024:* **TEB1113** – Algorithm and Data Structure and **TEB1043** Object-Oriented Programming
 - *Sep–Dec 2024:* **TFB2023** – Enterprise Architecture and **TFB2163** Digital Marketing
 - *Jan–Apr 2025:* **TEB1113** – Algorithm and Data Structure and **TEB3313** – Business Intelligence
 - *May–Aug 2024:* **TEB3133** – Data Visualization

2. Generative AI Internship

FlexiSAF Edusoft Ltd, Nigeria

- a) Intermediate Level: Jan 2024 – Apr 2024
- b) Advanced Level: May 2024 – Aug 2024
- c) Focused on applied generative models, prompt engineering, LLM workflows, and their real-world deployment

3. Software Developer

Intija Solutions

2022 – 2023

4. Software Developer

Nash Business Intelligence Solutions

2021 – 2022

5. Chief Creative Officer

Bitpoint Plc.

2019 – 2021

6. IT Intern

Cosmotech Learning Center

2019

Competitions & Academic Engagements

- **3-Minute Thesis (3MT) Competition, UTP – May 2025**
Presented core research on personalized asthma prediction using PPO in a condensed oral format for general audiences.
 - **Research Poster Competition**, in conjunction with the Annual Postgraduate Conference (APC 2025), UTP – 29 July to 1 August 2025
Showcased a visual research summary on reinforcement learning for early asthma prediction; interacted with evaluators and multidisciplinary researchers.
-

Leadership & Volunteering Experience

Financial Secretary

Association of International Students – Nigerian Chapter (AIS-NC), Universiti Teknologi PETRONAS
2024 – Present

1. Manage the chapter's financial records, reporting, and budgeting processes
2. Coordinate funding and logistical support for cultural, academic, and welfare activities
3. Represent the Nigerian student community in planning and decision-making forums
4. Foster community building and integration for international students

Facilitator, Nigerian Local Food Ordering

Association of International Students – Nigerian Chapter (AIS-NC), Universiti Teknologi PETRONAS

- Leading a welfare-focused programme that facilitates the overseas ordering and delivery of Nigerian local food items and essential goods to support the student community at UTP
- Overseeing logistics, vendor coordination, and distribution processes to ensure timely and efficient delivery of both food and non-food supplies

Head, UTP Clothing Recycling Hub

Association of International Students – Nigerian Chapter (AIS-NC), Universiti Teknologi PETRONAS – 2025

1. Led a community-driven initiative for collecting, cleaning, and distributing clothes to vulnerable groups
 2. Coordinated student volunteers, organized donation drives, and managed outreach activities
-

Notable Projects

- 1. Asthma Exacerbation Prediction Model (RL-based)**
Designed a real-time personalized risk prediction system using Proximal Policy Optimization. The model learned from multivariate health data to anticipate asthma attacks with high precision, addressing challenges of false negatives in clinical settings.
- 2. Oil Spill Detection via Deep Learning-Based Segmentation**
Applied hyperparameter-optimized deep learning models to enhance RGB image segmentation for identifying oil spills in port environments. Demonstrated robustness in environmental monitoring using AI, aligned with petroleum safety and resource integrity.
- 3. Reinforcement Learning Agent for CartPole**
Developed an RL agent using policy gradient methods for dynamic balancing, reinforcing expertise in temporal decision-making under changing environmental conditions.
- 4. Heart Disease Prediction System**
Built a machine learning model using structured health records to classify heart disease risk levels. Emphasized explainability and accuracy for practical deployment.
- 5. Breast Cancer Clustering using ML**
Applied unsupervised learning algorithms (e.g., K-Means, DBSCAN) for patient stratification using tumor characteristics.

Honors & Awards

1. Best Graduating Student, Information Technology Department & Faculty of Social and Management Sciences (MAUTECH, 2021)
2. Corresponding Author on 8 peer-reviewed publications in top venues
3. Multiple research publications in peer-reviewed journals and IEEE conference proceedings
4. Graduation on Time Award (UTP, 2025)

Languages

English (Fluent), Arabic, Hausa, Fulfulde

References

Ts. Dr. Emelia Akashah Patah Akhir

Senior Lecturer, Computer & Information Science

Universiti Teknologi PETRONAS

emelia.akhir@utp.edu.my

+6053687476

MSc. Main Supervisor

Ts. Dr. Nurul Aida Osman

Lecturer, Computer & Information Science

Universiti Teknologi PETRONAS

nurulaida.osman@utp.edu.my

+6053687494

MSc Co-Supervisor

Dr. Abubakar Muhammad

Director, Management Information Systems

Modibbo Adama University of Technology, Yola

ajungudo@mautech.edu.ng

+234 703 859 3509

Undergraduate Supervisor

Dr. Abdullateef Oluwagbemiga Balogun

Lecturer, Computer & Information Sciences

Universiti Teknologi PETRONAS

abdullateef.ob@utp.edu.my

+6053687416