ALIYU BELLO ALIYU

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Baltimore, MD.

EDUCATION

Master of Science in Advanced Computing Expected May 2026

Morgan State University **Baltimore, MD.**

Thesis title: An End-to-End AI Surveillance System Using Multi-Source Data Fusion and Visual Intelligence for Public Safety
Advisor: Dr. Guobin Xu

Bachelor of Science in Analytics, specialization in Data Analytics. Sep 2019 – Jan 2024

University of Prince Edward Island **Charlottetown, PEI.**

Thesis title: Teamwork Success Prediction
Advisor: Dr. Aya Salama

Relevant Coursework: Data Structures & Algorithms, Database Systems, Probability & Statistics, Machine Learning, Cloud Computing, Artificial Intelligence.

RESEARCH INTERESTS

Data Science and Predictive Analytics | Artificial Intelligence and Machine Learning | Computer Vision and Image Understanding | Data-Driven Decision Systems and Automation

RESEARCH EXPERIENCE

Graduate Research Assistant Sep 2024 - Ongoing

Department of Computer Science, Morgan State University. **Baltimore, MD.**

AI in Public Safety

- Designed and implemented an AI-powered public safety system using computer vision and deep learning (YOLO models) to detect weapons and violent actions in real time from surveillance footage.
- Integrated alert automation and notification mechanisms, enabling immediate response by security personnel and improving situational awareness through multi-object detection and event-based analytics.

AI in Social Work

- Collaborating on a multidisciplinary research project integrating data science and social work, involving data collection, cleaning, transformation, and exploratory data analysis (EDA) on datasets addressing social issues.
- Developing and deploying machine learning models to extract insights, predict trends, and support evidence-based decision-making for social welfare interventions through predictive analytics and process optimization.

TEACHING AND MENTORING

Teaching Assistant, Introduction to Computing Mar 2025 - Ongoing

Department of Computer Science, Morgan State University. **Baltimore, MD.**

- Teaching Introduction to Computing (COSC 110), covering fundamental computing concepts, programming basics, database management, data analysis, and cloud computing. Guiding students to develop essential computing skills.

Tutor Sep 2023 - Jan 2024

School of Mathematical and Computational Sciences, University of Prince Edward Island.

- Taught and assisted in instructing Linear Algebra and Introductory Programming, providing academic support and guidance to undergraduate students.

Professional Experience

Juxtopia **Baltimore, MD.**

Software Engineer Apprentice Jun 2025 – Aug 2025

Contributed to implementing AI algorithms for Human Activity Recognition (HAR) using DeepLearning4J (DL4J) and LSTM networks. Trained HAR models with JiBand wearable data, used OpenSim for sensor visualization, and supported the development of AI-driven e-training systems.

University of Prince Edward Island

Assistant International Students Recruiter Oct 2022 – May 2023

Maintained and monitored prospective student databases, tracking inquiries, applications, and admissions progress. Optimized recruitment processes and support systems, resulting in a 70% increase in international student enrollment.

Projects

Teamwork Success Prediction **Python | R**

Developed machine learning models to predict team success in achieving project milestones using data from five datasets. Conducted data preprocessing, applied statistical tests for evaluation, and utilized multiple machine learning algorithms.

Optimized performance through hyperparameter tuning and employed the **LIME** method for interpretability of key success factors.

Predictive Analysis for Hazardous Material Transportation Incidents **Python**

Applied advanced data analytics techniques, including geospatial mapping and machine learning, to analyze transportation incidents. Leveraged a Decision Tree model for predictive insights, identifying factors influencing incident likelihood, and provided actionable recommendations for improved safety and logistics.

Event-Based Network Simulator **Java**

Built an event-driven network simulator in **Java** modeling protocols like routing, congestion control, and security. Implemented routers, switches, and Dijkstra's algorithm for shortest-path routing, and evaluated performance for engineering insights.

Academic Research

Comparative Analysis of Machine Learning Models on Fashion MNIST Dataset

Conducted a comparative analysis of SVM, Random Forest, XGBoost, and CNN models on the Fashion MNIST dataset using TensorFlow and Scikit-learn. CNN achieved the highest accuracy (92%), while XGBoost offered the best balance between speed and performance.

Smart Supply Chain

Conducted data mining and visualization on the DataCo Smart Supply Chain dataset using R with clustering, PCA, and discriminant analysis. Identified six key clusters and strong variable associations for supply chain optimization.

Database Management System (DBMS)

Compared relational and graph databases using SQL Server and Neo4j to assess scalability and query performance. Found relational DBMS excelled on small datasets, while Neo4j outperformed in large, complex network queries.

Face Recognition Techniques

Compared 3D and thermal facial recognition methods, finding 3D more precise geometrically and thermal imaging superior in low-light, together enhancing biometric security.

Smart Contracts and Cryptocurrency In Blockchain

Analyzed blockchain applications in finance and data systems, showing smart contracts automate secure transactions while cryptocurrencies support transparent, decentralized payments.

Time Series Analysis for Smart Water Management

Performed time series forecasting on the Acea Smart Water dataset using Auto-ARIMA to model groundwater depth influenced by rainfall and temperature. Auto-ARIMA delivered the most accurate results, effectively capturing temporal groundwater trends.

Big Data, Machine Learning, and Hadoop

The study examines the interplay between machine learning and Hadoop in managing massive datasets, emphasizing Hadoop's scalability and machine learning's analytical power. It concludes that combining both technologies enables efficient data processing, pattern discovery, and smarter decision-making in Big Data environments

University Service

Assistant Head of Finance, Student Union Oct 2021 – May 2022

Student Union, University of Prince Edward Island.

Assisted with budget development, monitoring, and financial record management, ensuring accurate expense tracking, documentation, and reporting for transparency and accountability.

Supported strategic financial planning by compiling reports, verifying transactions, and identifying cost-saving opportunities to enhance operational efficiency.

Student Ambassador Jan 2023 - Dec 2023

School of Mathematical and Computational Sciences, University of Prince Edward Island.

Provided support and guidance to incoming international students, explaining university policies, procedures, and available resources while assisting with orientation programs, campus tours, and informational sessions.

Mentored international students by offering academic guidance, cultural adjustment support, and personalized advice to enhance their transition and overall university experience.

Technical Skills

Programming Languages: Python | Java | R | SQL | C++ | C | JavaScript | Dart

Software & Technologies: AWS | Apache Spark | PowerBI | Tableau | Azure | Hubspot | Matlab

Leadership & Extracurriculars

Intra-African Trade Fair (IATF) Nov 2023

IT personnel for Borealis Nigeria Limited.

United Nations (UN) Apr 2021

International model united nations (IMUN).

References

Dr. Guobin Xu
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