

MICHAEL TUNWASHE

Research-Oriented Data Scientist

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Professional Summary

B.Sc. Mathematics student with a research-oriented approach to data analysis across financial, economic, and text-based systems. Work focuses on statistical analysis, applied machine learning, and time-series reasoning, treating projects as investigations into real-world uncertainty. Emphasis on establishing baselines, evaluating models under realistic assumptions, and clearly communicating results and limitations. Actively taking on applied data analysis, NLP, and analytical reasoning contracts in AI-driven environments.

Research Projects

1. Financial News Sentiment and Short-Term Market Returns (Sep 2025 – Nov 2025)

Status: Complete • Research Question: Can textual embeddings from financial news provide stable predictive signal beyond noise for short-horizon returns? Approach: Combined financial news embeddings with price data; established naive return baselines; compared linear models and shallow neural networks; evaluated out-of-sample performance across rolling windows. Findings: Predictive signal was weak and highly regime-dependent. Performance degraded under temporal shifts, with sensitivity to window selection. Identified multiple leakage risks and failure modes, limiting robustness for production use.

2. Hybrid Recommendation Methods on Music Listening Data (Oct 2025 – Dec 2025)

Status: Complete • Research Question: When do recommendation methods fail, and does hybridization improve performance over single-method baselines? Methods: Content-based filtering (semantic embeddings), collaborative filtering (neural matrix factorization), and weighted hybrid models. Data included user-track interaction logs and metadata. Evaluation used temporal splits with Precision@k, Recall@k, NDCG@k, and Hit Rate. Findings: Standalone CBF and CF models performed near popularity baselines due to sparsity and weak embedding-behavior alignment. Hybrid models showed marginal improvement at k=20. Limitations included low interaction density and offline-only evaluation.

Applied Systems (Supporting Work)

Designed and implemented data ingestion, validation, and visualization tools to support exploratory analysis and reporting. Built ETL workflows and dashboards for retail analytics and economic indicators, and implemented hybrid recommendation systems to support controlled experimentation and evaluation.

Technical Skills

Analysis & Evaluation: Exploratory data analysis, feature construction, model evaluation, error analysis, temporal validation

Mathematical Foundations: Probability & Statistics, Linear Algebra, Calculus

Data & Modeling: Pandas, NumPy, scikit-learn, PyTorch (applied)

Supporting Tools: SQL (PostgreSQL), Git, Linux

Professional Experience

Data Analyst Intern

Aug 2025 – Nov 2025

HNG Tech

- Cleaned and transformed large business datasets using Python and SQL
- Wrote SQL queries for recurring reporting tasks
- Built dashboards in Metabase to support business insights
- Assisted team with lightweight automation pipelines

Education

B.Sc. Mathematics

2024 – 2028

University of Lagos

- Relevant Coursework: Probability, Statistics, Linear Algebra, Calculus