DAMILOLA ESAN, FMVA®, BIDA™

Data Scientist | AI Engineer | AI Researcher

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SUMMARY

Results-driven Data Scientist, AI Engineer, and Master's Research Student at Nagoya Institute of Technology with expertise in data science, business intelligence, and intelligent transportation systems. Experienced in designing data infrastructure, automating analytics workflows, and developing AI-powered solutions using Python, SQL, Power BI, and machine learning. At LAMATA, led the transition from spreadsheet-based operations to a relational database system, improving reporting efficiency and operational insight generation. Skilled in generative AI, computer vision, NLP, and predictive analytics, with hands-on experience building real-time dashboards, AI chatbots, passenger counting systems, and forecasting models. Passionate about leveraging AI and data-driven innovation to improve public transportation systems and solve large-scale societal challenges.

EDUCATION

M.Sc. Research Student (M1), Computational Intelligence *Apr 2026 – Present*
Nagoya Institute of Technology (NITech), Nagoya, Japan

- Ozono Laboratory under **Prof. Tadachika Ozono**; research focus on multi-object tracking and re-identification for automated bus passenger counting in unstructured transit environments.

Nanodegree in Data Analysis *Dec 2022 – May 2023*
Udacity, Mountain View, CA, USA

B.Tech, Transport Management Technology *Feb 2013 – Nov 2018*
Federal University of Technology, Akure (FUTA), Nigeria

RESEARCH EXPERIENCE

Graduate Researcher | Ozono Lab, NITech *Oct 2025 – Present*
Nagoya, Japan

- Research on unique-identifier–based segregation and tracking across video frames, applied to automated bus passenger counting using real LAMATA (Lagos) deployment footage.

PROFESSIONAL EXPERIENCE

Data Analyst | LAMATA (Lagos Metropolitan Area Transport Authority) *Dec 2020 – Sep 2025*
Lagos, Nigeria

- Developed a **GPT-powered data analysis chatbot** allowing operations staff to query bus operations data in natural language.
- Built and maintain an **interactive real-time dashboard** for bus operations, surfacing KPIs that drive day-to-day service decisions.
- Wrote an e-ticketing **data-scraping and validation script** for selected bus operators, improving data-gathering efficiency by **80%** and standardizing field-level checks across operator submissions.
- Designed a cost-analysis model that informed a comprehensive review of route fares for the First and Last Mile (FLM) bus scheme, contributing to a **~20% reduction in operational cost**.
- Analysed and quality-controlled the **bus passenger video system** subsequently used as real-world test data for my current MOT research at NITech.

Research Analyst — EPIC UChicago Air Quality Fund Project *Nov 2024 – Sep 2025*

- Analyze real-time PM2.5 data from Lagos's first statewide air-quality monitoring network deployed across key urban areas and traffic points.

- Translate sensor data into insights supporting policy recommendations on vehicle emission standards and air-quality regulation, aligned with Lagos's 2050 Net Zero Climate Action Plan.

Machine Learning Engineer — eBRT2030 Horizon Europe Project (Twinning City) *May 2025 – Sep 2025*

- Technical lead for machine learning and data engineering on **eBRT2030 WP8**, assessing the feasibility of deploying electric Bus Rapid Transit (eBRT) in Lagos.
- Prepare and structure urban mobility datasets covering congestion ratios, land-use patterns, population density, and accessibility metrics across candidate BRT corridors.
- Implement and calibrate an **XGBoost-based feasibility tool** to identify optimal BRT corridors based on peak-hour congestion (Ratio_830) and other spatial variables.

Data Scientist (AI Trainer) | Remotasks | Remote (San Francisco, USA) *Jan 2024 – Apr 2024*

- **Trained and evaluated AI model responses** through iterative refinement (4+ passes per task), selecting outputs for factual accuracy, conciseness, and efficiency.
- Reviewed model-generated code and provided structured feedback on correctness and efficiency, frequently proposing improved solutions.
- Achieved **100% accuracy** training a model to answer factual questions directly from CSV datasets through careful exploratory data analysis and prompt refinement.

Machine Learning Engineer | Miksi | Remote (Zagreb, Croatia) *Oct 2023 – Feb 2024*

- Developed a **data-validation function** that infers field datatypes and flags inconsistencies, improving reliability of training data.
- Built an SQL agent with a custom forecast function that answers natural-language questions over relational databases.
- Designed and implemented the supporting relational database schema for an AI-powered SQL chatbot.

Earlier: *Logistics Analyst, Enugu Electricity Distribution Plc (Apr 2019 – Feb 2020) • Sales Analyst, Forever Living Products Ltd (Aug 2018 – Nov 2020).*

SKILLS

Data & Annotation: Large-scale dataset preparation, annotation format conversion (MOT Challenge, YOLO, COCO-style), stratified sampling, train/val splitting, dataset diversity metrics, quality control, edge-case auditing, label consistency review.

Computer Vision & ML: YOLOv8 / YOLOv11 / YOLOv12, ByteTrack, BoTSORT, OSNet re-identification, OpenCV, PyTorch, multi-object tracking, object detection, evaluation metrics (HOTA, CLEAR MOT, IDF1).

Data Analysis & BI: Microsoft Power BI, Tableau, DAX, Excel (Microsoft 365), statistical analysis, data cleaning and wrangling, dashboarding.

Programming & Tools: Python, R, SQL, LangChain, Large Language Models, Git

SELECTED PROJECTS

- **Bus Passenger Counter (YOLO + ByteTrack/BoTSORT):** Real-time computer-vision pipeline using line-crossing and polygon-based counting; identified ID-switching as the principal source of overcounting and used the finding to motivate ongoing MOT research.
- **Annotation**: Manually annotated **4,000 frames** of real LAMATA bus footage, producing **120,000+** bounding boxes across 68 passenger identities as ground-truth evaluation data; maintained ID consistency through occlusions and crowding.
- **AI-Powered Data Analysis Chatbot:** Natural-language interface over LAMATA First-and-Last-Mile operations data, enabling non-technical staff to interrogate operational metrics directly.
- **Sentiment Prediction Model:** Text-classification model for brand and customer-feedback monitoring.
- **Stock Price Prediction — Monte Carlo Simulation:** Forecasting model for Microsoft (MSFT) stock prices to support investment decision-making.
- **Interactive Real-Time Bus Operations Dashboard:** Power BI dashboard surfacing live KPIs across LAMATA bus operations.

CERTIFICATIONS

- **Power BI Data Analyst Associate (PL-300)**, Microsoft (2024)
- **Data Science**, ALX / Explore AI Academy (2023–2024)
- **Advanced Data Science with IBM Specialization**, IBM (2023)
- **Business Intelligence & Data Analyst (BIDA™)**, Corporate Finance Institute (2022)
- **Financial Modeling & Valuation Analyst (FMVA®)**, Corporate Finance Institute (2022)
- **Data Science in Precision Medicine & Cloud Computing**, Stanford University (in view).

VOLUNTEERING

- **Community Volunteer, World Health Organisation** *(2019, Imo State, Nigeria)* — Independent monitoring of house-to-house Polio Eradication vaccination, with daily reporting to the State Operations Room.
- **Volunteer, AIESEC** *(2018, Ondo State, Nigeria)* — Taught basic education and computer studies to underprivileged pupils in a remote town.