David Morohunfola

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Backend-focused Full Stack Engineer with extensive experience in cloud deployments, deftly balancing delivery speed with precision. Drives application stability and speed by leveraging efficient system design to solve security and performance challenges.

Education

University of Bath — Bath, England
Bachelor of Science in Computer Science — *Oct. 2021 – July 2025*

- Key Modules: Software Engineering, Databases, Systems Architecture, User Experience, Safety Critical Systems, AI/ML, Natural Language Processing, Entrepeneurship.

Parmiter's School — Watford, England
A-Levels: Mathematics, Further Mathematics, Physics, Chemistry — *Sep. 2014 – July 2021*

Technical Skills

Languages: Python, TypeScript/JavaScript, Java, SQL (Postgres, SQLite), HTML/CSS
Full-Stack: React, Next.js, Node.js, Express, Spring Boot, Redis
Data/ML: Scikit-learn, Pytorch, Pandas, Numpy
Developer Tools and Hosting: Git, Docker, VS Code, Copilot, AWS, Google Cloud, Vercel
Testing: JUnit 5, Jest, React Testing Library, Vitest, Supertest, Pytest

Projects

Gamified Nutrition Application | *React, Node.js, Express.js, PostgreSQL, Docker, GCP* — Oct. 2024 – Nov 2025

- Researched gamification features for those with the greatest impact on long term retention; leaderboards, rewards systems and narrative based gamification.
- Architected the project as a monorepo using pnpm and Turborepo to manage the API, web client, and shared types package.
- Developed a responsive React frontend and used a centralised Axios instance with interceptors to automatically manage API errors and JWT refreshing.
- Implemented secure user authentication (JWT, bcrypt) and hardened the Node.js API for OWASP compliance.
- Optimised database performance by implementing caching, reducing leaderboard endpoint latency by over 20x and refactoring code into atomic PostgreSQL queries to eliminate race conditions during user level-ups.
- Migrated the application from a local server to Google Cloud and AWS for 99.5% uptime, securing all database and cache services within a VPC.
- Optimised the CI/CD pipeline, reducing the container image size by over 85% to accelerate deployments and minimise cold start latency.
- The resulting platform validated the hypothesis, enabling the collection of data that quantified an 83% rate of increase in user self-efficacy.

Celeste Classic Reinforcement Learning Agent | *Python, PyTorch, Numpy, Docker* — Jan. 2025

- Implemented a Proximal Policy Optimisation (PPO) algorithm from scratch in Python to train an agent capable of playing complex platforming games.
- Independently engineered the agent's architecture, reward functions, and state representation to optimise learning.

Movie Review Classification | *Python, Pandas, Scikit-learn, Hugging Face, Docker* — Aug. 2025

- Engineered data pre-processing pipelines using Pandas and Scikit-learn, implementing tokenisation, TF-IDF vectorisation, and normalisation techniques.
- Developed text classification models to sort sentiment with up to 87% accuracy, deployed live on Hugging Face.
- Tested Naive Bayes, Logistic Regression and Support Vector Machine configurations with different hyperparameter settings to optimise accuracy.

Recipe Designer | *Next.js, Auth.js, TypeScript, Prisma, PostgreSQL, Vercel* — Sep. 2025 – Oct. 2025

- Architected a full-stack application efficiently with Next.js and a PostgreSQL backend managed by a singleton-pattern Prisma ORM to ensure efficient database connection management, with secure user authentication using Auth.js.

- Developed a dynamic front-end where users can build recipes with real-time updates to total cost and calorie counts.

Midas Financial Transaction System | *Java, Spring Boot, Apache Kafka, Hibernate* Nov. 2025

- Engineered a real-time, event-driven transaction processing system using Spring Boot and Apache Kafka to handle high-throughput financial data asynchronously.
- Implemented a relational database schema with Spring Data JPA and H2, enforcing ACID compliance and strict validation logic for account balances and transaction integrity.
- Integrated external microservices via REST APIs to apply dynamic incentives and developed internal endpoints to allow real-time user balance queries.

Experience

PhD Research Assistant June 2025

Journal of Quantitative Spectroscopy and Radiative Transfer

- Extracted and analysed data on the spin properties of ozone from 29 scientific sources, resulting in a co-authored publication.