

# Emmanuel Alabi

Software Engineer working toward AI & Robotics Research

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## Research Interests

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Embodied AI; robot learning; computer vision; autonomous systems; multimodal intelligence. Specifically, how an agent's representation of a physical environment should be shaped by having to move through it, and when learned components genuinely outperform well-specified classical methods.

*Broader interests:* machine learning, robotics, state estimation, planning, reinforcement learning.

## Education

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**Babcock University — BSc (Hons) Software Engineering** 2019 — 2023

Ilishan-Remo, Ogun State, Nigeria. School of Computing and Engineering Sciences.

*Relevant coursework:* Algorithms and Data Structures; Discrete Mathematics; Introductory Statistics; Introduction to Operations Research; Artificial Intelligence and Applications; Introduction to Big Data Engineering; Computer Organization and Assembly Language; Operating System I; Database System Design, Implementation and Management.

## Research & Technical Experience

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**Independent Research Programme — Embodied & Multimodal Autonomy** 2026 — present

- Self-directed programme building the mathematical, machine-learning and robotics foundations required to conduct independent research: linear algebra, probability, optimisation, state estimation and rigid-body geometry, each with implementations written from first principles.
- Reproducing published baselines in perception and navigation before extending them, on the principle that a reproduction which fails is itself a result worth documenting.
- Working toward a research question in embodied, multimodal autonomy precise enough to investigate with controlled experiments rather than demonstrations.
- Programme and progress documented publicly at [emmanuelalabi.com/research/research-programme-2026](https://emmanuelalabi.com/research/research-programme-2026)

## Selected Academic Projects

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**BUCODEL — Learning Management System for Open & Distance e-Learning** 2022 — 2023

Undergraduate Final-Year Project (SENG490, 72/100), Babcock University. Supervisor: Dr. Stephen Maitanmi.

- Co-designed and implemented a web-based learning management system for Babcock University's Centre for Open and Distance e-Learning, supporting student, lecturer and administrator workflows.
- Built course and resource management, assignments, authentication, user administration, collaborative course activity and role-specific interfaces using React, Node.js/Express and MongoDB.
- Conducted requirements analysis, system design, iterative implementation under a spiral methodology, and interface/usability, unit and integration testing.
- [emmanuelalabi.com/projects/bucodel-learning-management-system](https://emmanuelalabi.com/projects/bucodel-learning-management-system)

## Selected Engineering Projects

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**Obelo — Multimodal AI Infrastructure**

- Production AI platform combining multimodal generation, retrieval-augmented context, asynchronous orchestration, model routing and evaluation systems.
- Experimentation across multiple image-generation and language-model families; structured creative pipelines; reliability mechanisms for long-running AI workflows.
- [emmanuelalabi.com/projects/obelo-multimodal-ai-infrastructure](https://emmanuelalabi.com/projects/obelo-multimodal-ai-infrastructure)

## Selected Technical Experience

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**Founder / Lead Engineer — Obelo**

- Designed and developed a production AI platform: multimodal generation, retrieval-augmented brand context, model routing across model families, asynchronous orchestration, and evaluation and quality systems.

**Software Engineer — SPay Business**

- Production mobile-financial systems: authentication improvements, application performance, interface redesign, CI/CD automation and over-the-air mobile deployments.

## **Technical Skills**

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**Programming** Python, TypeScript, JavaScript, Java, SQL

**AI systems** Multimodal AI systems, retrieval-augmented generation, LLM and model integration, evaluation and quality systems

**Systems & engineering** React, Next.js, Node.js, Express, MongoDB, PostgreSQL, Redis, Docker, CI/CD