Emmanuel Oladokun

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Summary

DPhil graduate in Engineering Science from the University of Oxford, specialising in **controllable generative models for synthetic data and spatio-temporal image and video generation**. Experienced in developing **diffusion and flow-based models** for multi-modal data, with applications to data augmentation, robustness, and downstream performance. Published at **international conferences** in collaboration with industry and secure government partners. Interested in **generative world models** and simulation for learning and evaluation.

Education

DPhil Engineering Science CDT, University of Oxford

(period includes internship) Oct 2020 – March 2026

Since Oct 2021, in collaboration with GE HealthCare, applying **deep generative models** to create **synthetic datasets** for downstream tasks. Designed, trained, and evaluated computer vision models end-to-end, demonstrating up to a **10% improvement** in model performance by **augmenting and rebalancing skewed real-world datasets with synthetic data** and counterfactuals. Work has produced first-authored publications and **international conference presentations**. Most recently developed a **flow-matching** method for **one-step latent video generation**, including **implementing a custom flash-attention processor**.

MEng Engineering Science (2:1), University of Oxford

2016 – 2020

Modules include: **Machine Learning** (Generative and Discriminative Models), Optimisation, Advanced Probability, Software Engineering; Medical Imaging and Informatics (**Deep Learning, Computer Vision**), and Image Processing.

First-author Publications

- EchoLVFM: One-Step Video Generation via Latent Flow Matching for Echocardiogram Synthesis; (2026); EchoLVFM `Flow Matching`; `Video Generation`; **`GenAI`**;
- From Transthoracic to Transesophageal: Cross-Modality Generation using LoRA Diffusion; MICCAI-ASMUS (2025). **`Best Paper Award`**; `Diffusion Models`; `Multi-Modal Learning`; `Parameter-Efficient Fine-Tuning`; , `Proprietary`
- Transesophageal Echocardiography Generation using Anatomical Models; MICCAI-DALI (2023). `Generative Adversarial Networks`; `Contrastive Learning`; `Synthetic Data`; , `Proprietary`
- Machine-Learning Informed Prediction of Linear Solver Tolerance for Non-Linear Solution Methods in Numerical Simulation; ECMOR XVII (2020). `Random Forest Regression`; `Linear Algebra`; , `Proprietary`

Research & Industry Experience

Alan Turing Intern, GCHQ

Jan 2024 – Jul 2024

- Curated and processed **large-scale image datasets (∼ 300k samples)** and developed pipelines for training and evaluating **state-of-the-art generative models**.
- Researched, implemented, and trained generative models for **high-quality synthetic data generation**, with a focus on **scalability**, and **generalisability to real-world scenarios.**
- Built and ran scalable training workflows using **AWS Cloud** services (**S3**, **SageMaker**, **CloudWatch**) for data storage, model training, and experiment monitoring.

Developer & Supervisor, University of Oxford / GE HealthCare

Oct 2020 – Jun 2022

- Co-developed and maintained an **open-source tool** for automated validation of DICOM images, improving **data quality** within clinical ML pipelines while ensuring privacy compliance. ECIQC
- Led technical design and implementation using both C++ and Python, including **CI/CD** pipelines and automated tests to ensure reliability as the codebase evolved.
- **Supervised 5 PhD students**, mentoring on software development practices and contributing to key project deliverables.

Master's Thesis Research, University of Oxford — Oct 2019 – Jun 2020

- **Used Python** and MATLAB to develop **mathematical** and **statistical models** for the circadian blood pressure rhythm.
- Managed and performed statistical analysis on noisy data consisting of **4M records** from **208,948** hospital admissions.
- Delivered an independent research project under academic supervision achieving a **First Class Grade**.

Software Engineering Intern, Schlumberger — Jul 2019 – Sep 2019

- **Reduced computational costs by 30–50%** within a production reservoir simulator by using **machine learning** models.
- Successfully developed machine learning models using **Scikit-Learn** and TensorFlow.
- Internship findings contributed to a **publication**.

Research Intern, University of Leeds — Jul 2015 – Aug 2015

- Investigated scale deposition in oilfield conditions to improve oil recovery efficiency.
- Cooperated with PhD students in generating exemplary work to support a PhD thesis.
- Gained exposure to engineering research and specialist equipment.

Skills

Programming Experience (Years):

Python | **MATLAB** | **C++**

Libraries & Cloud: HuggingFace, **PyTorch**, Torchvision, NumPy, SciPy; **AWS, S3**, Vercel.

Methods: **Diffusion models**, latent video generation, flow matching, **generative modelling**, representation learning, **multi-modal learning**, transformer architectures, synthetic data generation.

Awards

Selected Awards

- **Best Paper (Sep 2025):** Awarded **'Best Paper'** at ASMUS-MICCAI 2025 for work on diffusion-based image generation using data from multiple domains.
- **OxAI Hackathon (Mar 2026):** Co-developed a transfer learning prototype to estimate visceral fat proxies from facial imagery; built an end-to-end multimodal training pipeline in six hours, earning **3rd place**. `Face2Visceral`
- **Google HQ Hackathon (Oct 2019):** Co-developed a machine learning application, delivering a working **prototype in less than 24 hours** and earning **2nd place** out of 12 teams.
- **UKMT Maths Challenge (Nov 2015):** Awarded a Silver Certificate.

Leadership and Service

Engineering Tutor, St Peter's College — 2022

- Delivered tutorials in Mathematics and Physics to undergraduate engineering students, and assessed problem sheets.

Volunteer, THRIVE — Nov 2018 – Dec 2022

- Led weekly sports sessions for **50+ children** from deprived communities, mentoring participants while fostering teamwork, discipline, and leadership.

Alumni Relations Officer, St Peter's College, University of Oxford — Nov 2016 – Jun 2018

- Established strong ties as an ambassador through connecting undergraduates with alumni, and networking with professionals.
- Raised **£5,862** for the college during a telethon and learned protocols for dealing with sensitive and confidential information.