Ahab Isaac

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EDUCATION

University College London — London, England
PhD in Statistics and Deep Learning (Python) — *Sep 2025 – Present*
- Member of the Fundamentals of Statistical Machine Learning Research Group focusing on interpretability in deep learning for biomedical applications.

University College London — London, England
MSc Statistics (R, Python) — *Sep 2024 – Sep 2025*
- **Distinction** in exams and thesis
- **Relevant Modules**: Applied Bayesian Methods, Statistical Inference, Computational Statistics, Stochastic Methods in Finance

University of Oxford — Oxford, United Kingdom
MEng. Engineering Science (Python, Matlab) — *Sep 2018 – June 2022*
- **First Class Honours**, Academic Scholar, declined Oxford Machine Learning PhD offer (with funding)
- **Final Honour School Part C Modules**: Machine Vision and Robotics, Machine Learning, Robust and Distributed Control, Nonlinear and Optimum Control, Probability, Systems and Perturbation Methods.

PROFESSIONAL EXPERIENCE

Data Scientist — London, United Kingdom
CourtCorrect — *Sep 2023 – Sep 2024*
- **Full-Stack LLM Development:** Optimized RAG (RECOMP), fine-tuned Llama 3 (LoRA/QLoRA), and implemented alignment (DPO) for production A/B testing.

NLP Researcher/Developer — London, England
Xapien — *August 2022 – Aug 2023*
- **Entity Resolution:** Worked on tackling entity resolution through clustering algorithms on embeddings fine-tuned through contrastive loss functions (cosine loss and triplet loss).

Research Assistant — Oxford, United Kingdom
Oxford e-Research Centre — *May 2022 – July 2022*
- Furthered my Master's Thesis research in GANs by artificially introducing randomness to the GAN output through randomised learning rate perturbations and gaussian noise injection into network weights.

PROJECTS

Masked Autoregressive Flows to sample from the Levy distribution
- Trained a series of autoregressive bijectors to form an invertible flow for density estimation of the Levy distribution.

Confusion Detection using EEG Brainwave Data via Binary Classification
- Designed a binary classifier utilizing deep neural networks to accurately discern confusion in students. Incorporated techniques for network sparsity analysis and SHAP-based feature interpretation.

Oxford Thesis - Generative Modelling of Complex Probability Distributions
- Implemented a GAN that can accurately sample from skewed Gaussian distributions and a Maxwell Juttner Distribution. Included several contributions in the field of generative modelling for RNG (Final mark: 78).

New Beam Profile Monitor for the LHC at CERN
- Group project which involved designing a new beam profiling method for the Large Hadron Collider for the High Luminosity upgrade in collaboration with CERN.

Adaptive Random Walk Metropolis with Preconditioning under Structured Misspecification
- Built a Adaptive RWM with spectral decomposition as a preconditioner to evaluate Bayesian Inference under non-Gaussian errors and structured misspecification.

UCL Thesis - Tackling Information Leakage in Concept Bottleneck Models
- Introduced an adversarial training setup which minimised concept task leakage through exploiting an "accuracy gap" between adversarial classifier and task classifier (final mark: 77)

TECHNICAL SKILLS

Technologies: Python, R, Matlab, AWS, Elasticsearch, Huggingface, PostgreSQL, Git

PUBLICATIONS

Towards using GANs in astrophysical Monte-Carlo simulations: Published in Astronomical Data Analysis Software & Systems 2023