Benjamin Naylor

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EXPERIENCE ↘

Multiverse Computing · Summer Research Project — June 2025 - September 2025

- Currently completing a three-month research project developing pricing models for complex derivatives.
- Investigating tensor train methods from quantum computing to encode high-dimensional option payoff structures efficiently.
- Designed and implemented HyperNetworks to generate these tensor networks, overcoming limitations of traditional methods for non-linear tensor train generation.
- Primary objective is to reduce complexity for highly parameterised/multi-asset models and improve interpretability over traditional NN methods.

Outlier AI · Expert — January 2025 - September 2025

- Expert in Maths, Finance, Coding and Mechanical Engineering, using my knowledge to help train LLMs via RLHF.

KAI Conversations · Data Analyst / ML Engineer — 2022 - 2024

- 2-year tenure at AI startup, primarily as data analyst and ML engineer using Python and TypeScript.
- Engineered a deep multimodal model integrating text and audio for speech emotion recognition, a cornerstone of the platform's emotional intelligence capabilities.
- Led MLOps pipeline development, integrating performance monitoring, automated training, and model deployment to enhance operational efficiency across ML workflows.
- Leveraged LLMs for targeted message extraction model, enhancing information retrieval precision and automating content categorisation on conversation transcripts.
- Built real-time speech-to-text transcription engine using a transformer-based model, equipped to handle complex language tasks like Arabic-English code-switching.

EDUCATION ↘

University College London · MSc Computational Finance — 2024 - 2025

- Distinction expected. Optional modules: Probability Theory and Stochastic Processes, Advanced Machine Learning in Finance, Market Microstructure, Algorithmic Trading.

University of Leeds · BEng Mechanical Engineering — 2020 - 2023

- Upper Second Class Honours (2:1).

The King's (The Cathedral) School Peterborough · A-Levels — 2012 - 2019

- Mathematics (A*), Physics (A*), Product Design (A).

PROJECTS ↘

Market-Context Stock Transformer (MCST) · UCL — 2025

- Designed and implemented a novel Transformer-based model to forecast stock returns by integrating stock-specific features with broader market-context indicators.
- Developed a dual-encoder architecture with a cross-attention fusion module that significantly outperformed an LSTM benchmark in both directional accuracy and error rates.

Reinforcement Learning-Based Control Algorithm · University of Leeds — 2023

- Developed Reinforcement Learning control system for a lunar lander, implementing a custom Deep Deterministic Policy Gradient (DDPG) algorithm in Python.
- Engineered custom simulation environments with hard constraints, while focusing on reward function optimisation for increasing safety and limiting training instability.
- Achieved 75% in final report.

SKILLS ↘

- Fluent in Python (PyTorch, NumPy, Pandas) and MATLAB; working knowledge of TypeScript and C++.
- Experienced in machine learning development and deployment (MLOps), with focus on RL, deep learning, transformers, and LLMs.
- Proficient with Git, Docker, Kubernetes, and AWS (Lambda, ECS, CloudFormation, SageMaker); familiar with SQL and NoSQL databases (PostgreSQL, MongoDB).
- Skilled at delivering production-ready code and end-to-end solutions; proven ability to thrive in fast-paced start-up environments.