

Nathan Carey

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Education

University College London (UCL), M.Sc. AI for Sustainable Development 09/23 – 09/24

- Final grade: **Distinction**
- Key Modules: Reinforcement Learning, Deep Learning (Distinction), Probabilistic Modeling (Distinction)

Southern Methodist University, B.Sc. Electrical Engineering 08/17 – 12/21

Work Experience

ML Engineer (FTC), Malevich – London, UK 10/24 – Present

- Built an end-to-end data pipeline that translated, embedded and leveraged PCA to build a stacking regression model: **XGBoost**, Random Forest, and LightGBM as base learners, with Ridge regression as the meta-learner model **outperforming baseline** Mean Absolute Error by **20%** and Mean Squared Error by **29%**.
- Enhanced model performance with **feature engineering**, using lagged price variables, competitor price ratios, and price change indicators resulting in a predictive Mean Absolute Error of **1.24 (USD)**.

Systems Design Engineer, Samsung – Texas, US 02/22 – 09/23

- Leveraged 5G SME knowledge in high-stakes environments to ensure 99.5% KPI compliance for the the first US 5G Stand-alone deployment, minimising downtime, improving reliability, and ensuring feature-set utility.
- Developed data **visualisations in Python** for latency metrics with **Matplotlib**, delivering insights that informed strategic 5G feature rollouts, directly influencing executive-level decision-making.
- Managed multiple drive test projects, leveraging JIRA to document and successfully complete 100+ stationary/mobility test cases, leading teams of 12+ testers in-person (Atlanta, GA) and remote.
- Delivered technical briefings on 5G call flows and research on cutting-edge **AI-based energy savings** algorithms.

Systems Design Engineer Intern, Samsung – Texas, US 05/21 – 08/21

- Designed and pitched C-Band slot placement for CSI-RS, reducing interference by 25% in neighbouring cells, enhancing network performance while adhering to 3GPP standards.

Publications

- Carey, N., Optimising HVAC Control Across Diverse Climates: A Replay-Enhanced Deep Reinforcement Learning Approach. Submitted to **NeurIPS 2024** Workshop on Tackling Climate Change with ML.

Masters Thesis

Optimising HVAC Control Across Diverse Climates, a Deep Reinforcement 01/24 – 09/24

Learning Approach, UCL – London, UK

- Researched and developed a Reinforcement Learning HVAC control optimisation framework, **achieving 53% improvements** in energy efficiency and saving 1.064m kWh, equivalent to powering 300+ homes annually.
- Engineered **data-heavy agentic training environment** by leveraging the Department of Energy physics engine EnergyPlus APIs to generate thermodynamic states and OpenStudio for digital twin building CAD models.
- Awarded distinction (**78%**) from John Shawe-Taylor, UNESCO Chair in Artificial Intelligence.

Entrepreneurship

Co-Founder, Morfff – London, UK 10/23 – 03/24

- Ran sprints and agile development with co-founder to launch full-stack mobile app: JS, React Native, Android Studio, Firebase/Firestore, GCP, Replicate API, AWS Lambda, and Vast.ai.
- Researched and deployed novel text-to-image and image-to-image pipelines from Hugging Face and Replicate for cross-platform social network app, **sparking 1250+ conversations**. Launched App Store MVP with co-founder.

Skills

Programming Languages: Python, JavaScript, SQL

Machine Learning Frameworks: PyTorch, TensorFlow, JAX

Deep Learning Specializations: Reinforcement Learning, RNNs, CNNs, Diffusion Models, LSTMs, Autoencoders

Cloud Platforms: AWS, Azure (AZ-900), GCP (exposure to Firebase)

Communication: Strong track record in delivering technical documentation, presentations, and client engagement.

Languages: English (fluent), German (beginner)