Nathan Carey

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Education

University College London — London, UK
M.Sc., AI for Sustainable Development. Distinction — 09/23 – 09/24

- Key Modules: Reinforcement Learning, Deep Learning, Probabilistic Modeling, Applied AI
- Thesis: "Optimising HVAC Control Across Diverse Climates, a Deep Reinforcement Learning Approach"

Southern Methodist University — Dallas, USA
B.Sc., Electrical Computer Engineering — 08/17 – 12/21

- Key Modules: Microcontrollers and Embedded Systems, Programming Concepts (C/C++)

Study Abroad — Prague, CZ
Coursework in Russian culture and Russian language — 06/18 – 07/18

Work Experience

Samsung Electronics America – TS Systems Design Engineer I — Dallas, USA
02/22 – 09/23

- Leveraged 5G SME knowledge in high-stakes troubleshooting environments
- Delivered technical briefings on 3GPP features, 5G call flows, and cloud architectures
- Developed data visualisations in Python for latency metrics with Matplotlib, delivering insights that informed rigorous customer compliance checks, directly influencing executive-level decision-making
- Led end-to-end validation of Xn-based handover procedures, enhancing smooth mobility and service continuity across multiple vendor 5G gNBs in line with 3GPP specifications (TS 23.502 release 18)

Samsung Electronics America – TS Systems Design Engineer Intern — Dallas, USA
05/21 – 08/21

- Responsible for weekly technical deep-dives into customer feature-set
- Pitched design of C-Band slot placement strategies (CSI-RS) that minimised cell-to-cell interference by 25%, enhancing signal integrity with adherence to 3GPP specifications

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

Master's Thesis

"Optimising HVAC Control Across Diverse Climates, a DRL Approach" — London, UK
01/24 – 09/24

- Developed and open-sourced novel HVAC optimisation framework
- Created Deep Reinforcement Learning (DRL)-based model, reducing energy consumption by an average of 53% and cumulatively **saving 1.064M kWh** while receiving multiple IP-agreement offers from industry
- Accelerated machine learning pipelines by extending PyTorch models to leverage Metal Performance Shaders (MPS), graph frameworks and optimised kernel libraries, reducing training time from **days to minutes**
- Collaborated closely with an internationally recognised AI authority (UNESCO Chair in AI) to align research with SDG-driven objectives, integrating sustainable computing methodologies into machine learning workflows

Entrepreneurship

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

- Ran sprints and agile development with co-founder to build and launch full-stack mobile app in under three months
- Tech Stack: JS, React Native, Python, 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, **sparking 1250+ conversations** and launching App Store MVP

Skills

Programming and ML: Python (PyTorch, JAX), C++, JavaScript, SQL
Deep Learning Specialisations: Reinforcement Learning, LLMs, CNNs, Diffusion Models, Autoencoders
Certifications: Azure (AZ-900), Samsung RAN Product Certification, 5G NR Air Interface (Award Solutions)
Communication: Strong track record in delivering technical documentation, presentations, and client engagement