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

TS Systems Design Engineer, Samsung Networks – Texas, US   02/22 – 09/23
- Supported teams with 5G SME knowledge during unplanned outages, leading 4 RF engineers to achieve 99.5% KPI compliance during **the first US 5G Stand-alone deployment**.
- Created Python scripts and utilised Matplotlib to analyse and visualise latency metrics for 5G feature rollouts, providing data-driven insights that shaped strategic decisions by Samsung Networks leadership.
- Collaborated with HQ (South Korea) and cross-functional teams to deliver technical briefings on 5G call flows and AI-based energy savings algorithm applications, enhancing key customer adoption strategies.
- Authored technical test procedure documents, leveraging JIRA for successful completion of 100+ stationary test cases while leading a team of 12+ engineers through rigorous troubleshooting to root cause analyse connectivity.

TS Systems Design Engineer Intern, Samsung Networks – Texas, US   05/21 – 08/21
- Delivered C-Band slot placement of CSI-RS solution, **reducing interference by 25%** from neighbouring cells and demonstrating understanding of 3GPP standards.
- Organised the intern culture committee, leading Zoom events of > 40 interns to increase cohort camaraderie.

Flight Deck Electrical Design Co-Op, L3Harris – Texas, US   05/19 – 12/19
- Contributed to **3D CAD optimisations** for mission-critical flight-deck systems across a fleet of military and commercial aircraft. Delivered 40+ tech lead-approved Siemens NX wiring diagrams with an average of **8% under project budget**.

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.

Entrepreneurship

Entrepreneurship, Morfff – London, UK   10/23 – 03/24
- Bootstrapped a cross-platform social network app harnessing generative AI to **spark 1250+ conversations**.
- Established CI/CD pipeline for agile development with a co-founder on **full-stack mobile app development** JS, React Native, Android Studio, Firebase/Firestore, GCP, Replicate API, AWS Lambda, and Vast.ai.

Projects

Optimising HVAC Control Across Diverse Climates, a Deep Reinforcement   01/24 – 09/24
Learning Approach, UCL – London, UK
- Achieved second highest mark (78%) by John Shawe-Taylor, UNESCO Chair in Artificial Intelligence, collaborated towards SDG goals and sustainability-driven, structured thesis.
- Built Reinforcement Learning HVAC optimization framework, **achieve 53% improvements in energy efficiency**, energy savings of **1.064m kWh**.
- 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.

Skills

Programming Languages: Python, JavaScript, SQL
Machine Learning Frameworks: PyTorch, TensorFlow, JAX
Deep Learning Specializations: Reinforcement Learning, Generative Models, Neural Networks
Simulation Software: MATLAB, OpenStudio, Energy Plus, Gymnasium, bsuite
Hardware Acceleration: GPU Optimization, Metal Performance Shaders, Distributed Computing