Dhillon Thurairatnam

Linkedin | Online Portfolio | Github

Education

King's College London Sept. 2025 – Jan. 2027
MSc Artificial Intelligence *London, UK*

University of Bristol Sept. 2022 – July 2025
BSc Computer Science *Bristol, UK*

- Grade: 1^{st} Class honours
- Key Modules: Machine Learning, Advanced Algorithms, Data Science, Software Tools, OS & Security, Computer Vision, Functional + Imperative + Object-Oriented + Concurrent & Distributed Programming

Wimbledon College Sept. 2015 – June 2022
London, UK

- A-Levels: Mathematics A^*, Further Mathematics A^*, Physics A^*, Chemistry A^*

Experience

Teaching Assistant | University of Bristol Sept. 2024 – May 2025

- Mentored 2^{nd} year software engineering project students, ensuring adherence to industry-standard development practices.
- Collaborated with unit directors teaching cybersecurity and operating systems theory in the Computer Systems B module.
- Facilitated student learning by clarifying core principles to students in the algorithms and data structures module.

Machine Learning Research Internship | University of Bristol June – July 2024

- Researched novel machine learning methods for super resolution tasks to upscale models of flow fields in 3D.
- Reviewed research papers on Generative Adversarial Networks (GANs) applied to super resolution and implemented and trained a Multi-Pass GAN using Pytorch.
- Achieved a 50% training time reduction compared to traditional 3D GAN approaches while enhancing visual quality of generated flow fields; authored a comprehensive report and presented findings to the project supervisor.

Olympus Rover Trials Software Engineer | University of Bristol Oct. 2023 – June 2024

- Designed a Wi-Fi-controlled rover for a sample return mission, leading software development and testing in a 9-member team.
- Engineered a client-server architecture with a web interface for real-time telemetry and live video streaming via WebRTC and a Python HTTP server for the drivetrain and scoop control.
- Awarded 83% on a critical design review, delivering technical specifications on component selection, software analysis and efficient teamwork strategies.

Projects

RAWL-E AI Agents | *Python, Tensorflow, Mesa* Jan. – May 2025

- Developed ethical multi-agent reinforcement learning systems using DQN and Rawlsian principles.
- Engineered a novel multi-DQN learning architecture with an Ethical Embedding algorithm to promote fairness in simulated resource-sharing environments.
- Achieved emergent ethical norms and improved overall outcomes for disadvantaged agents, scoring 75% in the dissertation.

Quantum Cross Chain Arbitrage | *Python React, Typescript, Docker, Qiskit* Jan. 2025

- Programmed a Quantum enhanced cross chain arbitrage bot that uses QAOA and Flare's blockchain protocols to execute fast, secure and profitable cross-chain arbitrages via flash loans.
- Built an interactive dashboard to visualise trading pair data and created the backend graph construction and API endpoints.
- Won the DeFi prize category ($5000) and secured runner-up in the Vyper category at the Oxford ETH hackathon.

MedicRecall Revision App | *Dart, Flutter, Python, Firebase, Google Cloud Platform* Sept. 2023 – June 2024

- Developed a cross-platform medical exam revision application on for an NHS doctor, implementing a spaced repetition learning algorithm, a revision calendar with email notifications and secure JWT + OAuth with 2FA authentication system.
- Orchestrated agile development as a product manager and utilised a Kanban board in a team of 5.

Conway's Game of Life Simulation | *Go, AWS* Sept. – Dec. 2023

- Optimised a distributed Game of Life simulation on AWS EC2 nodes using goroutines, dynamic load balancing and CPU profiling to identify bottlenecks. Ensured reliable communication through TCP, RPC and a Halo-Exchange mechanism.
- Enhanced cell update time complexity with algorithmic refinements, reducing computation time by 25%, ensuring scalability and a checkpoint-based fault tolerance.

Scotland Yard Game | *Java* Jan. – May 2023

- Modeled the game mechanics of the Scotland Yard Board Game and implemented an AI agent using Dijkstra's algorithm and a Mini-Max game tree to optimise the winning potential with a custom scoring function.

Technical Skills & Achievements

Languages: Java, Python, C, C#, SQL, JavaScript, HTML/CSS, Haskell, Go, Dart
Frameworks & Tools: React, Express.js, Dash, Flutter, JSON, pandas, NumPy, Matplotlib, Scikit-learn, OpenCV, Tensorflow, Mesa, Git, Docker, CI/CD, Firebase, AWS, Google Cloud Platform, Linux, LaTeX, Figma
Achievements:

- Bristol Plus Award - Top 5% of University of Bristol students for outstanding work experience and extracurricular activities.
- Duke of Edinburgh Bronze Award - Building teamwork, perseverance and community service skills.