

Education

- 2021 - 2022 **Imperial College London**,
MSc.Advanced Computing.
Final Grade 70+
- 2018 - 2021 **The University of Manchester**,
BSc.Artificial Intelligence.
Top 10% Graduate
- 2017 - 2018 **INTO Manchester**,
Foundation Year.
Top 10% Graduate with A*A*A* in Maths, Further Maths and Physics

Experience

- Sep 2023 - **Software Engineer - Full Time**, *Emotech*, London, UK, Rust.
Present
 - Served as a key member of the production team.
 - Responsible for backend API development in Rust, transforming AI models trained by the research team into market-ready products, while employing innovative Rust libraries to minimize API response times.
 - Responsible for Azure SaaS integration to market our products.
 - The product earned high praise from both colleagues and clients.
- Jan 2023 - **Software Engineer - Full Time**, *Codethink*, Manchester, UK, C.
Aug 2023
 - Developed and contributed to Free and Open-Source Software to automate quality assurance testing.
 - Quality Assurance Daemon: Provides remote interaction with a device in place of having to physically interact with it. It's a remote control for test rigs. [Link to Blog Post]
 - Testing in a Box: Integrates GitLab server/runner, OpenQA webUI/worker, and Q.A.D. into one box, making it an all-in-one solution for fully automated hardware testing. On-going project.
- Jun 2021 - **Machine Learning Engineer - Internship**, *AgCIM Research Centre*, Guangzhou, China, Python.
Aug 2021
 - Utilized Pytorch to develop an image-based rural area hazard detection system with core functionalities such as object segmentation and road category classification.
 - Improved the accuracy of the road width calculation module in City Information Modeling (CIM) by incorporating the MegaDepth network.
- Jun 2022 - **Network Support Engineer - Part Time**, *Sobey*, London.
Aug 2022
 - Monitored the status of over 200 server clusters and ensure the proper functioning of the database.
 - Regularly performs maintenance on PCs for non-technical colleagues.

Skills

Languages Rust, Python, Java, C, JavaScript, familiar with C++
Frameworks Tokio, Nddarray, PyTorch, Spring, OpenGL, Flask, JUnit
Utilities Linux, Docker, Ansible, Git, Markdown, LaTeX, CI/CD, OpenQA, AWS, Azure
Communication English(fluent), Chinese(mother language)

Projects

- Jun 2024 - **Rust Voice Activity Detection Library**, [Homepage], Rust.
Present
 - Ongoing personal open-source project. Published on crates.io
 - Pure Rust implementation of Silero VAD model and algorithm.
 - Easy to use batch and streaming interface.
 - Doing: Async interface.

- Jun 2023 - **Rust Octree Library**, [Github], Rust.
- Jul 2023
- A highly optimised Octree implementation.
 - Capable of tracking dynamic objects in the environment.
 - Easy to integrate into existing codebase.
- Mar 2023 - **Brainf*ck Interpreter in Rust**, [Github], Rust.
- May 2023
- Developed a highly optimized interpreter for the Brainf*ck language using Rust.
 - Implemented a modern and user-friendly command-line interface.
 - Included extensive debugging messages for static checking and runtime errors.
 - Achieved high test coverage and fully documented the project.
- May 2022 - **Unsupervised Domain Adaptation on Medical Images**, *Dr. Matthew Williams, Imperial College London*, [Github], PyTorch.
- Sep 2022
- Devised a novel method for addressing the domain shift problem, enabling a model trained on one dataset to adapt and fit to another dataset without significant loss in performance.
 - The proposed novel method offers two key benefits:
 1. Source-Free: Model adaptation does not require the source dataset, which enhances cross-institutional collaboration efficiency and addresses data privacy.
 2. Supports Various Network Backbones: The novel method is compatible with all neural network architectures, without any special requirements.
 - Demonstrated the efficacy of the proposed method on BraTS2021 dataset, achieving comparable performance with the state-of-the-art approach.
- Jan 2022 - **Robot Learning and Control in Maze Environment**, *Self-motivated*, PyTorch.
- Mar 2022
- Implemented several algorithms to teach a robot how to solve a maze.
 - Traditional algorithm: Cross Entropy Method. Continuously adjusted the covariance matrix to make the action distribution approach the known optimal solution.
 - Machine Learning: Trained a model to learn the non-linear environment and later used in Model Predictive Control algorithm.
 - Behavioural Cloning. Trained a model to mimic how humans navigate in the maze. Implemented the DAgger algorithm to improve the model's performance while reducing the amount of data needed.
- Oct 2020 - **Procedural Terrain Generation for Video Game Development**, *Dr Ke Chen, The University of Manchester*, PyTorch, C#, Unity.
- Apr 2021
- Utilized Perlin noise to procedurally generate terrains for modern RPG games and simulated hydraulic erosion process to enhance playability.
 - Employed Spatial GAN model to generate realistic terrain for a flight simulation game.
 - Completed as a First Class Final Year project for my undergraduate degree.
- Oct 2020 - **MCTS Board Game AI**, *Team*, [Github], Java.
- Dec 2020
- Collaborated with a team of four to develop an AI bot to play a board game, Kalah.
 - Implemented a bot based on Monte Carlo Tree Search with some improvements such as Early Payout Termination and MCTS-Minimax hybrid.
 - Our bot beats 37 bots submitted by other teams (51 in total) in a tournament.