

## 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

- Jan 2023 - **Software Engineer**, *Codethink*, Manchester, UK.  
Present
  - 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.
  - Skills: C, CI/CD, Ansible, Docker, Team communication, Technical writing for documentation and blog post.
- Jun 2021 - **Machine Learning Engineer Internship**, *AgCIM Research Centre*, Guangzhou, China.  
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 Python, Java, Rust, C, JavaScript, familiar with C++  
Frameworks PyTorch, Numpy, Spring, OpenGL, Flask, JUnit  
Utilities Linux, Docker, Ansible, Git, Markdown, LaTeX, CI/CD, OpenQA, familiar with AWS  
Communication English(fluent), Chinese(mother language)

## Projects

- Jun 2023 - **Rust Octree Library**, [Code], Rust.  
Present
  - Ongoing personal project.
  - 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**, [Code], 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*, [Code], PyTorch.
- 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*, [Code], 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.
- Jan 2020 - **EventLite Website**, *Team*, Java, Spring, JUnit, Jenkins.
- May 2020
- Lead a team of 6 people to develop a website, EventLite, in Spring framework.
  - Set up and maintained the website database.
  - Code is maintained in a high standard with unit tests and security tests of each function we implemented.
- Oct 2019 - **Stendhal Game**, *Team*, Java, JUnit, Jenkins.
- Jan 2020
- Worked in a group of 7 to maintain an open source game in GitLab.
  - Fixed bugs raised by players and added JUnit tests for them. Introduced new story-line based on the original game and refactored some hard-to-read legacy code.

## Extra Curriculars

- Oct 2020 - **Animal Observer Volunteer**, *ZSL Instant Wild*.
- Mar 2021
- Identified hundreds of animals from photos to promote behaviour analysis, demonstrating a strong attention to detail and the ability to concentrate for extended periods of time.
- Sep 2019 - **PASS Leader**, *The University of Manchester*.
- Jun 2020
- Helped several first year students in Peer Assisted Study Session, offering academic support and developed interpersonal skills.
- Dec 2019 - **Panda Volunteer**, *China Conservation and Research Center for Giant Panda*.
- Dec 2019
- Assisted in cleaning panda rooms, preparing their food, and collecting data to monitor their health.
- Sep 2018 - **Student Representative**, *The University of Manchester*.
- Jun 2019
- Acted on behalf of students to raise concerns and suggestions to department staff, with the aim of making a positive impact on the CS department community.
- Jun 2018 - **IELTS Teaching Assistant**, *DISA English*.
- Aug 2018
- Assisted nine students in achieving a score of 7 or higher in the reading and listening sections of the IELTS exam.