

## Education

- 2021 - 2022 **Imperial College London**,  
*MSc.Advanced Computer science.*  
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

- Jun 2021 - **Research Internship**, *AgCIM Research Centre*, Guangzhou, China.  
Aug 2021
  - Completed image-based rural area hazard detection system using Pytorch. Core functions include object segmentation and road category classification.
  - Used MegaDepth network to improve the accuracy of road width calculation module in City Information Modeling (CIM).
  - Work highly recognized by my colleagues.
- Jun 2022 - **Network Support Engineer - Part Time**, *Sobey*, London.  
Aug 2022
  - Used Docker to monitor the status of more than 200 server clusters and maintain the normal operation of the database.
  - Provides routine maintenance of PCs to non-tech colleagues.
  - Improved problem-solving and communication skills.

## Skills

Languages Python & Java, familiar with other C-like languages  
Frameworks PyTorch, Numpy, familiar with TensorFlow, Spring, OpenGL, React, Flask  
Utilities Linux, Docker, AWS, Anaconda, Git, Markdown, LaTeX, Jenkins  
Communication English(fluent), Chinese(mother language)

## Projects

- May 2022 - **Unsupervised Domain Adaptation on Medical Images**, *Dr. Matthew Williams, Imperial College London*, [Code], PyTorch.  
Sep 2022
  - Proposed a new method to solve domain shift problem so a model trained in one dataset could be used to fit another without obvious performance drop.
  - The novel method has the following two advantages:
    - Source-Free. The source dataset is not required during model adaptation, which makes cross-institution cooperation more efficient.
    - Support Various Network Backbone. There is no special requirements to neural network architecture, the novel method can easily fit all neural network design.
  - Tested in BraTS2021 dataset, achieved a similar performance when compared to SOTA paper.

- Jan 2022 - **Robot Learning and Control in Maze Environment**, *Self-motivated*, PyTorch.
- Mar 2022
- Implemented several algorithms to teach robot how to solve a maze.
  - Traditional algorithm: Cross Entropy Method. The covariance matrix is continuously adjusted to make the action distribution approach the known optimal solution.
  - Machine Learning: Trained a model to learn this non-linear environment and later used in Model Predictive Control.
  - Behavioural Cloning. Trained a model to learn how human navigate in this maze. Used DAgger algorithm to further improve performance while reducing amount of data needed.
- Nov 2021 - **Reinforcement Learning in OpenAI Gym CartPole**, *Self-motivated*, PyTorch.
- Dec 2021
- Implemented DQN, Target DQN, DDQN to balance CartPole.
  - Can reach 500 seconds after fine-tune.
- Oct 2021 - **Indoor Location Inference Based on WIFI Signal Strengths**, *Team*, PyTorch.
- Nov 2021
- A house is equipped with 7 WIFI emitters in its 4 rooms, detect which room we are in based on the signal strengths.
  - Implemented a decision tree model and used pruning to prevent overfitting.
  - Achieved 89.5% average accuracy and 0.9 F1 score with 10 fold cross validation.
- Oct 2020 - **Procedural Terrain Generation**, *Dr Ke Chen, The University of Manchester*, PyTorch, C#, Unity.
- Apr 2021
- Used Perlin noise to procedurally generate terrains for modern RPG games and simulated hydraulic erosion process to increase playability.
  - Used Spatial GAN model to generate realistic terrain for flight simulation type game.
  - First Class Final year project (Undergraduate).
- Oct 2020 - **N Body Movement Simulation**, *Self-motivated*, [Code], Numpy, PyQt, OpenGL.
- Dec 2020
- Built a particle system to simulate the N-Body movement problem in OpenGL.
  - Used PyQt framework to provide a powerful GUI where users can adjust all parameters of each particle.
- Oct 2020 - **MCTS Board Game AI**, *Team*, [Code], Java.
- Dec 2020
- Participated in a team of 4 to develop an AI bot to play a board game, Kalah.
  - Our bot was based on Monte Carlo Tree Search with some improvements such as Early Payout Termination, MCTS-Minimax hybrid.
  - The 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.
- Nov 2019 **Face Recognition**, *Self-motivated*, Numpy, Jupyter.
- Trained a model by minimising the  $L_2$ -regularised sum of squares loss using the normal equations.
  - Achieved 92.5% accuracy when classifying 40 people.
- 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 features based on the original game and refactored some hard-to-read legacy code.
- Jan 2019 **Yes/No Voice Recognition System**, *Self-motivated*, Java.
- Built a voice recognition system to distinguish "yes" and "no" said by different people with different accent.
  - Originally this was a naive Bayes classifier, optimised with Markov chain and hidden Markov Model later on. Achieved 89% testing accuracy.
- Jan 2019 **Robot Localization System**, *Self-motivated*, Java.
- Developed an automatic robot positioning system, which is based on Bayes probability theory.
  - Achieve high positioning accuracy even when sensor readings maybe inaccurate, thereby reducing the probability of collision between the robot and obstacles.

## Extra Curriculars

- Oct 2020 - **Animal Observer Volunteer**, *ZSL Instant Wild*.
- Mar 2021 Identified hundreds of animals from photos to promote behaviour analysis. Enhanced ability to concentrate.
- 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 Helped to clean panda houses, prepared panda food, and recorded data to monitor panda health.
- Sep 2018 - **Student Representative**, *The University of Manchester*.  
Jun 2019 Acted on behalf of students to raise issues we concerned and suggestions to department staff, in order to make a positive difference not only on courses but also the whole CS department community.
- Jun 2018 - **IELTS Teaching Assistant**, *DISA English*.  
Aug 2018 Helped 9 students to achieve 7+ in IELTS reading and listening part.