

Education

- 2021 - **Imperial College London**,
Present *MSc.Advanced Computer science.*
First Class Expected
- 2018 - 2021 **The University of Manchester**,
BSc.Artificial Intelligence.
Top 10% Graduate
- 2017 - 2018 **INTO Manchester**,
Foundation Year.
Top 10% Graduate

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.

Skills

- Languages Python, familiar with Java and other C-like
- Frameworks PyTorch, Numpy, familiar with Tensorflow, Spring, OpenGL
- Utilities Linux, Anaconda, IDEA, Jupyter Notebook, Git, Markdown, LaTeX, Jenkins
- Communication English(fluent), Chinese(mother language)

Projects

- May 2022 - **Transfer Learning on Brain Metastasis Detection**, *Dr. Matthew Williams, Imperial College London*,
Present PyTorch.
- Apply transfer learning on CT scans to detect Brain Metastasis.
 - On going project.
- 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.