Wenqing Zong

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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 - Aug 2021 **Research Internship**, *AgCIM Research Centre*, Guangzhou, China.
- 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 - Aug 2022 **Network Support Engineer - Part Time**, *Sobey*, London.
- 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, 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 - Sep 2022 **Unsupervised Domain Adaptation on Medical Images**, *Dr. Matthew Williams, Imperial College London*, [Code], PyTorch.
- 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:
  1. Source-Free. The source dataset is not required during model adaptation, which makes cross-institution cooperation more efficient.
  2. Support Various Network Backbone. These 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 - Mar 2022 **Robot Learning and Control in Maze Environment**, *Self-motivated*, PyTorch.
- 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 - Dec 2021 **Reinforcement Learning in OpenAI Gym CartPole**, *Self-motivated*, PyTorch.
- Implemented DQN, Target DQN, DDQN to balance CartPole.
- Can reach 500 seconds after fine-tune.

Oct 2021 - Nov 2021 **Indoor Location Inference Based on WIFI Signal Strengths**, *Team*, PyTorch.
- 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 - Apr 2021 **Procedural Terrain Generation**, *Dr Ke Chen, The University of Manchester*, PyTorch, C#, Unity.
- 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 - Dec 2020 **N Body Movement Simulation**, *Self-motivated*, [Code], Numpy, PyQt, OpenGL.
- 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 - Dec 2020 **MCTS Board Game AI**, *Team*, [Code], Java.
- 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 - May 2020 **EventLite Website**, *Team*, Java, Spring, JUnit, Jenkins.
- 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 $L2$-regularised sum of squares loss using the normal equations.
- Achieved 92.5% accuracy when classifying 40 people.

Oct 2019 - Jan 2020 **Stendhal Game**, *Team*, Java, JUnit, Jenkins.
- 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 - Mar 2021 **Animal Observer Volunteer**, *ZSL Instant Wild*.
Identified hundreds of animals from photos to promote behaviour analysis. Enhanced ability to concentrate.

Sep 2019 - Jun 2020 **PASS Leader**, *The University of Manchester*.
Helped several first year students in Peer Assisted Study Session, offering academic support and developed interpersonal skills.

Dec 2019 - Dec 2019 **Panda Volunteer**, *China Conservation and Research Center for Giant Panda*.
Helped to clean panda houses, prepared panda food, and recorded data to monitor panda health.

Sep 2018 - Jun 2019 **Student Representative**, *The University of Manchester*.
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 - Aug 2018 **IELTS Teaching Assistant**, *DISA English*.
Helped 9 students to achieve 7+ in IELTS reading and listening part.