Mingyang Hao

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Education

Master of Information Technology **Mar 2022 - Jun 2023**
The University of Melbourne
- Major in Artificial Intelligence (WAM 78)

Bachelor of Computer Science **Mar 2019 - Dec 2021**
University of Wollongong
- Graduate with distinction (WAM 87)

Technical Skills

Programming
- Experienced in Java, C++ and Python programming languages.
- Proficient in SQL and have solid understanding of database management.

Data Science and Machine Learning
- Extensive mastery of fundamental machine learning algorithms and principles of artificial neural networks.
- Demonstrated skills in utilizing Python-based deep learning frameworks such as TensorFlow and Keras.
- Practical experience in developing, implementing, and fine-tuning machine learning models, algorithms, and statistical models.

Natural Language Processing (NLP)
- Capable of resolving various downstream tasks using conventional algorithms.
- Expertise in applying algorithms such as N-gram, Feed-Forward NN, RNN, HMM, Transformer in real-life problems.

Computer Vision (CV)
- Competent in solving a wide array of classical computer vision tasks, including Classification, Depth & 3D, Object Detection, and others.
- Acquainted with the principles and applications of advanced algorithms such as CNN, GAN, Fast/Faster R-CNN.

Autonomy Planning
- Well-versed in various reinforcement learning algorithms such as MCTS, Heuristic Search, Q-learning/SARSA.
- Demonstrated proficiency in recommendation algorithms (MAB), game theory algorithms, and a solid understanding of the principles and practices of Nash Equilibrium.

Project Experience

Master's Research Project - Performance Analysis of Quantum Variational Classifier under Adversarial Attacks **Mar 2023 - Jun 2023**
- Devised, implemented, and enhanced the structure of Quantum Variational Classifiers (QVCs).
- Conducted extensive testing to assess resistance to adversarial attacks and evaluate performance and efficiency across various entanglement topologies.
- Environment built using Python, with libraries such as PyTorch, TensorFlow, and PennyLane

Bachelor's Graduate Project - Robocup Online Simulator **Jan 2019 - Dec 2019**
- Project Link: https://github.com/romeoonlinesim
- Served as team leader, architect, UI designer, and backend programmer.
- Developed a web-based application for continuous interaction with the backend server and display of match records.

Master's Course Project – Data visualization using R **Jul 2022 – Nov 2022**
- Project Link: https://github.com/hmywudi/NYC_Flight_Rshiny.
- Developed an R shiny application for visualizing the nycflight dataset.

Master's Course Project – Automated Fact Checking **May 2023**
- Used natural language processing technology to automatically fact-check climate science statements.
- Experimented various evidence retrieval and label prediction methods, including TF-IDF, Word2Vec, BERT, Siamese Network, and SVM.
- Evaluated the performance of different models in a large (1.2M records) Corpus-Evidence Corpus.
- Proposed a hybrid method for evidence retrieval and empirical weighted voting algorithm for label prediction.
- Made use of various Python libraries, including PyTorch, TensorFlow, Keras, NLTK, Transformers, Gensim.

Master's Course Project – Stereo Disparity **Oct 2022**

- Calculate disparity maps from stereo image pairs taken from moving vehicles.
- Evaluated the impact of parameters such as window size and offset values on algorithm performance, such as RMS error, subpixel accuracy, and runtime.
- Used the stereoBM algorithm in the OpenCV library as a benchmark to compare with self-implemented algorithms.
- Analyzed the pros and cons of different algorithms and possible directions for improvement, such as smoothness constraints and matrix operations.

Master's Course Project – Yinsh **Oct 2022**

- Design AI for the two-player board game Yinsh using MCTS, Heuristic Search, Q-learning.
- Explored different feature selection, heuristic functions, parameter adjustment, and model evaluation methods, including SSD, NCC, SAD, epsilon-greedy, subpixel accuracy, root mean square error.

Internship

IT Intern – ING Bank in Sydney **Jan 2019**

- Internship with IT department (infrastructure, security, DevOps team)
- Experienced the workflow of cloud-based enterprise and the application of DevOps and CI/CD

Awards and Other Experience

Dean's Merit List Award **2021**

University of Wollongong

- Top 5% of students in the Faculty of Engineering and Information Sciences

Part-time Volunteer **July 2013 - Sept 2014**

Rui Dong Hospital, Shanghai

- Guiding patients with special needs and assisting doctors