ZHANG Yehang

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EDUCATION

Hong Kong University of Science and Technology (Guangzhou), Guangdong, China 09/2024 - 07/2026

- Master of Philosophy (General)

China University of Geosciences, Wuhan(CUGW), Hubei, China 09/2019 - 07/2023

- Bachelor of Engineering in **Computer Science and Technology**, School of Computer Science
- Average Score: **88.32** | GPA: **3.57**

PUBLICATIONS

- **Y. Zhang**, "PCSA: Enhancing CNN Performance with Pyramid Channel and Spatial Attention," *IEEE Access*, vol. 12, pp. 29062-29071, 2024, doi: 10.1109/ACCESS.2024.3368801.
- **Y. Zhang**, Q. Ding, and C. Liu, "An Enhanced XGBoost Algorithm for Mobile Price Classification," in 2023 IEEE 6th International Conference on Big Data and Artificial Intelligence (BDAI), IEEE, Jul. 2023, pp. 154–159. doi: 10.1109/BDAI59165.2023.10256847.

RESEARCH EXPERIENCES

PCSA:Enhancing CNN Performance with Pyramid Channel and Spatial Attention 01/2023 – 06/2023

- My graduation research (also see in the **top 5%** ***"Excellent Graduation Thesis"*** at CUGW) proposed a new attention mechanism—PCSA block—which can extract and combine multi-scale information efficiently by fusing channel weights and spatial weights
- As a plug-and-play module, it can be applied to the backbone network for improving the performance of two experimented target models named as VGG-PCSA and PCSANet, respectively
- Used Grad-CAM algorithm to produce a visual explanation of the experimental result, with proven model performance superior to those applied other soft attention mechanism

Body Pose Recognition With MediaPipe 06/2022 – 09/2022

- Created a visualization program for gesture detection and yoga pose classification through monocular camera using Python and PyQt5 (which was recorded for oral presentation as an excellent example for the class)
- Achieving human body pose detection and yoga pose classification through the MediaPipe framework; implementing hand keypoint detection through deep learning and a human skin color segmentation algorithm.
- Trained landmark time series data in Artificial Neural Networks and LSTM for dynamic gesture prediction

An Enhanced XGBoost Algorithm for Mobile Price Classification 02/2022 – 05/2022

This project developed and experimented a novel classification model that combines the Dung Beetle Optimizer (DBO) and XGBoost to achieve accurate mobile price classification.

- Designed a feature filtering strategy that took into account the importance of each feature in the dimensionality reduction phase using PCA
- Conducted experiments on multiple classification datasets, which showed the proposed DBO-XGBoost model can improve classification accuracy and has better generalization ability compared to other baseline models such as Decision Tree (DT), Random Forest (RF), and AdaBoost
- A relevant research paper was accepted for publication and oral presentation by 6th International Conference on Big Data and Artificial Intelligence (**BDAI 2023**)

Satellite Coverage Area Measurement and Visualization 04/2021 – 06/2021

- Leveraged latitude and longitude coordinates with proficient C++ programming skills to compute time windows and coverage areas for satellite-to-ground targeting. Developed a visualization program with Qt to enhance data presentation.
- Further evaluated coverage simulation outcomes with genetic algorithm and particle swarm optimization methods (This coursework scored 95/100).

COMPETITIONS

First Prize, 2021 Big Data Challenge For College Students

- Fetched mask-wearing and facial framework recognition data from XML
- Utilized the YOLO-v5 algorithm to detect mask-wearing states based on the competition dataset. Conducted model evaluation and compared performance with classical target detection algorithms
- Enhancing the YOLO-v5 algorithm with the Squeeze-and-Excitation (SE) attention mechanism

Second Prize, 2021 Teddy Cup Data Analysis Challenge Competition

- Performed data mining (historical sales data) in Pandas and analyzed sales performance of a given telecom product.
- Activated time series prediction in Python based on LSTM neural network to forecast profitability
- Supported teammates to verify the programming of a digital board for data display

INTERNSHIP

R&D Assistant, Ningbo Chunjian Electronic Technology Co. 02/2024 – Now

- Participated and assisted in the development of gesture recognition technology in automotive smart cockpits. Acquisition, processing and labeling of IR images generated by infrared cameras and improve the development documents.
- Learn and participate in C++ and ONNX based model deployment and optimization

PERSONAL SKILLS

- **IT Skills**: proficient in C++, Python, PyTorch, Qt
- Personal Blog (CS/DS Study Notes and Technical Blogs): zhangyh2002.run
- Interests: Calligraphy, Swimming; Vocal Music (tenor of CUGW Student Choir)
- First Prize, The Second National College Students' English Vocabulary
- First Prize, 2023 "ETTBL" National College Students English Vocabulary Challenge Cup
- 200+ Volunteer Service Hours (Silver Prize for Outstanding Volunteers in Heilongjiang Province)