HAOLEI BAI

baih0011@e.ntu.edu.sg | deadlykitten4.github.io

Education

Nanyang Technological University, Singapore *Aug.2023 - Feb.2025*

Master of Science in Signal Processing; GPA: 4.57/5.0

Qingdao University of Technology, Qingdao, China *Sep.2019 - Jun.2023*

Bachelor of Engineering in Communication Engineering; GPA: 4.49/5.0 (Rank: 3/90)

Publications

ResSVD: Residual Compensated SVD for Large Language Model Compression *Under Review*

Haolei Bai, Siyong Jian, Tuo Liang, Yu Yin, Huan Wang

[arXiv]

Research Experience

ResSVD: Residual Compensated SVD for Large Language Model Compression *Jan.2025 - May.2025*

ENCODE Lab, Westlake University *Advisor: Huan Wang*

- Leveraged residual matrices to compensate for SVD, reducing the overall truncation loss
- Proposed partial-layer compression strategy to reduce layer-wise error and mitigate error propagation

AI Knowledge Engineering for Intelligence Analysis *May.2024 - Nov.2023*

CFAR, Agency for Science, Technology and Research (A*STAR) *Advisor: Ming Yan*

- Employed open source LLMs to extracted events from unstructured documents
- Improved LLMs event extraction accuracy through Chain-of-Thought prompt strategy and multi-turn dialogues
- Leveraged these extracted events as a basis for summary generation by AI model and as reasoning evidence for knowledge exploration by human users

Projects

Data Efficient Training for Egocentric Vision-based Action Recognition *Aug.2023 - Nov.2024*

Master's thesis, Supervised by prof. Kot Chichung, Alex, NTU

- Efficiently learn features with minimal labeled data using semi-supervised learning techniques
- Applied multimodal learning frameworks, incorporating complementary data modalities to enhance model performance
- Applied transformer-based architectures to analyze, implemented iterative experimentation and evaluation

Human Action Recognition in the Dark: Exploration with Late Fusion and Image Enhancement *Nov.2023 - Dec.2023*

- Employed late fusion strategy to integrate the features extracted from dark video frames with other relevant features and modalities, maximizing the accuracy of human action recognition in dark conditions
- Designed an end-to-end model to complete the whole process, tested and evaluated the performance of the model

Realization of Kinect Function Based on Face Recognition and Gesture Recognition *Dec.2022 - Jun.2023*

- Designed a game system that can be controlled without a remote control but specific gestures
- Employed OpenCV for face recognition to verify users' identity preventing unauthorized users from accessing the system and used Mediapipe to implement gesture recognition
- Created an interactive game, where users can play the game through specific gestures
- Developed and designed a UI interface to realize user interaction

Develop a UAV system for Detecting Industrial Chimney Flaws Based on Machine Learning *Jul.2021 - Jun.2022*

- Built a Quad-rotor UAV control system with a vision system
- Established an image processing model to process the collected chimney flaws' picture

Scholarships & Awards

CFAR Internship Award for Research Excellence (CIARE)	*2024*
Excellent Student Scholarship	*2019 - 2023*
National Scholarship for Encouragement	*2022*
Third Prize, "iCAN" National College Student Innovation and Entrepreneurship Competition	*2021*
Second Prize, The National College Student Electronic Design Competition	*2021*
First Prize, 14th China College Students Computer Design Competition of Shandong Province	*2021*
Second Prize, Shandong Provincial College Student SCM Application and Design Innovation Competition	*2021*
Third Prize, 11th Provincial College Students Mathematics Competition	*2020*

Skills & Languages

Skills: Python, Pytorch, Linux and C/C++

Languages: Chinese (Native), English (IELTS 6.5)