

Guangyan Sun

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Summary

Research Interest: My research interest focus revolves around the captivating domain of **artificial intelligence in education**, particularly in K-12 math learning education. Presently, my efforts are centered on Diffusion Models and Multi-modal Large Language Models. My ultimate goal is to develop autonomous systems that can design diverse study curriculum that can make learning easy and fun.

Education

Sun Yat-sen University (SYSU)

B.ENG. IN INTELLIGENCE SCIENCE AND TECHNOLOGY

- Overall GPA: **3.8/4**, 87.3/100. **1st** out of 226 in the last semester.

Shenzhen, Guangdong

Sep. 2020 - Jul. 2024

National University of Singapore

VISITING STUDENT IN SOC SUMMER WORKSHOP 2023

- Cluster in Visual Computing
- Traffic Sign Recognition System Project Leader.

Singapore

May. 2023 - Jul. 2023

Research Experience

Sun Yat-sen University

CV RA AT HUMAN CYBER PHYSICAL INTELLIGENCE INTEGRATION LAB

Nov. 2022 - Present

- **Research Topics:** Multi-modal LLMs, Diffusion Models, Open-Vocabulary Object Detection
- Developed a data-driven pipeline for open-vocabulary detection using diffusion models to generate high-quality synthetic data. Utilizing multi-modal LLMs on open-vocabulary detection problem for better understanding and reasoning on real world. (on going)

NLP RA AT HUMAN CYBER PHYSICAL INTELLIGENCE INTEGRATION LAB

Sep. 2021 - Nov. 2022

- **Research Topics:** AI for Math, Natural Language Processing
- Developed a seq-to-seq framewok for solving Math Word Problems (MWP) using **goal-driven tree decoder**. This decoder performed better than RNN decoder, giving a 4% increase in accuracy of equation and 5% in accuracy of answer than RNN decoder on MWP datasets like Math23k.

FOUNDER & DEVELOPER OF SYSU FLEA MARKET

Nov. 2022

- **Tech Stack:** JAVA, Python, Android Studio, PyCharm
- Designed and developed an Android application for SYSU Flea Market using Java and Android Studio. Incorporated XML for layout design to create a user-friendly interface, enabling users to browse, buy, and sell items effectively within the university community.

National University of Singapore

VISITING STUDENT AT SOC SUMMER WORKSHOP

May. 2023 - July. 2023

- **Research Topics:** Computer Vision, Traffic Sign Recognition
- Utilized a bunch of machine learning and deep learning models (SVM, Random Forest, LeNet, ResNet, ViT, etc) on GTSRB dataset to give a comprehensive analysis of the classic visual recognition problem. We found that with proper data preprocessing (image brightness) and data augmentation (color jittering), machine learning models can also perform well compared to deep learning methods on smaller datasets.

Skills

English	Tofel 108 (R:29/L:30/S:26/W:23), GRE 321 (V:151/Q:170/AW 3.5)
Programming	Python, LaTeX, Julia, C/C++, MATLAB, Java
Framework	PyTorch, Tensorflow, Transformers, MMDetection, fastai, NumPy, OpenCV.
Dev Tools	Wandb, Tensorboard, Git, Anaconda, Slurm

Honors & Awards

2021 **Sun Yat-sen University Excellent Scholarship**, Top 20% Students in SYSU