Avery Xia

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Applying for Part-Time Research Position

Education

Central South University 09/2020 – 07/2024
B.E. in Computer Science

- Major GPA: 90.05 / 100.0
- Relevant Coursework: Digital Image Processing (96), Computer Networking Technology (95), Fundamentals of Disk Operating System (93), Man–Machine Interaction (92), Artificial Intelligence (90)

Hong Kong University 09/2024 – Present
MSc in Artificial Intelligence

- Major GPA: 3.72 / 4.3
- Relevant Coursework: Foundations of Artificial Intelligence (A+), Deep Learning (A+), Quantum Computing and Artificial Intelligence (A-)

Work Experience

AI Product Application Department, Speech & Semantic R&D Group 07/2023 – 10/2023
Industry Research Intern

- Implemented table line extraction using OpenCV and LSD line detection to analyze spatial layouts of tables in complex document images.
- Integrated OCR techniques to ensure accurate extraction of table structures and text.
- Tested on over 1,400 images, achieving >95% accuracy with processing time under 150 ms per image; system was accepted and deployed.
- Developed a Golang-based backend service for cross-page table merging, supporting addition, deletion, and modification of document trees and nodes.
- Explored large language model based document parsing using optimized Markdown representations to compress document structure information.
- Verified that optimized representations significantly improved downstream question-answering accuracy.

Project & Research Experience

Multimodal Medical Image Synthesis (CT & MRI) 06/2022 – 07/2023
Supervisor: Prof. *Rangchong Zhau* (Associate Professor)

- Combined CT and MRI data to generate synthetic CT images for medical applications.
- Studied ViT, FCN, GAN, and U-Net architectures; extended U-Net to a 3D U-Net framework.

- Applied optimization techniques to reduce training loss and improve reconstruction performance.
- Evaluated models using multiple metrics and analyzed the influence of different network structures.

Rotation-Invariant Remote Sensing Image Analysis 05/2022 – 04/2023
Supervisor: Prof. *Lao Zhu* (Associate Professor)

- Designed a CNN–Transformer hybrid model with rotation invariance for remote sensing target detection.
- Conducted classification statistics across object scales and categories.
- Compared performance against ResNet and Fast R-CNN under extensive image rotations.
- Demonstrated superior robustness of the proposed model under rotation perturbations.

Multimodal Cell Image Object Detection 12/2023 – 05/2024
Supervisor: Prof. *Ruxi Liang*

- Applied YOLOv3 and Faster R-CNN to medical cell image datasets.
- Proposed a multimodal fusion approach combining medical text and image representations.
- Used large language models to generate optimized category text descriptions via prompt engineering.
- Evaluated image-only, text-only, and multimodal classifiers using AP50 and AP75 metrics.
- Achieved best detection and classification performance with the multimodal approach.

Honors & Awards

- Individual Scholarship, School of Computer Science, Central South University 2020–2021
- "Sublimation Cup" Innovation and Entrepreneurship Competition, Silver Award 2021–2022
- "Sublimation Cup" Innovation and Entrepreneurship Competition, Second Prize 2022–2023
- Provincial Excellent Project, Student Innovation Program 2022–2023
- Third Prize Scholarship, School of Computer Science, Central South University 2022–2023

Skills

Programming: Java, Python, Golang, C
Frameworks: PyTorch, PaddlePaddle
Databases & Systems: MySQL, SQL Server
Tools: PyCharm, VS Code, IntelliJ IDEA, Anaconda, VMware
Languages: Chinese (Native), English (IELTS 6.5)