Weiyi Zhang

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EDUCATION

Southern University of Science and Technology   **Shenzhen, China**

Department of Computer Science and Engineering

B.E. in Computer Science and Technology   *09/2022-07/2026*

GPA: 3.74/4.0 (89.47/100)

TOELF: 104 (Reading 28 / Listening 25 / Speaking 24 / Writing 27)

RESEARCH EXPERIENCE

Research on blood vessel segmentation algorithm of retinal OCTA image   *02/2024-06/2024*

Research Background:

➢ The segmentation of retinal blood vessels in OCTA images is the key to study and analyze the morphology of retinal blood vessels. Automatic segmentation based on deep learning still faces challenges such as fuzzy blood vessel morphology, segmentation fragmentation, and small blood vessel segmentation difficulties due to high pixel ratio of large blood vessel image.

Contributions:

➢ Proposed the Resolution Restoration Assisted Segmentation (RRAS) method to enhance both connectivity and accuracy.

➢ Introduced the Weighted Vascular Dice (WVD) metric, offering enhanced expressivity for evaluating vascular segmentation performance.

Intelligent diagnosis algorithm combining temporal eye-tracking medical knowledge   *09/2024-01/2025*

Research Background:

➢ The acquisition of pixel-level labels is time-consuming and laborious, and the traditional computer-aided diagnosis algorithm lacks interpretability.

➢ The application of eye movement technique to computer-aided diagnosis algorithm lacks the mining of time sequence information.

Contributions:

➢ Explored the importance of eye movement information at different time periods, using temporal eye movement information as medical prior knowledge to guide the model's attention.

➢ Improved the accuracy and the interpretability of the model in the task of grading diabetic retinopathy.

Personalized education agent based on MOOC - video understanding of LLM   *01/2025-Present*

Research Background:

➢ MOOC (Massive Open Online Courses) have become a key force in global education innovation. The current phenomenon of online MOOC education is "emphasizing resource supply and undervaluing learning support".

➢ It is hoped that LMMs can realize "classroom learning" by watching videos.

Current Work:

➢ Improve the understanding and application ability of video knowledge in large models, and realize multi-modal input by modal alignment

EXCHANGE PROGRAMMES

National University of Singapore(NUS)   **Singapore**

Developer, School of Computer Summer Workshop 2024   *05/2024-07/2024*

➢ Got into the course of Artificial Intelligence and Internet of Things

➢ Completed the ꞌFitness Magic Mirrorꞌ project: developed algorithms for bone extraction, fitness movement recognition and analysis and deployed them on the Raspberry PI.

➢ Received an A personal rating in the course.

INTERNSHIP EXPERIENCE

Beijing Swing Technology Co., LTD   Shenzhen, China

Intern   *02/2025-Present*

➢ Develop related algorithms for key frame identification, joint extraction and racket extraction of tennis fans'

batting videos
- ➢ Worked with a professional tennis coach to perform error correction analysis based on bone feature maps.

CURRICULAR PROJECTS

Stack Overflow Data Analysis Website
Computer System Design and Applications, Project Score: 100   *09/2024-01/2025*
- ➢ Collected 10000+ piece of Q&A data from the Stack Overflow website using api and completed four analysis tasks .
- ➢ Developed Web applications with Spring Boot that provided data visualization and enabled users to query through RESTful apis, while ensuring data analysis and results are dynamically generated.

Detection and Recognition of Traffic Signs for Self-driving Applications
Machine Learning, Project Score: 92   *09/2024-01/2025*
- ➢ Improved the accuracy of detecting small target in distance based on the yolo framework. Achieved the balance of false detection and leakage rate and real-time effect.
- ➢ Built a real-time traffic sign detection platform, which supported local video streaming, camera remote capture.

Remote Meeting
Computer Network, Project Score: 100   *09/2024-01/2025*
- ➢ Constructed a video meeting system that enables participants to communicate over the network using video, audio, and text in real time. Support multi-user concurrency and ensure multi-meeting content independence.
- ➢ Supported automatic switching between CS mode and P2P mode in different transmission environments.

User matching based on eye image Wechat mini program -- "You are in my Eyes"
Multimedia Information Processing, Project Score: 100   *02/2024-06/2024*
- ➢ Recruited volunteers and used professional instruments to collect fundus data.
- ➢ Performed feature extraction and downstream classification tasks using neural networks.
- ➢ Developed Wechat mini programs and built a user-friendly matching platform.

CPU Design
The Principle of Computer Organization, Project Score: 100   *02/2024-06/2024*
- ➢ Designed and implemented a single cycle CPU based on RISC-V architecture, which supported memory mapped I/O peripherals and UART communication.
- ➢ Completed the logic operation test on FPGA chip.

Database design based on video barrage website
Principles of Database Systems, Project Score: 97   *09/2023-01/2024*
- ➢ Designed a rights-managed database for a website that revolves around users constantly producing content including videos and monocular reviews. (100, 000+ data) Supported three entities (including user, video, and bullet-screen information) related functions.
- ➢ Provided validity check and exception handling based on application scenario, and passed benchmark test.
- ➢ Designed optimization strategies to reduce connection pool overhead in database operations.

HONORS&AWARDS

- ➢ Awarded S Prize in 2024 Mathematical Contest in Modeling.
- ➢ Awarded the "Outstanding Student" (2024).
- ➢ Awarded SUSTech First-Class of the Merit Student Scholarship (2023, 2024).
- ➢ Awarded Second Prize in 2023 CUMCM in Guangdong Province.

STUDENT ACTIVITIES & VOLUNTEER EXPERIENCE

- ➢ Director of Student Union of Southern University of Science and Technology
  - •Designed and organized a series of university activities, such as ancient literature knowledge competition, mystery and puzzle solving activities combined with dance, "freshman Camp", etc.
- ➢ SUSTech Alumni Association student assistant
  - •Assisted in organizing alumni Association brand activities.
  - •Wrote and promoted on media platforms such as Wechat public accounts.
- ➢ Volunteer service (85 + hours)
  - •Contributed to the coordination of competitions and conferences (venue setup and attendee guidance).
  - •Kept up correspondence with children in remote areas and taught them knowledge through various activities.