ZOU TONG

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EDUCATION

Nanyang Technological University Singapore
Ph.D. in Electrical and Electronic Engineering Aug 2025 – Present
- Research Interests: Medical image analysis, computer vision and translation medicine

Huazhong University of Science and Technology Wuhan, China
BEng in Biomedical Engineering Sept 2020 – June 2024
- GPA: 3.8/4.0
- GitHub: https://github.com/EdithZou

RESEARCH EXPERIENCE

Huazhong University of Science and Technology Wuhan, China
Instructor: Professor Fumin Guo July 2024
MyoSAIQ Challenge: LGE Image Segmentation
- Compared the performance of automatic methods in segmenting the endocardium and epicardium of the left ventricle on LGE images
- Evaluated the performance of automatic methods in quantifying myocardial infarction lesion size at different stages of disease progression, specifically during the acute phase (4-8 days after myocardial infarction and reperfusion treatment) and the chronic phase (1 month/12 months after myocardial infarction and reperfusion treatment)
- Addressed segmentation issues in imbalanced datasets by enhancing MambaUnet with a multi-class cross-attention mechanism
- Achieved dice scores of 0.91/0.81/0.63/0.55 for LV/Myo/MI/MVO segmentation and correlation coefficients of 0.976/0.923/0.902/0.970 for LV/Myo/MI/MVO, respectively

Huazhong University of Science and Technology Wuhan, China
Instructor: Professor Fumin Guo Oct 2023
Multimodal Image Registration and Myocardial Activity Assessment Method
- Aimed at creating a multimodal registration method for Cine-LGE cardiac MRI images with functions such as standardized segmental quantification and myocardial activity display
- Applied the Bspline-FFD interpolation method based on the VoxelMorph registration method, which performed local B-spline interpolation on the displacement vector field using node pairs, allowed the deformation field to more closely approximate the characteristic polygon, reduced the folding degree of the deformation field, achieving reasonable deformation and a dice score of 0.7704
- Employed a one-shot registration strategy and the template matching concept to better complete single multimodal registration tasks without training
- Reviewed literature to solve problems in LGE data and unsatisfactory results from innovative modules
- Completed a thesis titled *Cine-LGE Cardiac MRI Image Registration and Myocardial Activity Assessment Method*

Huazhong University of Science and Technology Wuhan, China
Instructor: Professor Hailong Zhou May 2023
Gesture Recognition based on Deep Learning
- Employed PyTorch as a deep learning framework, finishing missions such as fine-tuning pre-trained models
- Trained a gesture recognition model using Unet as the backbone and designed a GUI with MATLAB for user interaction
- Solved issues related to data volume and insufficient memory in the hardware device
- Increased the recognition accuracy rate up to 98% with real-time recognition in just 1.2 seconds (CPU 4 threads)

Huazhong University of Science and Technology Wuhan, China
Instructor: Professor Jianwei Chen Mar 2022
Development of a Universal Medical Flexible Gripper (an Undergraduate Innovation and Entrepreneurship Project)
- Aimed to improve medical service through intelligent applications and promote the progress of medical automation
- Planned and invented a flexible medical gripper with adaptive functions and demonstrated its application in two different medical scenarios: contactless automatic sampling and surgical instrument handover assistance
- Used SOLIDWORKS to model and simulate the existing robotic arm, and 3D-printed and tested the robotic arm

- Applied algorithm and developed a face detection and positioning model to locate the lips and pharynx
- Conducted preliminary experiments and optimized based on the sampling position error

The Winter Camp at the Bernstein Center for Computational Neuroscience Berlin Berlin, Germany
Instructors: Professor Thomas Schmidt & Professor John-Dylan Haynes Feb 2022 – Mar 2022
Ethics of Neurosicence and AI

- Learned theoretical knowledge in computational neuroscience, completed a course report on Deep Brain Stimulation (DBS) technology and neuroethics
- Constructed a model of the excitability of CA1 cells and demonstrated the connection between post-burst slow after-hyperpolarization and the development of Alzheimer's disease
- Passed all exams with high distinction

Summer Camp at the University of California, Los Angeles Los Angeles, USA
Instructor: Postdoctoral Fellow Ramin Ramezani Oct 2021 – Nov 2021
Big Data and Public Health Management

- Learned the principles and methods of Cox proportional risk modeling for logistic regression parameter estimation, cohort studies, and case-control design in clinical research
- Wrote a review on the application and development of Remote Patient Monitoring (RPM) devices for Congestive Heart Failure (CHF)

SELECTED AWARDS AND QUALIFICATIONS

- Renmin Scholarship of Huazhong University of Science and Technology 2022
- Quarterfinalist in the China Online National English Debate Championship (CONEDC) 2022
- National Computer Rank Examination (Level 3) 2021

ADDITIONAL INFORMATION

Additional Professional and Extracurricular Experiences

- China Online National English Debate Championship, Debater (July – Aug 2022)
- Hubei Provincial Hospital of Traditional Chinese Medicine, Volunteer (Sept – Oct 2021)

Student Work & Leadership Experience

- College WeChat Publicity Team – Member
- Academic Department of Student Union, School of Engineering Science – Member

Computer and Language Skills

- Programming: Python, C++
- Software: MS Office, MATLAB, VS, Visio
- Languages: Chinese (native), English (fluent)