

Shiquan Zhang (Jeremy)

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PERSONAL STATEMENT

I am a self-discipline and self-learning student and I love to try something new. I was engaged in the research of medical imaging, computer vision and machine learning. I am passionate about the application of artificial intelligence in biomedical field and hope to make some contributions in healthcare.

EDUCATION

University of Chinese Academy of Science (UCAS)	Beijing, China
Shenzhen Institute of Advanced Technology (SIAT)	Shenzhen, China
M.Eng. in Computer Technology GPA: 3.77/4.0	Jun. 2019 – Jun.2022(expected)
The first place in professional interview before enrollment	2019
Chinese Academy of Sciences Public Science Day's outstanding volunteer	2021
Hainan University (HNU)	Haikou, China
B.Eng. in Mechatronic Engineering GPA: 3.27/4.0 Ranking: 20/111	Sep. 2015 – Jun. 2019
HNU outstanding graduate	2019
National inspirational scholarship	2017
HNU merit student and excellent student leader	2016, 2017
Member of HNU Elite Youth Training Program (4%, 24/600)	Mar. 2017 – Jun. 2019
National top 100 summer social practice team and outstanding individual	2018
Haikou International Marathon Competition's outstanding volunteer	2017

RESEARCH EXPERIENCES

SIAT-Medical AI Center

Advisor: P.I. Zhicheng Li

- 'Batch-effects' Removal in Radiomic Features, Independent May. 2021 – Present
Discrepancy across domain distributions (e.g., multicenter, scanner model, reconstruction settings) may greatly influence radiomic features extraction and cause degradation in the analysis performance. We have carried out some experiments trying to improve the Combat algorithm in feature domain.

SIAT-Paul C. Lauterbur Biomedical Imaging Lab & Peking Tiantan Hospital

Advisor: P.I. Yang Xiao and Prof. Yongjin Zhou

- Patent Foramen Ovale (heart disease) Classification, Independent Sep. 2019 – Apr. 2021
Preliminarily achieved an efficient automated diagnosis method, which focused on two key difficulties of **interferences** and **bubble detection** in 2D contrast echocardiography videos and developed a **two-stage** classification pipeline: firstly proposed a **time-domain** preprocessing method to reduce inherent interferences by integrating two modality's images, utilized CNNs(Deeplabv3+/Unet) to realize **left atrium segmentation**, developed a **space-domain** gray and geometry restricted superpixel segmentation method to detect bubbles and realize coarse-grained classification to obtain the negative cases, extracted radiomics features from the candidate bubble cases to realize fine-grained classification, and finally combined the two-stage results to make final classification.
- Muscle Atrophy Disease Classification, Participate Sep. 2020 – Apr. 2021
Utilized 3D-ResNet to make binary classification in 2D shear-wave elastography videos, which realized the effective discrimination of muscle atrophy and achieved 86.89% accuracy and 88.89% F1-Score.
- Quantitative Analysis of Contrast-Enhanced Ultrasound of Osteonecrosis of Femoral Head Jun. - Aug. 2019
Preprocessed ultrasound videos, utilized VGG16 to make segmentation and extracted features of ROIs to plot Time-Intensity Curve to analyze curve parameters.

PROJECTS EXPERIENCES

- Vehicle Life Monitoring System Jun. - Aug. 2019
Designed a multi-judgment integrated system to reflect the status of living body or trigger the alarming mechanism, which covered positioning, sensor detection, solar battery and false alarm release modules.
- Mobile Double-deck Parking Space Jun. - Aug. 2019
Designed a mechanical transmission control system, which can semi-automatically park lifting and rotate, and participated in the physical production, test and calibration.
- Smart Household Control System Jun. - Aug. 2019
Designed a STM32 microcontroller and Android control system, which send a requiring order via smartphone to control the corresponding devices.

LEARNING EXPERIENCES

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PUBLICATIONS AND PATENTS

- [1] Yang J, Zhang H, Wang Y, **Zhang S** et al. The Efficacy of Contrast Transthoracic Echocardiography and Contrast Transcranial Doppler for the Detection of Patent Foramen Ovale Related to Cryptogenic Stroke. BioMed research international, 2020:1513409, 2020.
- [2] **Zhang S** et al. Quantitative Evaluation of Gastrocnemius Medialis Stiffness Using Shear Wave Elastography in Parkinson's Disease during Passive Stretching: A Prospective Preliminary Study. Korean Journal of Radiology, xxx, 2021 (accepted)
- [3] **Zhang S** et al. PD-1 prediction in hepatocellular carcinoma patients using radiomics analysis with RF-based ultrasound multifeature maps. BioMedical Engineering OnLine, xxx, 2021 (under review)
- [4] **Zhang S** et al. Deep residual convolutional neural network for the diagnosis of muscle atrophy based on dynamic ultrasound shear-wave elastography video. Chinese Journal of Biomedical Engineering, xxx, 2021
- [5] Invention and PCT patent: Patent foramen oval detection method, system, terminal, and storage medium, **first inventor**, CN202011373095.3 & PCT/CN2020/139680, 2020 (under review)
- [6] Invention and PCT patent: Muscle ultrasound image detection method, system, terminal, and storage medium, **third inventor**, CN202011230395.6 & PCT/CN2020/139413, 2020 (under review)
- [7] Utility model: A new type of automobile mechanical impact buffer device, **third inventor**, ZL201721292832.0, 2017

SKILLS

Standardized tests: IELTS 6 (R6.5 L6.5 S5.5 W6) in Jul. 2021

Programming skills:

Proficient in Python, R, Matlab and C,
Experiences with LaTeX, Java and HTML
Technical Linux, Pytorch and Tensorflow

Software skills:

Proficient in AutoCAD, Pro/E
Proficient in Adobe Photoshop, Premiere, Illustrator and AfterEffects (Amateur designer and editor)