

Shiquan Zhang

X Explorer, Game Player, Salesman, New things Hunter

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EDUCATION

University of Melbourne

Incoming Ph.D. Candidate in Human-Computer Interaction

Melbourne, Australia

Visa Pending Over 8 Months

Research Proposal: [AI-Supported Collaborative Decision-Making in Smart Environments](#)

University of Chinese Academy of Sciences (UCAS)

Beijing, China

Shenzhen Institute of Advanced Technology (SIAT)

Shenzhen, China

M.Eng. in Computer Technology [GPA: 3.78/4](#) Ranking: 3/62 (5%)

Jun. 2019 – Jun. 2022

Master Thesis: [Artificial Intelligence Diagnosis Analysis of Cardiac Patent Foramen Ovale \(Chinese\)](#)

Related Courses: Design and Analysis of Algorithms, Digital Image Processing, Digital Signal Processing, Data Visualization, Computer Architecture

Cloud Computing and Big Data Processing, High-Performance Computing and Applications, 5G Wireless Communication, Biomedical Informatics

Hainan University (HNU)

Haikou, China

B.Eng. in Mechanical Engineering [GPA: 3.27/4](#) Ranking: 20/111 (18%)

Sep. 2015 – Jun. 2019

Undergraduate Thesis: Vehicle License Plate Recognition System Based on OpenCV [#Video Demo](#)

Related Courses: C language program Design and Experiment, Control Engineering, Single Chip Microcomputer, Higher Mathematics, Linear Algebra
Probability and Statistics, Data Structure, Principles of Computer Organization, Computer Network, Computer Operating System

SELECTED AWARDS

[Human-Computer Interaction Ph.D. Offer](#) at the University of Melbourne (Australia) and Melbourne Research Scholarship 2022

[Computer Vision Ph.D. Offer](#) at the University of Sydney (Australia) and UniSydney-China Scholarship Council Joint Scholarship 2022

First place in the professional interview of SIAT in the Chinese Postgraduate Entrance Examination 2019

National Endeavor Scholarship 2017

HNU Outstanding Graduate 2019

HNU Elite Youth Training Program (1%) Mar. 2017 – Jun. 2019

HNU Merit Student and Outstanding Student Leader 2016, 2017

First&Second place in the Innovation and Entrepreneurship Competition at the Mechanical Engineering College of HNU 2017

HNU Second-Class Scholarship 2016

First place in the Chemistry Competition of Guangdong Province of China 2014

Outstanding Volunteer of Public Science Day of the Chinese Academy of Sciences 2021

Outstanding Vice President of PKU Boxing Club of Peking University (PKU) Shenzhen 2019 – 2020

National Top 100 Summer Social Practice Team and Outstanding Individual 2018

Outstanding Volunteer of Haikou International Marathon Competition 2017

First place in the 1km Competition (Time: 3'03) in High School 2014

PUBLICATIONS

[1] Yang, J.*, **Zhang, S.***, Zhou, Y., Yu, H., Zhang, H., Lan, T., ... & He, W. (2023). The efficiency of a Machine learning approach based on Spatio-Temporal information in the detection of patent foramen ovale from contrast transthoracic echocardiography Images: A primary study. *Biomedical Signal Processing and Control*, 84, 104813. *Equal Contribution. [#https://doi.org/10.1016/j.bspc.2023.104813](https://doi.org/10.1016/j.bspc.2023.104813)

[2] Yin, L., Du, L., Li, Y., Xiao, Y., **Zhang, S.**, Ma, H., & He, W. (2021). Quantitative evaluation of gastrocnemius medialis stiffness during passive stretching using shear wave elastography in patients with Parkinson's disease: a prospective preliminary study. *Korean Journal of Radiology*, 22(11), 1841. [#https://doi.org/10.3348/kjr.2020.1338](https://doi.org/10.3348/kjr.2020.1338)

[3] Yang, J., Zhang, H., Wang, Y., **Zhang, S.**, Lan, T., Zhang, M., ... & Du, L. (2020). 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, 1-6. [#https://doi.org/10.1155/2020/1513409](https://doi.org/10.1155/2020/1513409)

PATENTS

- [1] **Zhang, S.**, Xiao, Y., Du L., Ma T., Zheng, H. Patent foramen ovale detection method, system, terminal and storage medium. CN Invention and PCT, CN202011373095.3 & PCT/CN2020/139680. Both Granted.
- [2] Xiao, Y., Zhang, X., **Zhang, S.**, Wang, C., Ma T., Zheng, H. Muscle ultrasonic image detection method, system, terminal, and storage medium. CN Invention and PCT, CN202011230395.6 & PCT/CN2020/139413. First trial.
- [3] Tang, Z., Zhang, J., **Zhang, S.**, et al. A new mechanical impact buffering device for the automobile. CN Utility Model, ZL201721292832.0. Granted.

RESEARCH EXPERIENCES

- **1 Removal of Domain Distribution's Differences in Radiomics Features**, Independent July. 2021 – Oct. 2021
SIAT-Medical AI Center, advisor: P.I. Zhicheng Li
Feature Extraction, Empirical Bayes, Radiomics, CNNs
 - Discrepancy across domain distributions (e.g., multicenter/scanner model/reconstruction settings) may greatly influence radiomic feature extraction and cause degradation in subsequent data analysis. We have conducted experiments using deep learning methods to fit mathematical relationships to improve the performance of the traditional Combat (Empirical Bayes) algorithm in the feature domain.
- **2 Patent Foramen Ovale (Heart) Disease Classification**, Independent #[Video](#) #[Slide](#) Sep. 2019 – May. 2021
SIAT-Paul C. Lauterbur Biomedical Imaging Lab & Shenzhen University & Beijing Tiantan Hospital, advisor: P.I. Yang Xiao and Prof. Yongjin Zhou
CNNs, Image Processing, Segmentation, Bubble Detection, Superpixel, Radiomics, Classification, Temporal Sequences, Echocardiography
 - Preliminarily achieved an automatic diagnosis method in patent foramen ovale (PFO) classification in 2D contrast echocardiography videos, which first explored the feasibility of PFO diagnosis with artificial intelligence, revolved around interference and microbubble detection, and achieved 0.7750 accuracies, 0.7847 sensitivity, and 0.7500 specificities compared to regular clinicians' 0.6800, 0.6200, and 0.8200.
 - Utilized CNNs (DeepLabv3+/Unet) to make 2D left atrium segmentation.
 - Proposed a time-domain preprocessing method to remove inherent interference (noise and motion artifacts) in echocardiography, which utilized conventional TTE imaging's prior knowledge and projected minimal gray intervals from TTE videos to cTTE videos, thereby minimizing inherent interference as much as possible.
 - Developed a two-stage detection method in the space domain, which includes a superpixel segmentation method and a radiomics method coarsely aggregates the features of similar pixels into superpixel block and discriminate bubbles under the constraints of grayscale threshold and elliptic or circular circularity further finely makes radiomics feature extraction and selection.
- **3 Muscle Atrophy Disease Classification**, Participate Sep. 2020 – Apr. 2021
SIAT-Paul C. Lauterbur Biomedical Imaging Lab, advisor: P.I. Yang Xiao
CNN, Data Fusion, Classification, Elastography
 - Utilized 3D-ResNet to make a binary classification in 2D shear-wave elastography videos, which fused B-mode and SWE (shear wave elasticity) images realized the effective discrimination of muscle atrophy and achieved 0.9556 accuracies, 0.9557 sensitivity, and 0.9554 specificities.
- **4 Other Projects Experiences**
 - 4.1 Competition**
 - **Shenzhen Cloud Cup Precipitation Nowcasting** May. - Jun. 2020
GAN, Temporal Sequences, Precipitation Prediction
Enhanced the performance of ConvGRU by introducing the GAN module to make predictions of future precipitation in radar data.
 - **User Cellphone Traffic Upgrade Prediction** Oct. - Nov. 2019
Machine Learning, Data Cleaning, Feature Engineering, SVM
Preprocessed and analyzed text data, practiced feature engineering, and utilized basic machine learning models to make traffic upgrade classification.
 - 4.2 Undergraduate projects**
 - **Sliding Double-deck Parking Space** #[Video](#) 2017. Sep - Jan. 2018
Mechanical Transmission, Physical Production, Design, and Rendering in Pro/E
Designed a sliding mechanical transmission control system in a car parking area, which can semi-automatically park, lift and rotate, and participated in physical production, testing, and calibration.
 - **Vehicle Life Monitoring System** #[Video](#) Jul. - Oct. 2017
Microcontroller, Sensors, GSM/GPS, Solar Power
Designed a multi-judgment integrated system with an alarming mechanism to reflect the status of life forms, which covered positioning, sensor detection, solar battery, and false alarm release modules.

INTERNSHIP EXPERIENCES (FULL-TIME)

- **1 Artificial Intelligence Generated-Content (AIGC)-ChatGPT**, Product Manager & Algorithm Shenzhen, China
[DeepWisdom](#), Mentor: Sirui Hong (Senior NLP Researcher) Mar. 2023 – Apr.2023
GPT-X, RLHF, Prompt Engineering, Nano-Model Training and Optimization, Market Research
 - Conducted competitive and market research for ChatGPT products (e.g., OpenAI/Microsoft/Baidu/Chinese Top Startups)
 - Deployed and optimized large language models/API with leading Natural Language Processing methods (e.g., GPT-X/Whisper/NanoGPT/GPT-Index/LLaMA/VisualChatGPT)
 - Shared a talk covering the background, history, technology, and future product implementation of ChatGPT within the company for over an hour
- **2 AIGC-AI Art Generation (AAG)+AutoML**, Product Manager & Algorithm Shenzhen, China
DeepWisdom, Mentor: Chenyu Ran (Senior Product Manager), Sirui Hong Dec. 2022 – Apr.2023
Stable Diffusion, Game/Anime, PRD, MVP-Product Design, Model Training and Optimization, Interface Design
 - Conducted competitive and market research for AAG products (NovelAI/Midjourney/ERNIE-ViLG/Scenario)
 - Deployed and optimized large vision models with leading Computer Vision methods (e.g., Stable Diffusion/Dreambooth/LoRA/ControlNet/CLIPVG)
 - Participated in the requirement analysis (Batch Production and Deployment of AAG models on the AutoML Platform), prototype design (PRD and Figma), and development coordination of the company's AAG+AutoML product.
 - ToCustomer: Launched a free demo product, explored business monetization patterns, achieving over 600, 000 algorithm calls and operating about 1000 users' community #[Product Website: MetaAIGC-2D Character Generation](#)
 - ToBusiness: Collaborated with a game production company to explore using AAG technology to synthesize icons of game scenes
- **3 Automated Machine Learning (AutoML) Platform**, Product Manager Shenzhen, China
DeepWisdom, Mentor: Chenyu Ran Nov. 2022 – Feb. 2023
AutoML, Platform Development, Search Space, Product Requirement Document (PRD), Market Research, Interface Design
 - Conducted competitive and market research for relevant products.
 - Participated in the requirement analysis (Minimum dataset for CV/NLP/Multimodality tasks, Web Integrated Development Environment, Image Preprocessing Operator, and Model Evaluation Index and Visualization), prototype design (PRD and Figma), and development coordination of the company's Auto-Deep Learning Product.
 - Collaborated with the Software Development team to promote fast iteration of core AutoML platform product.

ONLINE LEARNING EXPERIENCES

- Doing **Natural Language Processing with Deep Learning** (CS224N), Stanford University, 2023 Spring
- Doing **Introduction for 15.S12 Blockchain and Money**, MIT, 2018 Fall
- **CS50-Introduction to Computer Science**, Harvard University, 2022 Spring #[Learning Notes](#)
- **The Missing Semester of Your CS Education**, MIT, 2020 Spring #[Learning Notes](#)
- **Design Novel Interaction** (INFO90003), The University of Melbourne, 2021 Fall #[Learning Notes](#)
- **Statistical Data Analysis (R)**, Johns Hopkins University & Coursera, 2013 Fall #[Code and Certificate on GitHub](#)
- **Convolutional Neural Networks for Visual Recognition** (CS231n), Stanford University, 2019 Fall #[Code on GitHub](#)

SKILLS

1 Standardized Test: IELTS 6.5 (R7 L7 S6 W6) in Sep. 2021

2 Software:

• **2.1 Programming**

- Proficient in Python/Matlab/R/C, GPT-X and GitHub Copilot
- Linux/PyTorch/TensorFlow
- Experiences with JavaScript/HTML/C++/SQL/LaTeX

• **2.2 Design**

- **Mechanical Design:** Proficient in AutoCAD, Pro/E, and Single Chip Microcomputer
- **Graphic Design:** Proficient in Adobe Photoshop, Adobe Illustrator, and Figma
- **Video Design:** Proficient in Adobe Premiere and Adobe AfterEffects

3 Website: #[sqzhang-jeremy.github.io](#)

4 Multimedia: Amateur Image Designer/Video Editor/Movie Director #[Portfolio](#)

5 Hobby: Reading/Running/Badminton/Cooking/Classical & Jazz Music, and future Self-Media Blogger

6 Top Game Player on ChatGPT: [Thoughts and Understanding of ChatGPT](#)

7 Extra Curriculum: #[More details \(feel free to check\)](#)