# Shiquan Zhang

Shenzhen, China | (+86)139-2840-7251 | sqzhang.jeremy@gmail.com |

## EDUCATION

**University of Melbourne** — Melbourne, Australia
**Incoming** Ph.D. Candidate in Human-Computer Interaction — Visa Pending Over 10 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 Science 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 Spatial-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

[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

[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

## 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 AND PROJECTS EXPERIENCES

- **1 Mitigating Differences in Domain Distribution for Radiomics Features**, Independent July. 2021 – Oct. 2021
  SIAT-Medical AI Center, advisor: P.I. Zhicheng Li
  **# Feature Extraction, Empirical Bayes, Radiomics, CNNs**
  - Variations in domain distributions (e.g., multicenter/scanner model/reconstruction settings) may greatly influence radiomics feature extraction and cause degradation in subsequent data analysis. To address this, we conducted experiments using deep learning methods to model mathematical relationships, enhancing the performance of traditional Combat (Empirical Bayes) 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, outperforming regular clinicians' scores 0.6800, 0.6200, and 0.8200.
  - Utilized classical Convolutional Neural Networks (Deeplabv3+/Unet) with few labels 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, where a superpixel segmentation 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, and a radiomics method further finely makes radiomics feature extraction and selection.
- **3 Undergraduate Mechanical and Sensory Projects**
  - **3.1 Sliding Double-deck Parking Space,** Participate #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.
  - **3.2 Vehicle Life Monitoring System,** Participate #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

- **1 AI Foundation Courses and AIGC 101 Lectures**, Part-time Lecturer Shenzhen, China
  BASIS International School Shenzhen Apr. 2023 – Now
  **# AI for education, Teacher, Computer Vision, 101 Courses, Senior High School**
  - Co-designed a comprehensive series of basic computer vision courses, encompassing both theoretical concepts from entry-level knowledge to academic writing and hands-on coding practice, specifically tailored for international senior high school students
  - Engaging in course preparation, delivering lectures, grading assignments, etc.
  - Spearheading exploratory efforts to leverage ChatGPT and AI Art Generation for both students and teachers

- **2 Artificial Intelligence Generated-Content (AIGC)-ChatGPT**, Product Manager 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)
- presented a talk about ChatGPT within the company for an hour, covering the background, history, technology, and future product implementation

• **3 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 analysis 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

• **4 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), Competitive Analysis, 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 AutoML Product.
- Collaborated with the Software Development team to promote fast iteration of core AutoML platform product.

## COMPETITION EXPERIENCES

• **1 Shenzhen Cloud Cup Precipitation Nowcasting**, Participate — May. - Jun. 2020

**# GAN, ConvGRU, Temporal Sequences, Precipitation Prediction**

- Enhanced the performance of ConvGRU by introducing the GAN module to make predictions for future precipitation in radar data.

• **2 Xiamen Telecom User Cellphone Traffic Upgrade Prediction**, Participate — Oct. - Nov. 2019

**# Machine Learning, Data Cleaning, Feature Engineering**

- Preprocessed data, practiced feature engineering, and utilized machine learning models to make traffic upgrade classification.

## CAMPUS ACTIVITIES

• **1 Public Science Day of the Chinese Academy of Sciences-SIAT**, Volunteer — Nov. 2021

- Served as a volunteer to organize the visiting activity of Science Laboratories and answer 'Hundred Thousand Whys' for the Shenzhen's elementary and middle school students.

• **2 PKU Boxing Club-Peking University (PKU) Shenzhen**, Vice President&Coach Assistant — Aug. 2019 - Jun. 2020

- Designed logo and T-shirt for club publicity and carried out online and offline advertisement and recruitment (about 200 people were recruited in the first session)
- Assisted coaches in conducting training and organized daily activities for club members
- Fostered an international and diversified association atmosphere, actively promoting exchanges and cooperation between students from universities in Shenzhen University Town

• **3 HAITC COFFEE-Joint International Tourism College, HNU-Arizona State University**, Barista&Waiter — Sep. 2017 - Feb. 2018

- Participated in the establishment, publicity, and advertisement of the school's International Tourism College Café
- Mastered skills to make standard coffees, drinks, desserts, etc., routinely
- Participated in the daily operation and management of the café

• **4 Campus Marketing Competition-HNU**, Leader&Planner — Aug. 2017 - Sep. 2017

- Liaised with the China Unicom of Haikou and the business hall to plan, recruit, and promote the Unicom Back-to-School SIM card marketing competition
- Led four teams with a total of 125 people (directly managing about 40 people), involving task allocation, material coordination, skill training, data statistics, and emergency handling
- completed the marketing competition, with the direct team achieving 65% of the total marketing volume

## SKILLS

**1 Language**: Mandarin (Mother Tongue)/Cantonese (Some)/English (Fluent), 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

**Last Updated: 230522**