Le Zhang

Medical Image Computing · Deep Learning

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"Be the change that you want to see in the world."

Summary

Strong IT background and sufficient experiences with imaging processing, including machine learning, deep learning and pattern recognition. 4 YEARS EDUCATION in United Kingdom. Over 4 years project and learning experiences in China and UK. Strong interpersonal skills, organizational skills, and communication skills. A proven fast learner, self motivated, confident, willing to take challenges and being able to work under difficult working conditions; flexible and service-minded, being able to be independent or to be active in the team work. High proficiency in Chinese and English language, as well as the multi-cultural minds and life experiences in different countries.

My research involved a comprehensive exploration of the development of robust and interpretable deep learning and machine learning models for large-scale population imaging computation, including cardiac MRI quality assessment. In my current research, I am seeking to improve the transfer ability, generalization, and robustness of deep adversarial models, such as conditional generative adversarial net (cGAN). Another focus is the interpretation of deep adversarial models through human-understandable feedback, including data synthesis and visualisation, and attribute-based reasoning. My ongoing programme of research aims to synthesize novel data that is difficult to acquire for missing data of cardiac MRI, and realise expert-level recognition performance through knowledge-guided inference mechanisms.

Education

University of Leeds

Leeds, United Kingdom

Visiting Student in Medical Imaging Computing — *Aug. 2018 - March. 2019*

- Supervisor: Prof. Dr. Alejandro F Frangi (IEEE Fellow), Dr. Marco Pereañez
- Research Lab: Computational Imaging and Simulation Technologies in Biomedicine (CISTIB)

University of Sheffield

Sheffield, United Kingdom

Ph.D. Candidate in Medical Imaging Computing — *Sep. 2015 - March. 2019*

- Thesis Title: "*Image Quality Assessment for Population Cardiac MRI*"
- Supervisor: Prof. Dr. Alejandro F Frangi (IEEE Fellow), Prof. Dr. Geraint Jewell (Head of the Department)
- Research Lab: Computational Imaging and Simulation Technologies in Biomedicine (CISTIB)
- Specialisation: Convolutional Neural Networks (CNNs), Deep Adversarila Neural Networks, Cross-Modality Cardiac Image Quality Assessment, Generative Adversarial Nets, Cross-Modality Image Synthetize.

Wuhan University of Technology

Wuhan, China

M.Sc. Majoring in Control Science and Engineering — *Sep. 2012 - Jun. 2015*

- Thesis Title: "*Driver's Head Posture Recognition Based on Vehicle Driving System*"
- Supervisor: Prof. Dr. Yixin Su (Vice Dean of School of Automation), Prof. Danhong Zhang
- Thesis Grade: 6.00/ 6.00 - GPA: 3.48/ 4.00 (Top 9/80)
- Specialization: Image Processing and Pattern Recognition, Wireless Communications.

South-Central University for Nationalities

Wuhan, China

B.Sc. Majoring in Automation — *Sep. 2008 - Jun. 2012*

- *Summa cum Laude*, with High Honors in Engineering.
- Specialization: Digital Signal Processing and Telecommunications.
- GPA: 3.42/ 4.00 (Top 10/122)

Publications

9. **Le Zhang**, Macro Pereanez, Stefan Piechnik, Stefan Neubauer, Steffen Petersen and Alejandro F. Frangi, Multi-Input and Dataset-Invariant Adversarial Learning (MDAL) for Left and Right-Ventricular Coverage Estimation in Cardiac MRI, *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI). Springer, Cham, 2018.*

8. Rahman Attar, Marco Pereanez, Ali Gooya, Xenia Alba, **Le Zhang**, Stefan K. Piechnik, Stefan Neubauer, Steffen E. Petersen, Alejandro F. Frangi, High Throughput Computation of Reference Ranges of Biventricular Cardiac Function on the UK Biobank Population Cohort, *MICCAI Statistical Atlases and Computational Modeling of the Heart (STACOM) Workshop, 2018.*

7. **Le Zhang** one journal paper is submitted.

6. **Le Zhang**, Ali Gooya, and Alejandro F. Frangi, Semi-supervised assessment of incomplete LV coverage in cardiac MRI using generative adversarial nets, *MICCAI Workshop on Simulation and Synthesis in Medical Imaging (SASHIMI), pp. 61-68. Springer, Cham, 2017*

5. Yang Wang, Jie Yang, and **Le Zhang**, Fast speech keyword recognition based on improved filler model, *IEEE 2nd Advanced Information Technology, Electronic and Automation Control Conference (IAEAC), IEEE, 2017*

4. **Le Zhang**, Ali Gooya, Bo Dong, Rui Hua, Steffen E. Petersen, Pau Medrano-Gracia, and Alejandro F. Frangi, Automated quality assessment of cardiac MR images using convolutional neural networks, *MICCAI Workshop on Simulation and Synthesis in Medical Imaging (SASHIMI), pp. 138-145. Springer, Cham, 2016*

3. **Le Zhang**, Danhong Zhang, Yixin Su, and Chao Wang, Head pose estimation based on feature extraction, fuzzy C-means and neural network for driver assistance system, *11th IEEE International Conference on Control & Automation (ICCA), pp. 677-682. IEEE, 2014*

2. Chao Wang, Rongzhong Liu, Yuanlong Hou, Qiang Gao, Runmin Hou, and **Le Zhang**, Surplus torque suppression research based on the improved wavelet neural network, *11th IEEE International Conference on Control & Automation (ICCA), pp. 398-403. IEEE, 2014*

1. **Le Zhang**, Danhong Zhang, Yixin Su, and Fei Long, Adaptive kernel-bandwidth object tracking based on Mean-shift algorithm, *IEEE International Conference on Intelligent Control and Information Processing (ICICIP), pp. 413-416. IEEE, 2013*

Honors & Awards

2015	**Ph.D Scholarship,** China Scholarship Council	*Beijing, China*
2014	**Ph.D Scholarship (Tuition Fee waiver),** University of Sheffield	*Sheffield, UK*
2013	**Student Scholarship,** Wuhan University of Technology	*Wuhan, China*
2011	**Student Scholarship,** South-Central University for Nationalities	*Wuhan, China*

Experience

2018	**Training,** Medical Image Analysis Network (MedIAN) Mini Sandpit at University of Oxford.	*Oxford, UK*
2015	**Project,** Computational Imaging Methods for Population Imaging at University of Sheffield	*Sheffield, UK*
2013	**Project,** The research on a new type piling foundation static test system and development on portable system at Wuhan University of Technology	*Wuhan, China*
2012	**Project,** The research of digital telephone system oriented on training and scheduling at Wuhan University of Technology	*Wuhan, China*

Teaching

2018	**Graduate Teaching Assistant,** Amplitude Modulation and Mixing; EEE126 Individual Construction Project.	*Undergraduate*
2017	**Graduate Teaching Assistant,** EEE126 General Skills - CAD; Digital System Engineering.	*Undergraduate*
2016	**Graduate Teaching Assistant,** EEE260 - Transmission Lines;	*Undergraduate*

Professional Services

2018	**Reviewer,** IEEE Journal of Biomedical and Health Informatics	*JBHI*
2018	**Reviewer,** IEEE Transactions on Medical Imaging	*TMI*
2017	**Reviewer,** International Conference on Medical Image Computing and Computer Assisted Intervention	*MICCAI*

Invited Talks

2018	**Invited Speaker,** The 2rd International Youth Conference (Artificial Intelligence in Medical Imaging)	*Shenzhen, China*
2017	**Oral Presentation,** MICCAI Workshop on Simulation and Synthesis in Medical Imaging	*Quebec, Canada*
2013	**Oral Presentation,** 4th International Conference on In Intelligent Control and Information Processing	*Beijing, China*

Technical Skills

Programming Languages

- Matlab (Working Knowledge), Python (Working Knowledge), C/C++ (Knowledgeable)

Libraries

- CUDA, OpenCV, Matlab, LaTeX
- ConvNet, Tensorflow

Operating Systems

- Windows, Mac OS X, Ubuntu

Interests

- **Management:** I am actively developing my academic and professions skills including attending relevant University training activities (e.g. on preparing successful funding applications). During my time at the University of Sheffield, I took responsibility for the day-to-day activities and supervision of a master student's final project and thesis, providing them guidance on research ideas, technical and theoretical solutions, and writing skills.
- **Hiking and Photography:** I have interests that extend beyond my academic and family life. During my PhD lift, I was appointed as the conductor of hiking team in Confucius Institute of Sheffield University. Before I joined, it was a small team with less than 20 members. In 2006, I spent half a year to organize hiking activities, raise funds, and related propaganda. It has now grown to be a large team with 89 student hiker. I am qualified photographer and provide activities photos of Sheffield Confucius Institute regularly.

Referees

Prof. Dr. Alejandro F Frangi

- FIEEE, FEAMES
- Diamond Jubilee Chair in Computational Medicine
- Director of Center for Computational Imaging and Simulation Technologies in Biomedicine (CISTIB)
- School of Computing and School of Medicine, University of Leeds
- EC Stoner Building, Leeds LS2 9JT, United Kingdom
- E: a.frangi@leeds.ac.uk | W: www.cistib.org/afrangi

Dr. Marco Pereañez

- Research Associate
- Center for Computational Imaging and Simulation Technologies in Biomedicine (CISTIB)
- School of Computing and School of Medicine, University of Leeds
- EC Stoner Building, Leeds LS2 9JT, United Kingdom
- E: m.pereanez@sheffield.ac.uk

Prof. Dr. Steffen Peterson

- FRCP, FACC, FESC
- Professor of Cardiovascular Medicine
- Director of Centre: NIHR Advanced Imaging, NIHR Barts Biomedical Research Centre
- William Harvey Research Institute, Queen Mary University of London
- E: s.e.petersen@qmul.ac.uk | T: +44(0) 207 882 6902

Prof. Dr. Geraint Jewell

- Head of Department of Electronic and Electrical Engineering
- Director of Rolls-Royce UTC in Advanced Electrical Machines and Drives
- Department of Electronic and Electrical Engineering, University of Sheffield
- Suite 37, Level 2, 3 Solly Street, Sheffield S1 4DE, United Kingdom
- E: g.jewell@sheffield.ac.uk | T: +44 (0) 114 222 5845