ZHANG ZHENGYUAN

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EDUCATIONAL BACKGROUND

07/2024-Present **Nanyang Technological University, Singapore**
School: School of Electrical and Electronic Engineering (EEE)
Supervisor: Prof. Yuanjin Zheng
Degree: Postdoctoral Research Fellow

07/2019-06/2024 **Nanyang Technological University, Singapore**
School: School of Electrical and Electronic Engineering (EEE)
Overall GPA: 4.75/5.0
Supervisor: Prof. Yuanjin Zheng
Degree: Doctor of Philosophy

09/2017-07/2019 **Harbin Institute of Technology, Harbin, China**
School: State Key Laboratory of Robotics and System
Overall GPA: 88.5/100; **Rank:** Top 10%
Supervisors: Prof. Hong Liu **(Member of Chinese Academy of Engineering)** and Prof. Minghe Jin
Degree: Master of Engineering

09/2013-07/2017 **Harbin Institute of Technology, Harbin, China**
School: School of Mechatronics Engineering
Overall GPA: 90.47/100; **Rank:** 22/237
Degree: Bachelor of Engineering

SCHOLARSHIPS

07/2019-07/2023 Full Scholarship for NTU PhD (4 years)
09/2017 First-Class Scholarship of Harbin Institute of Technology
12/2016 Engineering Leadership program of Harbin Institute of Technology
02/2016 First-grade Scholarship of Harbin Institute of Technology (4/237)
02/2015 First-grade Scholarship of Harbin Institute of Technology (11/237)

RESEARCH/WORK EXPERIENCE

09/2021-05/2025 **Model-Based Photoacoustic Imaging Enhancement** **CICS Laboratory**
Project Leader
- Develop the degradation model of the photoacoustic imaging
- Design deep CNN denoiser prior and its optimization scheme to enhance imaging results
- Design Group Sparsity and Deep Prior and its optimization scheme to enhance imaging results adaptively

07/2019-09/2023 **Learning-Based Photoacoustic Imaging Enhancement** **CICS Laboratory**
Project Leader
- Develop the degradation model of the photoacoustic imaging
- Use GAN algorithm to achieve realistic imaging enhancement with high resolution
- Employ Dual Branch Gated Fusion Network to enhance the imaging resolution and speed simultaneously

04/2018-07/2019 **Target Capturing Based on Computer Vision** **SKL of Robotics and System**
MS Student
- Use binocular stereo camera to extract the position and orientation of the target
- Reconstruct the 3D model of the target by structure from motion
- Detect the handle and nozzle of the object for manipulator capturing

10/2016-12/2017 **Target Manipulation Based on Impedance Control** **SKL of Robotics and System**
BS Student
- Develop the telecommunication program between force/torque sensor and controller
- Model the kinematics and dynamics of manipulator and develop impedance control strategy
- Make simulation on Simulink and verify the algorithm on real manipulator

PUBLICATION (Google Scholar Citations: 184, h-index: 9; Scopus ID: 57225055834)

Journal papers

Deep and Domain Transfer Learning Aided Photoacoustic Microscopy: Acoustic Resolution to Optical Resolution
***Zhengyuan Zhang**, Haoran Jin, Zesheng Zheng, Arunima Sharma, Lipo Wang, Manojit Pramanik, and Yuanjin Zheng*
IEEE Transactions on Medical Imaging, 2022 (JCR Q1, Citation: 36, Impact Factor: 9.8)

Adaptive Enhancement of Acoustic Resolution Photoacoustic Microscopy Imaging via Deep CNN Prior
***Zhengyuan Zhang**, Haoran Jin, Wenwen Zhang, Wenhao Lu, Zesheng Zheng, Arunima Sharma, Manojit Pramanik, and Yuanjin Zheng*
Photoacoustics, 2023 (JCR Q1, Citation: 26, Impact Factor: 6.8)

Acoustic Resolution Photoacoustic Microscopy Imaging Enhancement: Integration of Group Sparsity with Deep Denoiser Prior
***Zhengyuan Zhang**, Zuozhou Pan, Zhuoyi Lin, Arunima Sharma, Chia-Wen Lin, Manojit Pramanik, and Yuanjin Zheng*
IEEE Transactions on Image Processing, 2025 (JCR Q1, Citation: 2, Impact Factor: 13.7)

Real-Time Imaging Enhancement of Handheld Photoacoustic System With FeRAM Crossbar Array based Neuromorphic Design
***Zhengyuan Zhang**, Tiancheng Cao, Siyu Liu, Haoran Jin, Wensong Wang, Xiangjun Yin, Chen Liu, Goh Wang Ling, Yuan Gao, and Yuanjin Zheng*
IEEE Transactions on Biomedical Circuits and Systems, 2025 (JCR Q1, Citation: 1, Impact Factor: 4.9)

High Temporal-Lateral Resolution Photoacoustic Microscopy Imaging with Dual Branch Graph Induced Fusion Network
***Zhengyuan Zhang**, Xiangjun Yin, Zhuoyi Lin, Wenwen Zhang, Ze Feng, Arunima Sharma, Manojit Pramanik, Chia-Wen Lin, Yuanjin Zheng*
IEEE Transactions on Computational Imaging (**Major revision**, JCR Q1, Impact Factor: 4.8)

Unsupervised Physics-Driven Generative Model for Adaptive Photoacoustic Microscopy Enhancement
***Zhengyuan Zhang**, Ze Feng, Xiangjun Yin, Zhuoyi Lin, Arunima Sharma, Manojit Pramanik, Huazhu Fu, Chia-Wen Lin, Yuanjin Zheng*
IEEE Transactions on Image Processing (**Under review**, JCR Q1, Impact Factor: 13.7)

Physical Model Guided Proximal Diffusion Sampling for Enhanced Photoacoustic Microscopy
*Zhengke Sun, Zhuoyi Lin, **Zhengyuan Zhang***, Huazhu Fu*
IEEE Transactions on Neural Networks and Learning Systems (**Under review**, JCR Q1, Impact Factor: 8.9)

Resolution Enhancement of Under-sampled Photoacoustic Microscopy Images using Neural Representation
*Youshen Xiao, **Zhengyuan Zhang**, Ruixi Sun, Sheng Liao, Fan Zhang, Yunhui Jiang, Xiyu Chen, Arunima Sharma, Manojit Pramanik, Yuyao Zhang, and Fei Gao*
IEEE Transactions on Computational Imaging, 2025 (JCR Q1, Impact Factor: 4.8)

A Symmetric Forward-inverse Reinforcement Framework for Image Reconstruction through Scattering Media
*Pengfei Qi, **Zhengyuan Zhang,** Xue Feng, Puxiang Lai, Yuanjin Zheng*
Optics & Laser Technology, 2024 (JCR Q1, Citation: 9, Impact Factor: 5.0)

Analysis on the Inherent Noise Tolerance of Feedforward Network and One Noise-resilient Structure
*Wenhao Lu, **Zhengyuan Zhang,** Feng Qin, Wenwen Zhang, Yuncheng Lu, Yue Liu, Yuanjin Zheng*
Neural Networks, 2023 (JCR Q1, Citation: 2, Impact Factor: 6.3)

A Novel Fault Classification Feature Extraction Method for Rolling Bearing based on Multi-sensor Fusion Technology and EB-1D-TP Encoding Algorithm
*Zuozhou Pan, **Zhengyuan Zhang,** Zong Meng, Yuebing Wang*
ISA Transactions, 2023 (JCR Q1, Citation: 33, Impact Factor: 6.5)

Multi-sensor Signal Fusion Method for Rolling Bearing based on the Standard Relative Mean–variance Value and Random Weighting Algorithm
*Zuozhou Pan, **Zhengyuan Zhang,** Peng Zhao, Zong Meng, Yuebin Wang, Yuanjin Zheng*
Measurement, 2024 (JCR Q1, Citation: 14, Impact Factor: 5.6)

Standalone Ultrasound-based Highly Visualized Volumetric Spine Imaging for Surgical Navigation
*Xinben Hu, Tianjian Liu, **Zhengyuan Zhang,** Xuan Xiao, Lin Chen, Gao Wei, Yunjiang Wang, Keji Yang, Haoran Jin, Yongjian Zhu*
Scientific Reports, 2025 (JCR Q1, Citation: 2, Impact Factor: 3.9)

Influence Mechanism of Gas Turbine Blade Thickness on Photoacoustic Signals to Guide Defect Imaging Detection
*Feng Qin, Bing Li, Lei Chen, Tao Tang, Zhuqing Wang, Yu Huang, Zhenlong Zhang, **Zhengyuan Zhang,** Yuanjin Zheng*
IEEE Transactions on Instrumentation and Measurement, 2023 (JCR Q1, Citation: 11, Impact Factor: 5.9)

Conference papers

The Photoacoustic Quality-Enhancement Neural Network Processor with the Scalable and End-to-End Architecture by Improving the Sparsity Level
*Miao Sun, **Zhengyuan Zhang**, Jie Ma, Boyi Dong, Yange Wang, Zhongzhiguang Lu, Yuanjin Zheng*
2025 IEEE International Symposium on Circuits and Systems (ISCAS, Oral presentation).

Neuromorphic FeRAM-Based Co-Design for Imaging Enhancement in Handheld Photoacoustic Systems
*Tiancheng Cao, **Zhengyuan Zhang**, Shuailin Tao, Chen Liu, Wang Ling Goh, Yuanjin Zheng, Yuan Gao*
2025 IEEE International Symposium on Circuits and Systems (ISCAS, Oral presentation).

Plug and Play Prior Regularized Algorithm for Acoustic Resolution Photoacoustic Microscopy Bioimaging System Enhancement
***Zhengyuan Zhang**, Wenwen Zhang, Haoran Jin, Zesheng Zheng, Yuanjin Zheng*
2023 IEEE Biomedical Circuits and Systems Conference (BioCAS, Citation: 2, Poster)

Learning-based Algorithm for Real Imaging System Enhancement: Acoustic Resolution to Optical Resolution Photoacoustic Microscopy
***Zhengyuan Zhang**, Haoran Jin, Zesheng Zheng, Yuanjin Zheng*
2022 IEEE International Symposium on Circuits and Systems (ISCAS, Citation: 9, **Oral presentation**)

Super Acoustic Resolution Photoacoustic Microscopy Imaging Enhancement
***Zhengyuan Zhang**, Haoran Jin, Zesheng Zheng, Yuanjin Zheng*
2022 IEEE Biomedical Circuits and Systems Conference (BioCAS, Citation: 9, **Oral presentation**)

Photoacoustic Microscopy Imaging from Acoustic Resolution to Optical Resolution Enhancement with Deep Learning
***Zhengyuan Zhang**, Haoran Jin, Zesheng Zheng, Yunqi Luo, Yuanjin Zheng*
2021 IEEE International Symposium on Circuits and Systems (ISCAS, Citation: 14, Oral presentation)

TEACHING AND REVIEWER SERVICE

07/2019-05/2025 Master's Dissertation Co-supervisor. Student: Yibing Duan (2021); Xiaoshi Sun (2021); Chenyang Liu (2022); Zeliang Hao (2022); Ze Feng (2023); Zhengke Sun (2024).

07/2019-05/2025	Bachelor's FYP Co-supervisor. Student: SU WAI WAI ZIN (2021); POTIPIREDDI SAI PRATYUSHA (2022); MURALIDHARAN VAISHNAVI (2022); YU MYAT NOE OO (2023); Jing Lin Ong (2024); Leyi Li (2025).
07/2021-Present	Served as journal reviewer of "IEEE Transactions on Medical Imaging" and "Photoacoustics".

SKILLS

Programming Skills	Python, PyTorch, Tensorflow, OpenCV, MATLAB, C/C++, Vivado HLS, Verilog Computational Imaging, Image Restoration, Inverse Problem, Model based Image Processing, SLAM, Machine Learning, Deep Learning, Matrix Analysis, Convex Optimization, Probability and Statistics, Hardware Acceleration, etc.
Related Courses	Image Analysis & Pattern Recognition, Machine Vision, Computer Networks, Data Structure & Algorithm, Computer Architecture & Acceleration for Machine Learning, Operating System, etc.
Language	Mandarin (Native), English (Fluent), and German (Fluent).