PENGCHENG WANG

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EDUCATION

University of Southern California (USC) *Aug 2023 - Present*
PhD student in Biomedical Engineering
University of Science and Technology of China (USTC) *Sep 2018 - Jul 2022*
Bachelor in Electronic Information Engineering

PUBLICATIONS

Yan-Ran Wang*, **Pengcheng Wang***, Zihan Yan*, ... ,Lu Tian, Feng Wu, Jian Gong. *Advancing Presurgical Non-Invasive Molecular Subgroup Prediction in Medulloblastoma Using Artificial Intelligence and MRI Signatures*, **Cancer Cell 2024**

Yan-Ran Wang*, Kai Yang*, Yi Wen†, **Pengcheng Wang**†, Yuepeng Hu†, Yongfan Lai†, Yufeng Wang†, Kankan Zhao, ... , Joseph C. Wu, Shihua Zhao. *Screening and Diagnosis of Cardiovascular Disease Using Artificial Intelligence-Enabled Cardiac Magnetic Resonance Imaging*, **Nature Medicine 2024**

Yan-Ran Wang, **Pengcheng Wang**, Lisa Christine Adams, ... , Daniel Rubin, Heike E. Daldrup-Link. *Low-count whole-body PET/MRI restoration: an evaluation of dose reduction spectrum and five state-of-the-art artificial intelligence models*, **EJNMMI 2023**

Remark: *Co-first authors, †Co-second authors

CONFERENCES

Pengcheng Wang, Dan Ruan, Junzhou Chen, Jiayu Xiao, Diane Ling, Lijun Ma, Wensha Yang, Zhaoyang Fan, *Multi-contrast MR-driven deep learning for abdominal multi-organ segmentation (McDAMOS)*, American Association of Physicists in Medicine - **AAPM 2024 Snap Oral Presentation**

ASSISTANTSHIP EXPERIENCE

University of Southern California (USC) *Aug 2023 - Present*
Served as a research assistant, focused on AI-MRI
University of Science and Technology of China (USTC) *Sep 2021 - Jun 2023*
Served as a research assistant, focused on Biomedical AI

RESEARCH EXPERIENCES

Automated Abdominal Organs Segmentation Based on MRI Sep 2023 - Present
University of Southern California Advisor: Dr. Zhaoyang Fan & Dr. Dan Ruan
- Multi-contrast MR images are better than single-contrast MR images on segmentation tasks.
- Pre-training on a T1w dataset with a synthesized T2w contributed to segmentation on small datasets.
- Shape representation loss improved the accuracy in the duodenum, intestine and pancreas.

Pre-surgical Molecular Subgroup Prediction in Medulloblastoma Mar 2022 - Jun 2023
University of Science and Technology of China Advisor: Dr. Yan-Ran Wang
- Contributed to the organization of an international database of 934 medulloblastoma patients, utilizing image-based machine learning strategies to enable non-invasive molecular subgroup prediction..
- Carried out data processing, developed machine learning experiments, and performed model and data analysis to enhance the accuracy of molecular subgroup predictions.
- Validated the model through robust strategies, including cross-validation and external validation, to show its efficacy as a generalizable molecular diagnosis classifier.
- Conducted data quality control, contributing to statistical analysis and drafting of tables and figures.

AI-enabled Screening and Diagnosis of Cardiovascular Disease Jan 2022 - Jun 2023
University of Science and Technology of China Advisor: Dr. Yan-Ran Wang
• Developed and validated a computerized cardiac magnetic resonance imaging (CMR) interpretation system for screening and diagnosing 11 types of cardiovascular disease (CVD) in 9,719 patients.
• Conducted data processing, developed and trained deep learning algorithms, and performed model analysis to enhance the accuracy and effectiveness of CVD screening and diagnosis.
• Highlighted the potential of AI-enabled CMR to detect previously unidentified CMR features.
• Contributed equally as a co-second author in drafting the primary paper and figures.

Low-Count Whole-Body PET/MRI Restoration Oct 2021 - Mar 2022
University of Science and Technology of China Advisor: Dr. Yan-Ran Wang & Dr. Liang-Qiong Qu
• Investigated five state-of-the-art AI algorithms for low-count whole-body PET restoration, and provided a comprehensive comparison of current AI techniques.
• Implemented the convolutional neural networks in PET/MRI restoration: U-Net, enhanced deep super-resolution network (EDSR), and generative adversarial network (GAN).
• Explored swin transformer firstly - swin transformer image restoration network (SwinIR) and EDSR-ViT (vision transformer) - for whole-body PET/MRI restoration.
• Led contributor for the methodology, coding, and data analysis.

SKILLS

Programming skills: Python (Pytorch, Tensorflow), C, Matlab, R
Software: OsiriX/Horos, ITK-SNAP, 3D Slicer, ANTs

AWARDS

• The 26th Grodins Symposium Best Posters in Next-Generation MRI at BME, USC 2024
• Scholarship of Talent Program in Artificial Intelligence, USTC 2022
• Outstanding Student Scholarship, USTC 2021, 2020, 2019
• Outstanding Freshman Scholarship, USTC 2018

OTHERS

• Served as a Teaching Assistant for Computer Programming 2021