Gaofeng WU

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EDUCATIONAL BACKGROUND

ShanghaiTech University (Double First-Class Initiative) *Shanghai, China*
Master in Biomedical Engineering *Sep 2023 - Jul 2026*

- Advisor: Han Zhang
- GPA: 3.46/4.0
- Award: School Outstanding Student (**top 10%**), The Second Prize Scholarship
- Coursework: Deep Learning, Algorithm Design and Analysis (Python), Medical Big-Data and Artificial Intelligence, Biomedical Imaging, Advanced Biostatistics, Digital Image Processing.

South China University of Technology (Project 985) *Guangzhou, Guangdong, China*
Bachelor in Medical Imaging *Sep 2018 - Jul 2023*

- GPA: 3.3/4.0
- Award: School Outstanding Student Cadre
- Coursework: Medical Imaging Diagnosis, Nuclear Medicine, Interventional Radiology, Medical Imaging Physics, Medical Imaging Diagnostic Techniques, Applications of MATLAB in Digital Image Processing.

RESEARCH EXPERIENCE

ShanghaiTech University *Shanghai, China*
Master's student, BID Lab, School of Biomedical Engineering *Sep 2023 - Jul 2026*

Research Projects

Test-Arise: "Test-time" Domain Generalization for Multi-site Autism Spectrum Disorder Diagnosis on fMRI

- Proposed a zero-shot domain generalization framework that leverages unseen target fMRI data to address domain shifts without retraining;
- Developed a two-phase adaptation: 1) statistics-based self-normalization to mitigate domain-specific biases, 2) hyperspherical reprojection into a learnable style space for unseen-source domain alignment;
- Achieved 66.67% ACC and 67.98% AUC on ABIDE-I dataset, and identified clinically relevant biomarkers.

Structure-Function Guided Spatiotemporal Graph Transformers for Predicting Cognitive Development Trajectories in Infants

- Developed a multi-task spatiotemporal graph transformer model to predict individualized longitudinal cognitive development in infants using dynamic functional connectivity;
- Integrated structure-function, and demographic prior information via large lauguage models, and spatial-temporal priors to guide feature learning;
- Achieved a score of 0.744 (MAE), with a slope of 0.120 and intercept of 1.417 on the Baby Connectome Project dataset.

BEAM: Brainwave Empathy Assessment Model for Early Childhood

- Developed the first EEG-based deep learning model for objective empathy assessment in children (aged 4-6 years), addressing limitations of subjective behavioral metrics;
- Integrated multi-view EEG empathy signals through disentanglement, and enhanced class-consistent representations while reducing cross-subject variability via within-class contrastive learning;

- Achieved 64.7% ACC on the China Baby Connectome Project dataset.

T2T-Bridge: Direct Diffusion Bridge Model for Thick-to-Thin Slice Infant MRI Reconstruction

- Designed a direct diffusion bridge model to reconstruct thin-slice ($0.8*0.8*0.8mm^3$) infant MRI from thick-slice ($0.4*0.4*5.4mm^3$), enhancing the research utility of clinical thick-slice data;
- Introduced structural consistency constraints and age-guided contrast adaptation for improved fidelity;
- Enhanced resolution from 5.2mm to 0.8mm with SSIM 0.9573, PSNR 33.3784 on the in-hold database.

Research Assistantship

Chinese Baby Connectome Project (CBCP) *Nov 2023 - Present*

- Collected multimodal infant data (MRI/EEG/behavioral) from 100+ participants;
- Preprocessed multimodal infant MRI data from 1400+ participants.

South China University of Technology *Guangzhou, Guangdong, China*

Genetic susceptibility to intervertebral disc degeneration

Advisor: Fengjuan Lv *Dec 2019 - May 2021*

- Wrote a literature review on the genetic factors in intervertebral disc degeneration (IDD);
- Conducted experiments with laboratory mice to investigate the role of specific genes in IDD;
- Analyzed experimental data and identified MMP-12 as a key gene in IDD.

TEACHING AND PROFESSIONAL EXPERIENCE

ShanghaiTech University *Shanghai, China*

Teaching Assistant, Course: **Neuroscience and Neuroimaging Practicum** *Sep 2024 - Jan 2025*

- Guided students in MRI and EEG data acquisition;
- Coordinated the scheduling and communication for course experiments with students.

Teaching Assistant, Course: **Scientific Communication and Expression** *Feb 2024 - Jun 2024*

- Assisted the teacher in summarizing key lecture points;
- Managed and graded student assignments.

Teaching Assistant, Course: **Artificial Intelligence Repaints Brain Images** *Jul 2025 - Jul 2025*

- Prepared and delivered lecture content, improving engagement for 10 students;
- Guided students in MRI data acquisition and quality control.

Guangdong Provincial People's Hospital *Guangzhou, Guangdong, China*

Medical student (on clerkship) *Mar 2022 - Feb 2023*

- Conducted imaging examinations and drafted diagnostic imaging reports (*e.g.*, MRI, CT, PET);
- Provided patient care assistance, including dressing changes;
- Assisted doctors during surgery.

PUBLICATIONS

1. **Wu, G.**, Zhang, W., Zhu, Z., Cai, X., Hu, Y., Tao, T., Wang, L., Tao, Y., Tang, H., & Zhang, H.*. *Predicting Future Cognitive Development Using Past Brain fMRI With Spatiotemporal Graph Transformers Guided by Prior Informatio*n, ISBI 2025, Houston, USA, Apr. 14-17, 2025.
2. **Wu, G.**, Zhang, W., Li Y., Yue J., Zhu Z., Zhang H.*. *Test-Arise: "Test-time" Domain Generalization Multi-site Autism Spectrum Disorder on fMRI*, In Press.
3. Xie, C., **Wu, G.**, Wang, K., Zhu, Z., Luo, X., Liang, Y., Quan, F., Wu, R., Huang, X., & Zhang, H.*. BEAM: Brainwave Empathy Assessment Model for Early Childhood, EMBC 2025, Copenhagen, Denmark, Jul. 14-17, 2025.
4. Zhu Z., **Wu, G.**, Deng H., Tao Y., Tao T., Wang W., Wang L., Lan Z., Yang M., Wang S., Liu J., Zhang H.*. *T2T-Bridge: Direct Diffusion Bridge Model for Thick-to-Thin Slice Infant MRI Reconstruction*, ISBI 2025, Houston, USA, Apr. 14-17, 2025 (***Oral***).

5. Tang, H., Wang, L., **Wu, G.**, Cai, X., Zhou, R., Luo, X., Liang, Y., Zhang, W., & Zhang, H.*. *Dynamic Gradient Modulation for Enhanced Resting-State fMRI Denoising*, ISBI 2025, Houston, USA, Apr. 14-17, 2025.
6. Tang, H., Wang, L., **Wu, G.**, Jia, Y., & Zhang, H.*. *Deep Scrubbing: a Reconstruction-Based Approach for Automatic and Adaptive fMRI Denoising*, ISBI 2025, Houston, USA, Apr. 14-17, 2025.
7. Zhu, Z., Tao, T., Tao, Y., Deng, H., Cai, X., **Wu, G.**, ... & Zhang, H.*. *LoCI-DiffCom: Longitudinal Consistency-Informed Diffusion Model for 3D Infant Brain Image Completion*, MICCAI 2024, Marrakesh, Morocco, Oct. 6-10, 2024.
8. Deng H., **Wu G.**, Zhu Z., Gu Z., Cai X., Tao T., Zhu L., Tao Y., Shen D., Zhang H.*. *Generalizable Transformer-based Automatic MRI Quality Control for Infant Brain Imaging*, ISMRM 2024, Digital Poster.

SKILLS

- **Languages**: English (TOEFL: 83, CET 6: 518, CET 4: 529), Mandarin (native).
- **Programming**:
  - Python, Matlab, R
  - Transformer, Graph learning, LLMs, Contrastive Learning, Domain generalization.
- **Neuroimaging Processing**:
  - Tools: Freesurfer, FSL, ANTs, mrtrix3, DPABI, BrainNetViewer.
  - Modality: MRI (structural, resting-state functional, and diffusion MRI), EEG.