

Chenhui Wang

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SUMMARY

I am a **fourth-year direct Ph.D. student** in Biomedical Engineering (BME) at the *Institute of Science and Technology for Brain-inspired Intelligence, Fudan University (FDU)*, under the supervision of Professor **Hongming Shan**. I received my Bachelor's degree in Software Engineering (SE) from the *School of Computer Science and Artificial Intelligence, Wuhan University of Technology (WHUT)*.

Research Interests: *AI for medical image reconstruction and multi-modal analysis.*

EDUCATION

Fudan University – PhD in Biomedical Engineering: GPA: 3.6/4.0 (**Ranked 1st in Major**) Sept 2021

Wuhan University of Technology – Bachelor in Software Engineering: GPA: 4.4/5.0 (**Top 0.6%**) Sept 2016

HONORS AND AWARDS

National Scholarships (3 times) – once at FDU and twice at WHUT

IJCAI 2024 Travel Grant & Overseas Participation Funding – FDU Jun 2024

Top Ten Outstanding Students (Top 0.01%) & Excellence Scholarship (Top 0.1%) – WHUT May 2021

PROJECTS

Cross-Modal Neuroimaging Synthesis Based on Generative AI July 2021 – Present

- **Overview:** Collaborated with the **Tencent Rhino-Bird Fund** and **Huashan Hospital** to utilize the complementary characteristics of various medical imaging modalities (3D MRI and PET) for cross-modal synthesis. Developed: i) a **GAN-based** bidirectional synthesis network for MRI to FDG PET synthesis, and ii) a **3D latent diffusion transformer** for cross-modal synthesis from MRI to multi-tracer ($A\beta$, tau, and FDG) PET.
- **Outcomes:** First author of a paper published in **Med. Image Anal.** (SCI Q1, IF: 10.7) and another under review in **Nat. Commun.** Contributed to 2 public patents.

Intelligent Diagnosis of Alzheimer's Disease Based on Representation Learning July 2021 – Present

- **Overview:** Leveraged **spatiotemporal characteristics of Alzheimer's disease (AD)** to develop efficient and effective diagnostic methods. Specifically: i) proposed a **hybrid-granularity ranking prototype learning approach** for longitudinal patient state prediction using cross-sectional data; ii) aligned single-modal (MRI) and multi-modal imaging models (MRI and PET) through **distillation with a Mixture-of-Experts architecture**.
- **Outcomes:** First author of a paper in **IEEE J. Biomed. Health Inform.** (SCI Q1, IF: 6.7) and another under review for **MICCAI 2025**. Contributed to 1 public patent.

Fidelity Virtual Try-On Research Based on Generative Latent Diffusion Models July 2023 – Present

- **Overview:** Collaborated with **Suzhou Xiangji AI Company** to develop **FLDM-VTON**, a novel **fidelity latent diffusion model** for virtual try-on that addresses fidelity and diversity challenges in generative models. Extensive experiments on two widely used benchmark datasets demonstrate that **FLDM-VTON** outperforms state-of-the-art methods in generating realistic try-on images with precise clothing details.
- **Outcomes:** First author of a paper in **IJCAI** (**top AI conference, acceptance rate for the computer vision field: 8%**). Received travel funding for presentation. Contributed to 1 public patent.

PUBLICATIONS

1. **C. Wang**, S. Piao, Z. Huang, Q. Gao, J. Zhang, **Y. Li**, and **H. Shan**. "Joint learning framework of cross-modal synthesis and diagnosis for Alzheimer's disease by mining underlying shared modality information." **Med. Image Anal.**, 91, 103032, 2024. [[3D MRI-to-PET synthesis](#)|[AD diagnosis](#)|[Joint learning framework](#)]
2. **C. Wang**, Y. Lei, T. Chen, J. Zhang, **Y. Li**, and **H. Shan**. "HOPE: Hybrid-granularity Ordinal Prototype Learning for Progression Prediction of Mild Cognitive Impairment." **IEEE J. Biomed. Health Inform.**, 28(11), 6429-6440, 2024. [[AD ordinal progression](#)|[MCI prediction](#)|[Rank-based prototype learning](#)]

3. C. Wang, T. Chen, Z. Chen, Z. Huang, T. Jiang, Q. Wang, and H. Shan. “FLDM-VTON: Faithful Latent Diffusion Model for Virtual Try-on.” International Joint Conference on Artificial Intelligence (**IJCAI oral & poster**), 2024. [[Virtual Try-on](#)|[Latent diffusion](#)]
4. C. Wang, S. Piao, J. Wang, Z. Li, M. Cui, J. Zhao, Q. Guo, J. Zhang, F. Xie, Y. Li, and H. Shan. “GenPET Enables Diagnostic Multi-tracer PET Synthesis for Early Detection of Alzheimer’s Disease.” **Under review in Nat. Commun.** in 2025. [[3D MRI-to-multi-tracer PET synthesis](#)|[Diffusion transformer](#)]
5. C. Wang, Z. Chen, T. Chen, Z. Li, and H. Shan. “X-MoE: Anatomically Explainable Mixture of Experts for AD Diagnosis”. **submitted to MICCAI** in 2025. [[AD diagnosis](#)|[Explainable mixture-of-Experts](#)|[Brain atlas](#)]
6. T. Chen, C. Wang, Z. Chen, Y. Lei, and H. Shan. “HiDiff: Hybrid diffusion framework for medical image segmentation.” **IEEE Trans. Med. Imaging**, 43(10), 3570-3583, 2024. [[Segmentation](#)|[Hybrid framework](#)]
7. T. Chen, C. Wang, and H. Shan. “BerDiff: Conditional Bernoulli Diffusion Model for Medical Image Segmentation”. International Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI**), 2023. [[Segmentation](#)|[Diffusion model](#)|[Bernoulli](#)]
8. T. Chen, C. Wang, Z. Chen, and H. Shan. “Autoregressive Medical Image Segmentation via Next-Scale Mask Prediction.” **submitted to MICCAI** in 2025. [[Segmentation](#)|[Autoregressive model](#)|[Next-scale](#)]
9. Z. Chen, T. Chen, C. Wang, Q. Gao, C. Niu, G. Wang, and H. Shan. “Low-dose CT denoising with language-engaged dual-space alignment.” IEEE International Conference on Bioinformatics and Biomedicine (**BIBM**), 2024. [[Low-dose CT denoising](#)|[LLM-guided](#)]
10. Z. Chen, T. Chen, C. Wang, Q. Gao, H. Xie, C. Niu, G. Wang, and H. Shan. “LangMamba: A Language-driven Mamba Framework for Low-dose CT Denoising with Vision-language Models.” **submitted to IEEE Trans. Radiat. Plasma Med. Sci.** in 2025. [[Low-dose CT denoising](#)|[LLM-guided](#)|[Mamba](#)]

SKILLS AND EXPERIENCE

English & Coding: CET-6 & Python, PyTorch, .etc

Journal Reviewer: MedIA, PR, IEEE TCSVT, AIIM, CAAI TIT, PRLETTERS, BMC MI, IEEE ACCESS, and CCPE

Conference Reviewer: IJCAI, MICCAI, BIBM, MIDL, and IJCNN

Patents: CN202210748948.X, CN202310278934.0, CN202410412376.7

Competitions: *National First prize* in the Chinese Collegiate Computing Competition of 2020, *International Second Prize* in the ASC20-21 Asian Student Supercomputer Challenge.