Yijie Li

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Research Interests

My research focuses on diffusion MRI and tractography to investigate brain structural connectivity and characterize white matter organization across individuals. I am particularly interested in developing deep learning and computational methods for medical image analysis. Overall, my work integrates computational neuroscience, neuroimaging, and artificial intelligence to advance quantitative brain connectivity analysis.

Keywords: Diffusion MRI; Tractography; Connectivity Analysis; Computational Neuroimaging; Deep Learning

Education

University of Electronic Science and Technology of China, Chengdu, China — Sep 2023 – Present
Ph.D. Candidate in Information and Communication Engineering
Integrated M.S.-Ph.D. Program

University of Electronic Science and Technology of China, Chengdu, China — Sep 2019 – Jun 2023
Bachelor of Engineering in Communication Engineering

Publications

Summary: 8 Journal Articles (3 First- or Co-first-Authored), 7 Conference Papers/Abstracts

Journal Articles

- **Li, Y.**, Zhang, W., Zhu, X., Wu, Y., Rathi, Y., O'Donnell, L. J., & Zhang, F. (2026). DDTracking: A Diffusion Model-Based Deep Generative Framework with Local-Global Spatiotemporal Modeling for Diffusion MRI Tractography. *Medical Image Analysis*, 103967. *(First Author)*
- **Li, Y.**, Zhang, W., Wu, Y., Yin, L., Zhu, C., Chen, Y., ... & Zhang, F. (2024). A diffusion MRI tractography atlas for concurrent white matter mapping across Eastern and Western populations. *Scientific Data*, *11*(1), 787. *(First Author)*
- Zhang, W., **Li, Y.**, Zheng, R., Sochen, N. A., Chen, Y., Zekelman, L. R., ... & Zhang, F. (2026). Cross-population white matter atlas creation for concurrent mapping of brain connections in neonates and adults with diffusion MRI tractography. *Fundamental Research. (Co-first Author)*
- Zhang, F., Rushmore, J., **Li, Y.**, Cetin-Karayumak, S., Song, Y., Cai, W., ... & O'Donnell, L. J. (2026). Study of sex differences in the whole brain white matter using diffusion MRI tractography and suprathreshold fiber cluster statistics. *NeuroImage: Clinical*, 103979.
- Zheng, R., Zhang, W., **Li, Y.**, Zhu, X., Lan, Z., Rushmore, J., ... & Zhang, F. (2025). AGFS-tractometry: A novel atlas-guided fine-scale tractometry approach for enhanced along-tract group statistical comparison using diffusion MRI tractography. *Medical Image Analysis*, 103892.
- Zhang, W., **Li, Y.**, Wu, Y., Chen, H., & Zhang, F. (2025). Segmentation Methods for Diffusion Magnetic Resonance Imaging Tractography: A Survey. *Journal of Data Acquisition and Processing/Shu Ju Cai Ji Yu Chu Li*, *40*(4).
- Guo, B., Wang, J., **Li, Y.**, Wang, J., Gao, M., Feng, P., ... & Zhang, F. (2025). DMVFC: Deep Learning-Based Functionally Consistent Tractography Fiber Clustering Using Multimodal Diffusion MRI and Functional MRI. *IEEE Journal of Selected Topics in Signal Processing*.
- Cao, D., Ni, L., Qi, Q., Zhou, L., Wang, J., **Li, Y.**, ... & Li, S. (2025). Free Water Corrected Diffusion Magnetic Resonance Imaging Reveals Microstructural Alterations in Corpus Callosum Subregions of Preschool Children With Autism. *Human Brain Mapping*, *46*(18), e70435.

Conference Papers/Abstracts

- **Li, Y.**, Zhang, W., Zhu, X., Wu, Y., Rathi, Y., O'Donnell, L. J., & Zhang, F. (2025, May). A Deep Diffusion Model Approach for Diffusion MRI White Matter Fiber Tractography. In *Proceedings of the International Society for Magnetic Resonance in Medicine*.
- **Li, Y.**, Zhang, W., Wu, Y., Yin, L., Chen, Y., Cetin-Karayumak, S., ... & Zhang, F. (2024, May). Creation of a cross-population white matter atlas for concurrent mapping of brain connections between Eastern and Western populations. In *Proceedings of the International Society for Magnetic Resonance in Medicine*.
- Zhang, W., **Li, Y.**, Zhu, X., Li, C., Ning, L., Rathi, Y., O'Donnell, L. J., & Zhang, F. (2026, May). Privacy-Preserving Multi-Site Diffusion MRI Harmonization via Federated Learning. In *Proceedings of the International Society for Magnetic Resonance in Medicine*.
- Huang, G., Xie, G., **Li, Y.**, Sheng, D., O'Donnell, L. J., Golby, A., & Zhang, F. (2026, May). A Novel Deep Learning Approach for Mapping White Matter Fiber Pathways in Stroke Patients from Routine Clinical CT. In *Proceedings of the International Society for Magnetic Resonance in Medicine*.

- Wang, J., Du, M., Wu, Y., **Li, Y.**, Wells III, W. M., O'Donnell, L. J., & Zhang, F. (2025, September). A Novel Streamline-Based Diffusion MRI Tractography Registration Method with Probabilistic Keypoint Detection. In *International Conference on Medical Image Computing and Computer-Assisted Intervention* (pp. 24–34). Cham: Springer Nature Switzerland.
- Zhang, W., **Li, Y.**, Zhu, X., Zhang, L., Chen, Y., O'Donnell, L. J., ... & Zhang, F. (2025, May). Multiple-site diffusion MRI tractography analysis using federated learning for brain disease classification. In *Proceedings of the International Society for Magnetic Resonance in Medicine*.
- Zhu, X., Zhang, W., **Li, Y.**, O'Donnell, L. J., & Zhang, F. (2024, October). When diffusion MRI meets diffusion model: a novel deep generative model for diffusion MRI generation. In *International Conference on Medical Image Computing and Computer-Assisted Intervention* (pp. 530–540). Cham: Springer Nature Switzerland.

Patents

- Zhang, F., **Li, Y.**, Zhang, L., Zhang, W. (2024). *A Deep Learning-Based Fiber Reconstruction Method for Diffusion MRI Tractography*. Chinese Patent, Under Examination.
- Zhang, F., Zhang, W., Zhang, L., **Li, Y.**, Zhu, X., Wang, J. (2024). *A Multi-center Diffusion MRI Data Analysis Method Based on Federated Learning*. Chinese Patent, Under Examination.
- Zhang, F., Huang, G., **Li, Y.** (2026). *A CT Image-Based White Matter Fiber Reconstruction Method for Intracerebral Hemorrhage Patients*. Chinese Patent, Under Review.

Awards

Trainee (Educational) Stipend	International Society for Magnetic Resonance in Medicine	2024–2025
Grand Prize	19th "Challenge Cup" (Jiebang Guashuai Track)	Nov 2024
Academic Scholarship	University of Electronic Science and Technology of China	2023–2025
Graduate Academic Rising Star Award	University of Electronic Science and Technology of China	Apr 2025
Outstanding Graduate Student	University of Electronic Science and Technology of China	Oct 2024

Participated Projects

National Key R&D Program (Ministry of Science and Technology of China)
Cross-Regional Collaborative Analysis of Human Brain Structural Connectome Using Diffusion MRI
Research Contributor 2024 – Present

- Developed novel fiber tracking algorithms for diffusion MRI tractography, improving white matter reconstruction.
- Constructed a cross-population white matter atlas by harmonizing HCP and CHCP datasets.
- Conducted clinical studies on brain disorders (MDD, ASD, ALS, Alzheimer's disease, intracerebral hemorrhage).

Medical-Engineering Interdisciplinary Joint Fund (Central Universities Basic Research Fund)
Deep Learning-Based Analysis of Cerebro-Cerebellar Connectivity Alterations in Alzheimer's Disease
Research Participant 2024 – Present

- Designed diffusion MRI preprocessing and feature extraction pipelines.
- Performed tractography-based connectivity analysis and quantitative evaluation.

General Program (National Natural Science Foundation of China)
Reconstruction of Cerebellar Structural Connectome using Diffusion MRI and Deep Learning
Research Contributor 2024 – Present

- Investigated anatomically constrained cerebellar tractography and atlas construction.
- Developed computational models for structural connectome analysis.

International S&T Cooperation Project (Sichuan Provincial Department of Science and Technology)
AI-Driven Multi-Center Diffusion MRI Computing and Brain Disease Analysis
Research Participant 2026 – Present

- Developed algorithms for multi-site diffusion MRI processing.
- Conducted large-scale tractography analysis and post-processing optimization.

Skills

- **Programming:** Python (PyTorch, NumPy, SciPy), MATLAB, C++, Shell
- **Medical Imaging:** Diffusion MRI (tractography, connectome analysis), White Matter Atlas Construction, Cross-population Harmonization
- **Tools:** FSL, ANTs, MRtrix3, FreeSurfer, 3D Slicer, DSI Studio, VTK, Git, Docker, Linux
- **Languages:** Chinese (native), English (proficient)