Ziyu Li

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FMRIB, John Radcliffe Hospital, Oxford, OX3 9DU, UK
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Research Experiences

Postdoctoral Researcher **Feb 2025 - present**
Wellcome Centre for Integrative Neuroimaging, FMRIB, University of Oxford, Oxford, UK
Supervisors: Karla L. Miller, Ph.D.; Wenchuan Wu, Ph.D.

Research Assistant **Mar 2020 - Oct 2021**
Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School, MA, USA
Supervisors: Qiyuan Tian, Ph.D.; Susie Y. Huang, M.D., Ph.D.

Education

Doctor of Philosophy (DPhil/Ph.D.) **Oct 2021 - Dec 2024**
Wellcome Centre for Integrative Neuroimaging, FMRIB, University of Oxford, Oxford, UK
Advisors: Wenchuan Wu, Ph.D.; Karla L. Miller, Ph.D.
Thesis: Acquisition and reconstruction methods for high-resolution, high-fidelity 3D multi-slab diffusion MRI

Bachelor of Engineering (with distinction) **Sept 2017 - June 2021**
Department of Biomedical Engineering, Tsinghua University, Beijing, China

Bachelor of Management **Sept 2018 - June 2021**
School of Economics and Management, Tsinghua University, Beijing, China

Awards and Honors

- Mansfield Research Innovation Award (awarded: £1,500), International Society of Magnetic Resonance in Medicine (ISMRM) British and Irish Chapter & Siemens 2025
- Young Investigator Award (2nd Prize), Overseas Chinese Society for Magnetic Resonance in Medicine (OCSMRM) 2024
- Goodger & Schorstein Scholarship (awarded: £3,300), University of Oxford 2024
- Academic Grant (total awarded: £900), Exeter College, University of Oxford 2022, 2023, 2024
- Educational Stipend, International Society for Magnetic Resonance in Medicine (ISMRM) 2021, 2022, 2023
- Departmental Funding (full funding for DPhil study), Nuffield Department of Clinical Neurosciences, University of Oxford 2021
- Outstanding Graduates of Tsinghua University, Tsinghua University (Top 2% in university) 2021
- Outstanding Graduates of Beijing, Beijing Municipal Administration Committee 2021
- Outstanding Undergraduate Thesis of Beijing, Beijing Municipal Administration Committee (Top 1 in department) 2021
- Magna Cum Laude Merit Award, ISMRM 2021
- SenseTime Scholarship (awarded: ¥20,000), SenseTime 2020
- National Scholarship, Ministry of Education of P.R. China 2019, 2020

- Seed-Funding for Student's Academic Research (total awarded: ¥40,000), Tsinghua University 2019, 2020

Publications

Journal Articles

- **Li Z**, Miller KL, Chen X, Chiew M, Wu W. Self-navigated 3D diffusion MRI using an optimized CAIPI sampling and structured low-rank reconstruction estimated navigator. *IEEE Transactions on Medical Imaging*, 2025; 44(2), 632-644. https://doi.org/10.1109/TMI.2024.3454994
  GitHub: https://github.com/liziyu0929/Self-nav_CAIPI
- **Li Z**, Miller KL, Andersson JLR, Zhang J, Liu S, Guo H, Wu W. Sampling strategies and integrated reconstruction for reducing distortion and boundary slice aliasing in high-resolution 3D diffusion MRI. *Magnetic Resonance in Medicine*, 2023; 90(4), 1484-1501. *(OCSMRM Young Investigator Award 2nd Prize)* https://doi.org/10.1002/mrm.29741
  GitHub: https://github.com/liziyu0929/distortion-free-3d-diffusion-mri
- **Li Z**, Fan Q, Bilgic B, Wang G, Wu W, Polimeni JR, Miller KL, Huang SY, Tian Q. Diffusion MRI data analysis assisted by deep learning synthesized anatomical images (DeepAnat). *Medical Image Analysis*, 2023; 86, 102744. https://doi.org/10.1016/j.media.2023.102744
  GitHub: https://github.com/liziyu0929/DeepAnat
- **Li Z**, Tian Q, Ngamsombat C, Cartmell S, Conklin J, Filho ALMG, Lo W, Wang G, Ying K, Setsompop K, Fan Q, Bilgic B, Cauley S, Huang SY. High-fidelity fast volumetric brain MRI using synergistic wave-controlled aliasing in parallel imaging and a hybrid denoising generative adversarial network (HDnGAN). *Medical Physics*, 2022; 49(2), 1000-1014. https://doi.org/10.1002/mp.15427
  GitHub: https://github.com/liziyu0929/HDnGAN
- Tian Q, Ngamsombat C, Lee HH, Berger DR, Wu Y, Fan Q, Bilgic B, **Li Z**, Novikov DS, Fieremans E, Rosen BR, Lichtman JW, Huang SY. Quantifying axonal features of human superficial white matter from three-dimensional multibeam serial electron microscopy data assisted by deep learning. *NeuroImage*. 2025; 121212. https://doi.org/10.1016/j.neuroimage.2025.121212
- Suzuki Y, Koktzoglou I, **Li Z**, Jezzard P, Okell T. Improved visualization of intracranial distal arteries with multiple 2D slice dynamic ASL-MRA and super-resolution convolutional neural network. *Magnetic Resonance in Medicine*. 2024 Dec;92(6):2491-2505. https://doi.org/10.1002/mrm.30245
- Yang H, Wang G, **Li Z**, Li H, Zheng J, Hu Y, Cao X, Liao C, Ye H, Tian Q. Artificial intelligence for neuro MRI acquisition: a review. *Magnetic Resonance Materials in Physics, Biology and Medicine*. 2024 Jul;37(3):383-396. https://doi.org/10.1007/s10334-024-01182-7
- Li Z, **Li Z**, Bilgic B, Lee HH, Ying K, Huang SY, Liao H, Tian Q. DIMOND: DIffusion Model OptimizatioN with Deep Learning. *Advanced Science*, 2024; 2307965. https://doi.org/10.1002/advs.202307965
  GitHub: https://github.com/Lthinker/DIMOND
- Dong Y, Koolstra K, **Li Z**, Riedel M, van Osch MJP, Börnert P. Structured low-rank reconstruction for navigator-free water/fat separated multi-shot diffusion-weighted EPI. *Magnetic Resonance in Medicine*, 2024; 91(1), 205-220. https://doi.org/10.1002/mrm.29848
- Tian Q, **Li Z**, Fan Q, Polimeni JR, Bilgic B, Salat D, Huang SY. SDnDTI: Self-supervised deep learning-based denoising for diffusion tensor MRI. *NeuroImage*, 2022; 253, 119033. https://doi.org/10.1016/j.neuroimage.2022.119033
  GitHub: https://github.com/qiyuantian/SDnDTI
- Zhang X, Yang J, Li J, Li W, Song D, Lu XA, Wu F, Li J, Chen D, Li X, Xu Z, Liu S, **Li Z**, Ying K, Lu P. Factors associated with treatment response to CD19 CAR-T therapy among a large cohort of B cell acute lymphoblastic leukemia. *Cancer Immunology, Immunotherapy*, 2022; 71(3), 689-703. https://doi.org/10.1007/s00262-021-03009-z

Preprints

- **Li Z**, Miller KL, Zhu S, Wu W. Submillimeter diffusion MRI using an in-plane segmented 3D multi-slab

acquisition and denoiser-regularized reconstruction. 2024; bioRxiv 2024.10.10.617536; (Submitted to *Medical Image Analysis*, under review) https://doi.org/10.1101/2024.10.10.617536

- **Li Z**, Li Z, Li H, Fan Q, Miller KL, Wu W, Chaudhari AS, Tian Q. Enhance the image: super resolution using artificial intelligence in MRI. 2024; arXiv preprint arXiv:2406.13625. (A book chapter in *Machine Learning in MRI: From Methods to Clinical Translation*, under revision) https://doi.org/10.48550/arXiv.2406.13625

- Zhang J, Liu S, Dai E, Shao X, **Li Z**, Miller KL, Wu W, Guo H. Hybrid-space reconstruction with add-on distortion correction for simultaneous multi-slab diffusion MRI. 2023; arXiv preprint arXiv:2303.16442. https://arxiv.org/abs/2303.16442
- Avci MY, **Li Z**, Fan Q, Huang SY, Bilgic B, Tian Q. Quantifying the uncertainty of neural networks using Monte Carlo dropout for deep learning based quantitative MRI. 2021; arXiv preprint arXiv:2112.01587. https://arxiv.org/abs/2112.01587
- Tian Q, **Li Z**, Fan Q, Ngamsombat C, Hu Y, Liao C, Wang F, Setsompop K, Polimeni JR, Bilgic B, Huang SY. SRDTI: Deep learning-based super-resolution for diffusion tensor MRI. 2021; arXiv preprint arXiv:2102.09069. https://arxiv.org/abs/2102.09069

Selected Conference Proceedings

- **Li Z**, Zhu S, Miller KL, Wu W. In-vivo submillimeter 3D diffusion MRI for high-resolution, SNR-efficient microstructure imaging. The Annual Meeting of ISMRM, Honolulu, 2025. *(Oral Presentation)*
- Zhang J, Lange FJ, Andersson JLR, Zheng J, Jing Y, Yang H, Liu M, Li Z, Wu W, Tian Q, **Li Z**. DeepEddy: high-quality fast eddy current and bulk motion correction using deep learning- based image synthesis and co-registration. The Annual Meeting of ISMRM, Honolulu, 2025. *(Oral Presentation)*
- **Li Z**, Zhu S, Miller KL, Wu W. Submillimeter 3D diffusion MRI using in-plane segmented multi-slab EPI and denoiser-regularized reconstruction. ISMRM Diffusion Workshop, Kyoto, 2025. *(Oral Power Pitch)*
- Zhang J, Lange FJ, Andersson JLR, Zheng J, Jing Y, Yang H, Liu M, Li Z, Wu W, Tian Q, **Li Z**. DeepEddy: high-quality fast eddy current and bulk motion correction using deep learning-based image synthesis and co-registration. ISMRM Diffusion Workshop, Kyoto, 2025. *(Oral Presentation)*
- **Li Z**, Miller KL, Chen X, Chiew M, Wu W. Self-navigated 3D multi-slab EPI for SNR-efficient high-resolution diffusion MRI. The Annual Meeting of ISMRM, Singapore, 2024. *(Oral Presentation)*
- **Li Z**, Miller KL, Wu W. Submillimeter diffusion MRI using in-plane segmented 3D multi-slab EPI and a denoiser-regularized reconstruction. The Annual Meeting of ISMRM, Singapore, 2024. *(Digital Poster)*
- **Li Z**, Chen X, Chiew M, Miller KL, Wu W. Self-navigated high-resolution 3D diffusion MRI using an extended blipped-CAIPI sampling and structured low-rank reconstruction. The Annual Meeting of ISMRM, Toronto, 2023. *(Digital Poster)*
- **Li Z**, Miller KL, Wu W. Elimination of distortion and slice-aliasing in 3D diffusion MRI by integrating multiple sampling strategies into reconstruction. ISMRM Diffusion Workshop, Amsterdam, 2022. *(Oral Presentation)*
- **Li Z**, Fan Q, Bilgic B, Wang G, Wu W, Polimeni JR, Miller KL, Huang SY, Tian Q. Improved co-registration of diffusion and T1-weighted MRI data assisted by deep learning-based image synthesis. ISMRM Diffusion Workshop, Amsterdam, 2022. *(Scientific Poster)*
- **Li Z**, Fan Q, Bilgic B, Wang G, Polimeni JR, Huang SY, Tian Q. Diffusion MRI Data Analysis using Brain Segmentation from Anatomical Images Synthesized from Diffusion Data by Deep Learning (DeepAnat). The Annual Meeting of ISMRM, London, 2022. *(Oral Presentation)*
- **Li Z**, Miller KL, Wu W. Integration of blip reversal with CAIPI sampling enables simultaneous correction of slice aliasing and distortion in 3D multi-slab diffusion MRI. The Annual Meeting of ISMRM, London, 2022. *(Oral Power Pitch)*
- **Li Z**, Tian Q, Ngamsombat C, Cartmell S, Conklin J, Filho ALMG, Lo W, Wang G, Ying K, Setsompop K, Fan Q, Bilgic B, Cauley S, Huang SY. HDnGAN: High-fidelity ultrafast volumetric brain MRI using a hybrid denoising generative adversarial network. The Annual Meeting of ISMRM, Virtual Conference, 2021. *(Oral Presentation, Magna Cum Laude Merit Award)*

- **Li Z**, Tian Q, Ngamsombat C, Bilgic B, Fan Q, Huang SY. High-fidelity super-resolution diffusion tensor imaging using deep learning. The Annual Meeting of Radiological Society of North America (RSNA), Virtual Conference, 2020. *(Oral Presentation)*
- **Li Z**, Tian Q, Ngamsombat C, Bilgic B, Fan Q, Ying K, Huang SY. Synergistic super-resolution brain MRI and tissue segmentation using multitask deep learning. The Annual Meeting of RSNA, Virtual Conference, 2020. *(Digital Poster)*

Invited Talks

- **Diffusion Encoding**

  ISMRM Diffusion Workshop Educational Bootcamp, Kyoto, 2025

- **Pushing the Resolution Boundaries: Submillimeter In-Vivo 3D Diffusion MRI with Advanced Acquisition and Reconstruction Methods**

  Center for Biomedical Imaging Research, Tsinghua University, 2024

- **Advanced Diffusion Imaging Methods for Improved Microstructural Mapping**

  Institute of Science and Technology for Brain-inspired Intelligence, Fudan University, 2024

- **Exploring Generative Adversarial Networks (GANs) in MRI: Applications and Limitations**

  Oxford Centre for Clinical Magnetic Resonance Research, University of Oxford, 2023

- **Unraveling Brain Microstructure: Advancing Diffusion MRI from Acquisition to Analysis**

  Institute for Medical Imaging Technology, Ruijin Hospital, Shanghai Jiao Tong University, 2023

- **Advancing Diffusion MRI Acquisition, Reconstruction, and Analysis for Improved Microstructural Mapping**

  Center for Biomedical Imaging Research, Tsinghua University, 2023

Teaching and Outreach

MRI Graduate Programme, Wellcome Centre for Integrative Neuroimaging, University of Oxford

- Tutor for Fast Imaging (Michaelmas 2023), Advanced Graduate Lecture Series (Introduction to Convolutional Neural Network) (Hilary 2023)
- Teaching Assistant for Image Formation (Michaelmas 2023), Fast Imaging (Michaelmas 2022), Structural Analysis (Hilary 2024)
- Author of Motion Artifact Tutorial, Introduction to Convolution Neural Network Tutorial

African Brain Data Network

- Tutor for MR Image Formation Practical, African Brain Data Science Academy 2023

Oxford Global

- Stream Leader for Computer Science, Global Summit for Young Leaders 2023

Academic Services

- **Journal Reviewer**
  Magnetic Resonance in Medicine, IEEE Transactions on Medical Imaging, IEEE Journal of Biomedical and Health Informatics, IEEE Access

- **Conference Reviewer**
  2025 Annual Meeting of ISMRM

Skills

- **Programming**
  Python (Tensorflow, Keras, PyTorch), MATLAB, C, C++, R, Verilog, Arduino, LaTeX
- **MRI Sequence Programming**
  Pulseq, Siemens VE
- **Language**
  Chinese (native), English (fluent)