

RUYI ZHA

PhD ◇ Australian National University

ruyi.zha@anu.edu.au ◇ ruyi.zha@gmail.com

[Home Page](#) ◇ [Google Scholar](#) ◇ [Linkedin](#) ◇ [Github](#)

EDUCATION

Australian National University, Canberra, Australia

April 2021 - April 2026

Doctor of Philosophy in Engineering and Computer Science

Panel: Prof. Hongdong Li (Primary), Assoc. Prof. Liang Zheng, Assoc. Prof. Zongyuan Ge

Australian National University, Canberra, Australia

July 2018 - July 2020

Bachelor of Engineering (First Class Honours) Major in Mechatronics

Northwestern Polytechnical University, Xi'an, China

September 2016 - July 2018

Bachelor of Engineering Major in Automation

RESEARCH INTERESTS

3D Computer Vision

Rendering, Reconstruction, Understanding, Reasoning

AR/VR, Generative Models, Foundation Models

Medical Imaging

3D Imaging (CT, MRI, PET, DSA, Ultrasound, CryoEM)

Computer-Assisted Intervention (Robotics Surgery, Planning, Navigation, Registration)

AI for Science

Inverse Problem, Radiography, 3D Imaging for Material / Biology / Geoscience

SELECTED PUBLICATIONS

Summary. Published 10 papers in top medical imaging, machine learning, and computer vision venues such as MICCAI, NeurIPS, AAAI, ICCV, CVPR, etc. *: equal first authors; †: corresponding authors.

[Computed Tomography](#)

[1] **Ruyi Zha**, Yanhao Zhang, and Hongdong Li. “*NAF: Neural Attenuation Fields for Sparse-View CBCT Reconstruction.*” In International Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI (Oral)**). 2022.

[2] **Ruyi Zha**, Tao Jun Lin, Yuanhao Cai, Jiwen Cao, Yanhao Zhang, and Hongdong Li. “*R²-Gaussian: Rectifying Radiative Gaussian Splatting for Tomographic Reconstruction.*” In Proceedings of the International Conference on Neural Information Processing Systems (**NeurIPS**). 2024.

[3] Shiyao Su*, **Ruyi Zha***, Danli Shi, Hongdong Li, and Xuelian Cheng. “*DiffNR: Diffusion-Enhanced Neural Representation Optimization for Sparse-View 3D Tomographic Reconstruction.*” In Proceedings of the AAAI conference on artificial intelligence (**AAAI**). 2026.

[4] Guofeng Zhang*, **Ruyi Zha***, Hao He, Yixun Liang, Alan Yuille, Hongdong Li, and Yuanhao Cai. “*X-LRM: X-ray Large Reconstruction Model for Extremely Sparse-View Computed Tomography Recovery in One Second.*” In International Conference on 3D Vision (**3DV**). 2026.

[5] Weihao Yu, Yuanhao Cai, **Ruyi Zha**, Zhiwen Fan, Chenxin Li, and Yixuan Yuan. “*X²-Gaussian: 4D Radiative Gaussian Splatting for Continuous-time Tomographic Reconstruction.*” In Proceedings of the IEEE/CVF International Conference on Computer Vision (**ICCV**). 2025

[Digital Subtraction Angiography](#)

[6] Zhentao Liu*, **Ruyi Zha***, Huangxuan Zhao, Hongdong Li, and Zhiming Cui. “*4DRGS: 4D Radiative Gaussian Splatting for Efficient 3D Vessel Reconstruction from Sparse-View Dynamic DSA Images.*” In International Conference on Information Processing in Medical Imaging (**IPMI (Oral)**). 2025.

[Robotic Surgery](#)

[7] **Ruyi Zha***, Xuelian Cheng*, Hongdong Li, Mehrtash Harandi, and Zongyuan Ge. “*EndoSurf: Neural Surface Reconstruction of Deformable Tissues with Stereo Endoscope Videos.*” In International Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI (Oral)**). 2023.

Magnetic Resonance Imaging

[8] Tengya Peng, **Ruyi Zha**, Zhen Li, Xiaofeng Liu, and Qing Zou. “Three-Dimensional MRI Reconstruction with Gaussian Representations: Tackling the Undersampling Problem.” IEEE Transactions on Medical Imaging (TMI). 2025.

[9] Tengya Peng, **Ruyi Zha**, and Qing Zou. “MoRe-3DGS MR: Motion-Resolved Reconstruction Framework for Free-Breathing Pulmonary MRI Based on 3D Gaussian Representation.” Under Review. 2025.

3D Registration

[10] Liu, Liu, Hongdong Li, Haodong Yao, and **Ruyi Zha**. “Pluckernet: Learn to Register 3d Line Reconstructions.” In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR). 2021.

[11] Shiyao Su*, **Ruyi Zha***, Hongdong Li, Xuelian Cheng, Zongyuan Ge. “XPos3R: Cross-Modal Transformer for Intraoperative 2D/3D Registration” The European Conference on Computer Vision (ECCV). 2026.

INDUSTRY EXPERIENCE

Research Fellow Monash University, Australia Neurology Foundation Model	June 2026 - Present
Applied Scientist Intern Amazon International Machine Learning, Australia 3D Asset Generation	January 2025 - July 2025
Research Intern Tencent XR Lab, Australia Indoor VR/XR	July 2022 - April 2023
Research Assistant Australian National University, Australia 3D Plant Reconstruction	November 2020 - April 2021
Summer Research Intern Australian National University, Australia Person Re-Identification	November 2019 - February 2020

AWARDS

2024	NeurIPS 2024 Student Travel Award
2023	MICCAI 2023 Student Travel Award
2022	MICCAI 2022 Student Travel Award
2021-2025	Australian Government Research Training Program (AGRTP) Scholarship
2019	Summer Research Scholarship
2017	China National Scholarship

REFEREES

Hongdong Li	Professor, Australian National University, hongdong.li@anu.edu.au
Liang Zheng	Associate Professor, Australian National University, liang.zheng@anu.edu.au
Zongyuan Ge	Associate Professor, Monash University, Zongyuan.Ge@monash.edu

PROFESSIONAL SERVICE

Journal Reviewer	TPAMI, TCSVT, TMI, JBHI, TVCG
Conference Reviewer	CVPR, ICCV, ECCV, NeurIPS, AAI, MICCAI, SIGGRAPH, BMVC, EUROGRAPHICS, ACM MM, ICASSP, ICRA

INVITED TALK & TEACHING RECORD

Invited Talk Research School of Physics, Australian National University “Neural Representations for 3D Computed Tomography: Principles and Extensions”	2025
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Guest Lecturer

ANU COMP8535 Engineering Data Analytics, 1 lecture

“Signal Recovery from Projection & Computerized Axial Tomography”

2021