

Zixuan Pan

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EDUCATION

University of Notre Dame 2022 – Jun. 2027 (expected)
Ph.D. Candidate, Computer Science and Engineering
GPA: 4.00/4.00
Research interest: Post-training, Representation learning, Generative AI, Agentic AI
Advisor: Prof. Yiyu Shi

Zhejiang University 2018 – 2022
B.S., Information Engineering
GPA: 3.94/4.00

AWARDS AND HONORS

Graduate School Professional Development Awards 2026
University of Notre Dame CSE Select Fellowship 2022
Outstanding B.S. in Zhejiang University 2022
Outstanding Bachelor Thesis in Zhejiang University 2022
Meritorious (First Prize), International Interdisciplinary Contest in Modeling (ICM) 2021
Zhejiang University Scholarships 2019, 2020, 2021

RESEARCH EXPERIENCE

University of Notre Dame Notre Dame, IN
Doctoral Researcher Aug. 2022 – present

- Developed a label-efficient semantic segmentation algorithm by proposing a mask diffusion model for self-supervised pre-training
- Developed a simple yet effective method for weak-supervised medical anomaly detection
- Provided a dataset of normal microscopy images and a comprehensive collection of flawed images from five distinct categories as a benchmark for automatic quality control
- Developed an unsupervised out-of-distribution detection algorithm based on class activation maps
- Developed an efficient and compact 2D Gaussian representation method for large images
- Developed a multi-agent AI assistant Agentic-J for biological microscopy image analysis with automated workflow generation debugging and quality assurance

Canva Austin, TX
Research Scientist Intern Oct. 2025 – May. 2026

- Developed VLM judges integrated with RAG for design quality evaluation with limited human annotations
- Engineered a fine-grained Reward Model to capture nuanced design aesthetics
- Post-trained the design generation model to align with human preference with RL algorithms

Zhejiang University Hangzhou, Zhejiang
Research Assistant Jan. 2021 – Jun. 2022

- Developed unsupervised medical image domain adaptation methods for alleviating domain shift
- Designed effective algorithms for 3D cardiac cine MRI segmentation problems

PUBLICATION

Journal

- [1] Yifan Qin, Zheyu Yan, Dailin Gan, Jun Xia, **Zixuan Pan**, Wujie Wen, Xiaobo Sharon Hu, and Yiyu Shi. “NeFT: Negative feedback training to improve robustness of compute-in-memory DNN accelerators”. In: *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* (2025).

- [2] **Zixuan Pan**, Justin Sonneck, Dennis Nagel, Anja Hasenberg, Matthias Gunzer, Yiyu Shi, and Jianxu Chen. “AutoQC-Bench: A diffusion model and benchmark for automatic quality control in high-throughput microscopy”. In: *npj Imaging* 3 (2025), p. 57.
- [3] Shunjie Dong, **Zixuan Pan**, Yu Fu, Dongwei Xu, Kuangyu Shi, Qianqian Yang, Yiyu Shi, and Cheng Zhuo. “Partial unbalanced feature transport for cross-modality cardiac image segmentation”. In: *IEEE Transactions on Medical Imaging* 42.6 (2023), pp. 1758–1773.
- [4] Shunjie Dong, **Zixuan Pan**, Yu Fu, Qianqian Yang, Yuanxue Gao, Tianbai Yu, Yiyu Shi, and Cheng Zhuo. “DeU-Net 2.0: Enhanced deformable U-Net for 3D cardiac cine MRI segmentation”. In: *Medical Image Analysis* 78 (2022), p. 102389.

Conference

- [1] **Zixuan Pan**, Kaiyuan Tang, Jun Xia, Yifan Qin, Lin Gu, Chaoli Wang, Jianxu Chen, and Yiyu Shi. “SGI: Structured 2D Gaussians for efficient and compact large image representation”. In: *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. 2026. **(Highlight)**.
- [2] Xueyang Li, Zongren Wang, Yuliang Zhang, **Zixuan Pan**, Yu-Jen Chen, Nishchal Sapkota, Gelei Xu, Danny Chen, and Yiyu Shi. “H-CNN-ViT: A Hierarchical Gated Attention Multi-Branch Model for Bladder Cancer Recurrence Prediction”. In: *2025 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*. IEEE. 2025.
- [3] **Zixuan Pan**, Yu-Jen Chen, Jun Xia, Max Ficco, Jianxu Chen, Tsung-Yi Ho, and Yiyu Shi. “Multi-exit class activation map guided feature masking for unsupervised out-of-distribution detection in medical imaging”. In: *2025 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*. IEEE. 2025.
- [4] **Zixuan Pan**, Jun Xia, Zheyu Yan, Guoyue Xu, Yifan Qin, Xueyang Li, Yawen Wu, Zhengge Jia, Jianxu Chen, and Yiyu Shi. “Rethinking medical anomaly detection in brain MRI: An image quality assessment perspective”. In: *2025 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*. IEEE. 2025.
- [5] Yifan Qin, Zheyu Yan, **Zixuan Pan**, Wujie Wen, Xiaobo Sharon Hu, and Yiyu Shi. “TSB: Tiny shared block for efficient DNN deployment on NVCIM accelerators”. In: *Proceedings of the 43rd IEEE/ACM International Conference on Computer-Aided Design*. 2024, pp. 1–9.

Preprints

- [1] Lukas Johanns, Marilin Moor, Davide Panzeri, Yu Zhou, Xinyi Chen, Nora Pauly, **Zixuan Pan**, Matthias Gunzer, Andreas Müller, Yiyu Shi, Hedi Peterson, and Jianxu Chen. “Agentic-J: An AI Agent for Biological Microscopy Image Analysis”. Manuscript under review. 2026. URL: <https://arxiv.org/abs/2606.02080>.
- [2] **Zixuan Pan**, Jianxu Chen, and Yiyu Shi. “Masked diffusion as self-supervised representation learner”. 2023. URL: <https://arxiv.org/abs/2308.05695>.

REVIEWER FOR JOURNALS/CONFERENCE

Conference on Neural Information Processing Systems (NeurIPS)
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)
International Conference on Learning Representations (ICLR)
AAAI Conference on Artificial Intelligence (AAAI)
ACM/IEEE International Conference on Computer-Aided Design (ICCAD)
IEEE International Symposium on Biomedical Imaging (ISBI)
Scientific Reports – Nature