

Yining Jiao (Ina)

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I Research Highlights

I am a postdoc Scholar at UCSD. I build AI that knows what it knows — and recognizes what it doesn't. My research focuses on spatiotemporal representation learning, with a dedication to interpretability and uncertainty quantification within the healthcare domain. My work revolves around three questions:

- ⌚ Learning to see shapes — advanced techniques for image and geometry processing.
- 人群 Learning to model populations — representing how anatomical shapes vary and evolve.
- 统计 Learning to say "I don't know" — statistical machine learning for robust uncertainty quantification.

I Education

2020–2025	Ph.D. in Computer Science, UNC-Chapel Hill Advisor: Prof. Marc Niethammer
2017–2020	M.S. in Biomedical Engineering, Shanghai Jiao Tong University Advisor: Prof. Qian Wang
2013–2017	B.Eng. in Electronic Sci. & Tech., Northwestern Polytechnical University, Honors College

I Research Experience

2026–Present	Postdoctoral Scholar, UC San Diego Advisor: Prof. Marc Niethammer <ul style="list-style-type: none">› Individualized spatiotemporal learning; uncertainty quantification for shapes.
2020–2025	Research Assistant, Biomedical Image Analysis Group, UNC-Chapel Hill Advisor: Prof. Marc Niethammer <ul style="list-style-type: none">› Pediatric Airway Shape Analysis: Developed and maintained the full image processing pipeline — deep-learning-based segmentation, landmark detection, geometry processing, and clinical visualization of pediatric airways.› Airway OCT Segmentation & Reconstruction: First learning-based system to extract 3D geometries from airway OCT scans; benchmarked UNets and transformers; $< 46 \mu\text{m}$ reconstruction error.› Interpretable 3D Shape Modeling: Developed interpretable neural implicit shape representations for scientific shape analysis. ICLR 2024 Spotlight · top 5%› Uncertainty-Aware Spatiotemporal Learning: Built LucidAtlas, a by-construction interpretable atlas framework for modeling spatially varying data with covariates — supporting individualized prediction, population trend analysis, and OOD detection in a single model. Introduced marginalization theory to interpret dependent covariates.› Temporal Uncertainty for 3D Shapes: Developed PRISM, a probabilistic implicit shape representation that estimates spatially varying temporal uncertainty in closed form by exploiting automatic differentiation on implicit fields — no sampling, single forward pass. A single model for shape evolution, developmental time inference, personalized prediction, and anomaly detection.
2019–2020	Research Intern, United Imaging Intelligence, Shanghai Mentor: Dr. Zhong Xue & Prof. Dinggang Shen. Applied EfficientNet for Kaggle RSNA Intracranial Hemorrhage Detection Challenge — silver medal (top 4%, 1,345 teams) .
2017–2020	Research Assistant, Medical Image Computing Lab, SJTU Advisor: Prof. Qian Wang <ul style="list-style-type: none">› cuRadiomics: Developed a CUDA-based tool for fast computation of Radiomics features, 100× speedup. RNO-AI 2019 Oral · top 10

- **Data Science for Cancer Research:** Applied statistical analysis, survival analysis, and machine learning for treatment outcome prediction; published in *European Radiology, Cancer Mgmt. & Research*.

2016–2017

Research Assistant, Northwestern Polytechnical UniversityAdvisors: Prof. Wei Wei & Prof. Lei Zhang. Implemented convex optimization for hyperspectral image denoising; published in *IEEE Trans. Geoscience and Remote Sensing*.**I Selected Publications**

1. Y.Jiao et al. “PRISM: A 3D Probabilistic Neural Representation for Interpretable Shape Modeling.” *Preprint*, 2026.
2. Y.Jiao et al. “LucidAtlas: Learning Uncertainty-Aware, Covariate-Disentangled, Individualized Atlas Representations.” *Under Review*, 2025. [\[Paper\]](#)
3. Y.Jiao et al. “NAISR: A 3D Neural Additive Model for Interpretable Shape Representation.” *ICLR 2024*. Spotlight · top 5%
[\[Paper\]](#) [\[Demo\]](#) [\[Code\]](#)

I Other Publications

* equal contribution

4. Q. Liu, Z. Xu, Y.Jiao, M. Niethammer. “iSegFormer: Interactive Segmentation via Transformers with Application to 3D Knee MR Images.” *MICCAI 2022*. [\[Paper\]](#)
5. W. Wei, L. Zhang, Y. Jiao et al. “Intracluster Structured Low-Rank Matrix Analysis Method for Hyperspectral Denoising.” *IEEE Trans. Geoscience and Remote Sensing*, 2018. [\[Paper\]](#)
6. S. Wu*, Y. Jiao* et al. “Imaging-Based Individualized Response Prediction of Carbon Ion Radiotherapy for Prostate Cancer.” *Cancer Mgmt. and Research*, 2019. [\[Paper\]](#)
7. H. Song*, Y. Jiao* et al. “Can pretreatment 18F-FDG PET tumor texture features predict osteosarcoma chemotherapy outcomes?” *European Radiology*, 2019. [\[Paper\]](#)
8. Y.Jiao et al. “cuRadiomics: A GPU-based Radiomics Feature Extraction Toolkit.” *MICCAIRNO-AI 2019*. Oral · top 10
[\[Paper\]](#) [\[Code\]](#)

I Technical Skills**Programming** Python · C/C++ · CUDA · Git · Bash · L^AT_EX**ML / Scientific** PyTorch · TensorFlow · scikit-learn · Pandas · NumPy · SciPy**Imaging / 3D** ITK · VTK · SimpleITK · Open3D · trimesh · 3D Slicer · ParaView**Languages** English (fluent) · Chinese (native)**I Honors & Awards**

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| 2021 | ICML Workshop on Computational Biology Fellowship |
| 2020 | Outstanding Graduate of Shanghai (4 from department) |
| 2019 | SJTU Excellent Graduate Student Award (2 from department) |
| 2019 | Kaggle RSNA Hemorrhage Detection Silver Medal (top 4%, 1,845 teams) |
| 2017 | Excellent Undergraduate Thesis, Northwestern Polytechnical University |

I Academic Services**Conference Reviewer:** CVPR, ICCV, ECCV, NeurIPS, ICML, ICLR, AISTATS, AAAI, WACV, MICCAI**Journal Reviewer:** IEEE TPAMI, IEEE JBHI, Neural Networks