YINING JIAO

SN204, 232 S Columbia St, Chapel Hill, NC 27514

📞 919-338-3976 ✉ jyn@cs.unc.edu 🏠 https://jiaoyining.github.io/ 🐙 https://github.com/jiaoyining

Summary

AI/ML researcher with 7+ years of experience in (3D) computer vision, representation learning, and data science. The problem solver in interdisciplinary studies. Dedicated to developing interpretable, versatile, and efficient AIs.

Education

The University at North Carolina at Chapel Hill   Jan 2021 – Sep 2025(Expected)
Ph.D. in Computer Science   *Chapel Hill, NC, U.S.*

Shanghai Jiao Tong University   Sep 2017 - Mar 2020
M.S. in Biomedical Engineering   *Shanghai, China*

Northwestern Polytechnical University, Honors College   Sep 2013 - Jun 2017
B.Eng. in Electronic Science and Technology   *Xi'an, Shanxi, China*

Experience

The Biomedical Image Analysis Group at UNC-Chapel Hill   Aug. 2020 – Present
Research Assistant, Advisor: Prof. Marc Niethammer   *Chapel Hill, U.S.*

- **Pediatric Airway Shape Analysis**   Developed and maintained the whole image processing pipeline for pediatric airway shape analysis, including the *UNets*, *transformers*, and *implicit representations* for image segmentations, landmark detection and geometric data analysis/visualizations of diseased and normal pediatric airways for medical discoveries.

- **Airway OCT Segmentation and Geometry Reconstruction** Developed the first learning-based system to extract 3D geometries from airway OCT scans, by benchmarking *UNets* and *transformers* on OCT segmentation task; and then implemented 3D geometry reconstruction from the airway point clouds; leading to ***the error*** $< \mathbf{46}$ **micrometers** while significantly reducing the workload of creating extensive manual segmentations.

- **Interpretable Shape Modeling**   Proposed and developed interpretable neural shape representations for scientific shape analysis; designed and implemented experiments to validate the *SOTA-performance* and versatile capabilities of the proposed method; wrote up and made it publish on a top machine learning conference.

- (ongoing) **Uncertainty Quantification in Shape Modeling**   Proposed and developed uncertainty quantification approach to model population variances and disentangled covariate effects for scientific shape modeling, as the first uncertainty estimation approach for implicit shapes.

United Imaging Intelligence   Oct 2019 – May 2020
Research Intern, Mentor: Dr. Zhong Xue and Prof. Dinggang Shen   *Shanghai, China*

- **Kaggle Challenge** Applied *EfficientNet* for the hemorrhage detection for Kaggle RSNA Intracranial Hemorrhage Detection Challenge, ***awarded silver medal*** (top 4% of 1k+ teams).

The Medical Image Computing Lab at Shanghai Jiao Tong University   Sep 2017 – Mar 2020
Research Assistant, Advisor: Prof. Qian Wang   *Shanghai, China*

- **cuRadiomics** Developed a CUDA-based tool for fast computation of Radiomics features, boosting the computational efficiency by $\mathbf{100\times}$.

- **Data Science for Cancer Research** Applied *statistical analysis*, *survival analysis*, and *machine learning models* for treatment outcome prediction of prostate cancer and osteosarcoma, cervical cancer classification, diagnosis of Parkinson's disease, etc; summarized the discoveries and published several journal papers.

Computer Science Department at Northwestern Polytechnical Univeristy   May 2016 – Jun 2017
Research Assistant, Advisor: Prof. Wei Wei and Prof. Lei Zhang   *Xi'an, Shanxi, China*

- **Convex Optimization for Image Denoising** Implemented a method based on convex optimization for hyperspectral image denoising; conducted quantitative and qualitative evaluations to prove its *SOTA-performance*.

Selected Publications

* indicated equal contribution

Yining Jiao, Carlton Zdanski, Julia Kimbell, Andrew Prince, Cameron Worden, Samuel Kirse, Christopher Rutter, Benjamin Shields, William Dunn, Jisan Mahmud, Marc Niethammer. `NAISR`: A 3D Neural Additive Model for Interpretable Shape Representation. ***ICLR 2024***. **Spotlight (top 5%)**. [`DEMO`]

Yining Jiao, Amy Oldenburg, Yinghan Xu, Srikamal Soundararajan, Carlton Zdanski, Julia Kimbell, Marc Niethammer. `DigOCT`: Radiation-Free Automatic Airway Geometry Discovery from Endoscopic aOCT Scans ***In submission***.

Qin Liu, Zhenlin Xu and **Yining Jiao** and Marc Niethammer. iSegFormer: Interactive Segmentation via Transformers with Application to 3D Knee MR Images. ***MICCAI 2022.***

Yining Jiao, Oihane Mayo Ijurra, Lichi Zhang, Dinggang Shen, Qian Wang. cuRadiomics: A GPU-based Radiomics Feature Extraction Toolkit. ***MICCAI 2019 Workshop***. **Oral, top 10 of submitted papers**.

Shuang Wu*, **Yining Jiao***, Yafang Zhang, Xuhua Ren, Ping Li, Qi Yu, Qing Zhang, Qian Wang, Shen Fu. Imaging-Based Individualized Response Prediction of Carbon Ion Radiotherapy for Prostate Cancer Patients. ***Cancer Management and Research***, September 2019.

Hongjun Song*, **Yining Jiao***, Weijun Wei, Xuhua Ren, Chentian Shen, Zhongling Qiu, Qingcheng Yang, Qian Wang, Quan-Yong Luo. Can pretreatment 18F-FDG PET tumor texture features predict the outcomes of osteosarcoma treated by neoadjuvant chemotherapy? ***European Radiology***, July 2019.

Bin Xiao, Naying He, Qian Wang, Zenghui Cheng, **Yining Jiao**, E Mark Haacke, Fuhua Yan, Feng Shi. Quantitative Susceptibility Mapping Based Hybrid Feature Extraction for Diagnosis of Parkinson's Disease. ***NeuroImage: Clinical***, January 2019.

Wei Wei*, Lei Zhang*, **Yining Jiao**, Chunna Tian, Cong Wang, Yanning Zhang. Intracluster Structured Low-Rank Matrix Analysis Method for Hyperspectral Denoising. ***IEEE Transactions on Geoscience and Remote Sensing***, August 2018.

Skills

Programming: Python, C/C++, CUDA, Git, Scripting (Bash), LaTeX
Software: Pytorch, Tensorflow, ITK, Scikit-learn, Pandas, Linux
Language: English(fluent), Chinese(native), Japanese(advanced beginner)

Honors

ICML Workshop on Computational Biology Fellowship	2021
Outstanding Graduate of Shanghai (only 4 from department)	2020
SJTU Excellent Graduate Student Award (only 2 from the department)	2019
Silver Medal, Kaggle RSNA Intracranial Hemorrhage Detection Challenge	2019
Excellent Undergraduate Thesis in NWPU	2017

Academic Activities

Journal Reviews: IEEE Journal of Biomedical and Health Informatics, Neural Networks, TPAMI.
Conference Reviews: ICCV 2021, CVPR 2022, ICCV 2023, ICCV 2023, MICCAI2024, Neurips2024, WACV2025, ICLR2025.

Talks

- Radiomics-Driven Deep Reinforcement Learning in Detecting Brain Tumor Lesions
  SJTU Graduate Student Academic Forum, July 2019. **1st Prize in Oral Presentation Group**

- Can Radiomics Features Boost the Performance of Deep Learning upon Histology Images?
  International Conference on Medical Imaging Physics and Engineering, November 2019. **Excellent Paper Award**

- ConvRadiomics: Convolutional Radiomics Feature Extraction Toolkit
  International Conference on Medical Imaging Physics and Engineering, November 2019.

Teaching and Leadership

School of Biomedical Engineering at Shanghai Jiao Tong Univerisity   **May 2019 – August 2019**
Teaching Assistant, Advisor: Prof. Qian Wang and Prof. Lichi Zhang   *Shanghai, China*

- Led 4 undergraduates to develop a software for Radiomics feature extraction, data analysis and visualization.
- Organized presentations and exams in the *Computer Vision in Biomedical Engineering* course.
- Advised 2 international exchange MS students with their academic research and paper writing.