

JIAXIANG REN

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EDUCATION

Stony Brook University, NY, U.S. *Aug. 2019 - 2024 (Expected)*

Ph.D. Candidate in Computer Science

Advisor: Professor Haibin Ling, Professor Yingtian Pan

Tongji University, Shanghai, China *Sep. 2015 - Apr. 2018*

M.S. in Computer Science & Technology

Advisor: Professor Shengjie Zhao

Thesis: The Research on the Sparse-based Subspace Clustering Algorithm in High-dimensional Data

Tongji University, Shanghai, China *Sep. 2011 - Jun. 2015*

B.Eng. in Computer Science & Technology

Overall GPA: 4.02/5.00, Major GPA: 4.39/5.00

Thesis: Randomized Algorithms for Matrices and Big Data

RESEARCH INTEREST

Computer Vision, Machine Learning, 3D Image Denoising, NLP, and Large Language Models (LLM)

PUBLICATION

Jiaxiang Ren, Kicheon Park, Yingtian Pan, and Haibin Ling. “Self-Supervised Bulk Motion Artifact Removal in Optical Coherence Tomography Angiography,” in *Proc. of IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2022.

Yingtian Pan, Kicheon Park, **Jiaxiang Ren**, Nora D. Volkow, Haibin Ling, Alan P. Koretsky, and Congwu Du. “Dynamic 3D Imaging of Cerebral Blood Flow Networks in Awake Mice using Ultrahigh-resolution Optical Coherence Doppler Tomography,” *Nature Communications Biology*, 2023.

Jiaxiang Ren, Zhilin Zou, Zhenghong Li, Kicheon Park, Yingtian Pan, and Haibin Ling. “Self-supervised 3D Skeleton Completion for Curvilinear Structures,” under preparing.

Yasha Singh, Vivek Atulkar, **Jiaxiang Ren**, Jie Yang, Heng Fan, Longin Jan Latecki, and Haibin Ling. “Osteoporosis Prescreening and Bone Mineral Density Prediction using Dental Panoramic Radiographs,” in *Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, 2021.

Jiaxiang Ren, Heng Fan, Jie Yang, and Haibin Ling. “Detection of Trabecular Landmarks for Osteoporosis Prescreening in Dental Panoramic Radiographs,” in *Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, 2020.

Jiaxiang Ren, Shengjie Zhao, Kai Yang, and Brian Zhao. “A Novel and Robust Face Clustering Method via Adaptive Difference Dictionary,” in *IEEE International Conference on Multimedia & Expo Workshops (ICMEW)*, 2017.

WORK EXPERIENCE

AI and NLP Research Intern *Jul. 2023 - Oct. 2023*
Nvidia *Santa Clara, CA US*

- Fine-tune (PEFT and SFT) the open source LLMs, such as T5 and Code Llama, on Text2SQL task.

- Design the prompt with knowledge injection for a real-world database.
- Deploy the fine-tuned model using NVIDIA Triton Inference Server and integrate the API into a ChatBot.
- Implement the end-to-end pipeline from user question to information retrieval from the database.

Algorithm Engineer

May 2018 - Jul. 2019

Ping An Technology

Shanghai, China

- Plant Recognition AI: Medicinal Herb Classification Subtask (Fine-grained Classification)
Implementing an interpretable classification model to discern similar herbs with high accuracy and recall.
- AI Diagnostic Platform (Computer-aided Diagnosis)
Developing neural networks for the classification and segmentation with X-ray and CT images, aiding doctors in the diagnose of diseases. Product is integrated into the AI Diagnostic Platform.

RESEARCH EXPERIENCE

3D Denoising and Enhancement for Optical Coherence Tomography *Jan. 2021 - Present*

Interdisciplinary Project, with Dr. Haibin Ling and Dr. Yingtian Pan *Stony Brook University*

- Denoising and improving the imaging quality of optical coherence tomography system for the microvasculature of rodent cortex.
- Proposing an unsupervised method for Bulk Motion Artifacts removal.

Osteoporosis Research in Dental Panoramic Radiography

Sep. 2019 - Dec. 2020

Research Project, with Dr. Haibin Ling

CV Lab, Stony Brook University

- Designing an automatic osteoporosis prescreening system for dental panoramic radiography images.
- Proposing a trabecular landmark detector in dental panoramic radiography images.
- Predicting bone mineral density for potential osteoporosis patients.

Deep Learning based Data Mining on Oceanic Big Data

Sep. 2017 - Mar. 2018

Interdisciplinary Project, with Dr. Shengjie Zhao, Dr. Samuel Cheng

Tongji University

- Developing a platform to analysis oceanic data, including the detection and recognition of marine life, image denoising and inpainting.
- Developing deep neural networks for object retrieval and fine-grained classification.

Traffic Sign Detection in Automatic Driving Scene

Oct. 2016 - Nov. 2016

Graduate Researcher, with Dr. Shengjie Zhao, Dr. Samuel Cheng

ESSC Lab, Tongji University

- Improving the neural networks based detector for the traffic signs detection in the real world scenes.
- Participating in the Datafountain Competition sponsored by UISEE.

Social Network Management System on Mobile Devices

Oct. 2012 - Oct. 2014

Shanghai Undergraduate Innovation Project, App Developer, with Dr. Wei Wang *Tongji University*

- Developing an Android app for better management of the messages from several social networks, such as Sina Weibo, Renren and Tencent WBlog.

SELECTED HONORS

- Excellent Graduate of Shanghai, China 2018
- The ENN Energy Scholarship, China 2017

SKILLS

Programming Languages

Python, C/C++, MATLAB, Java, SQL, JSP, Shell, Assembly

Deep Learning Libraries

PyTorch, TensorFlow, HF-Transformers, LangChain, Langflow