Xinxin Wang

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Education

- **Case Western Reserve University (CWRU) and Cleveland Clinic (CC)** Aug 2023 - Now
  PhD program of Computer Science; **GPA:** 4.0/4.0; **Advisors:** Prof. Xiaojuan Li and Prof. Shuo Li
- **Sun Yat-sen University (SYSU)** Aug 2019 - June 2023
  Bachelor of Engineering in Intelligence Science and Technology; **GPA:** 3.7/4.0; **Advisor:** Prof. Shen Zhao

Internship

- **Index Engines** May 2025 - Aug 2025
  Machine Learning Engineer; under the mentorship of *Jairo Esteban*;
  - **Ransomware Detection Model**: Designed and implemented an end-to-end machine learning pipeline for ransomware detection. Responsibilities included data curation, literature review of recent academic research, experimentation with various model architectures, and optimization of hyperparameters for improved performance.
  - **Agile Development**: Collaborated in a cross-functional team using Agile methodology. Participated in sprint planning, daily stand-ups, and regular retrospectives. Contributed to iterative development, task tracking, and milestone-based project delivery.
- **Shenzhen Institute of Artificial Intelligence and Robotics for Society (AIRS)** Apr 2023 - Jul 2023
  Research Assistant at Medical Robotics Center; under the guidance of *Dr. Zhixiong Yang*;
  - **Improve segmentation workflow**: Establish the pipeline of pulmonary airway and artery-vein segmentation from CT scans, for visualization and navigation of our self-developed lung intervention surgery platform.

Academic Research

- **Self-supervised Pretraining on OAI data for 3D Knee MRI Analysis** Mar 2024 - Now
  Core member; collabrating with IBM team; under the guidance of *Prof. Xiaojuan Li*;
  - **Milestone**: Manuscript accepted to International Society for Magnetic Resonance in Medicine conference 2025
  - **Responsibility**: Help IBM team with the understanding of Osteoarthrits Initiative database (OAI); conduct experiments and validate code deliveries from IBM side; provide clinical insights and contribute to the OAI example of an open source code platform FuseMedML(link); transfer to in-house data validation.
- **Reliable Lesion Segmentation with Calibrated Uncertainty** Aug 2023 - Now
  First author; under the guidance of *Prof. Xiaojuan Li* and *Prof. Shuo Li*;
  - **Manuscript**: "CalDiff: Capture uncertainty in lesion segmentation via step-wise and sequence-aware calibrated diffusion model" is under review for IEEE Journal of Biomedical and Health Informatics.
  - **Innovation**: Caldiff is proposed with uncertainty calibrated on both step-wise and sequence-aware level, providing calibrated uncertainty maps generated from multiple plausible segmentation results, which can serve as a robust tool for lesion segmentation in clinical practice.
- **Effcient Uncertainty-aware Lesion Segmentation** Oct 2021 - June 2023
  Joint First author; under the guidance of *Prof. Shen Zhao*;
  - **Publication**: "Customized T-time Inner Sampling Network with Uncertainty-aware Data Augmentation Strategy for Multi-annotated Lesion Segmentation" accepted by *Computers in Biology and Medicine* (link).
  - **Innovation**: An efficient and flexible probabilistic model architecture with a low-cost data augmentation strategy devised from multi-annotated datasets to adaptively capture both high and low degree of uncertainty in lesion segmentations.
- **Deep Active Contour Model for Vertebrae Segmentation** Nov 2022 - June 2023
  Third author; under the guidance of *Prof. Shen Zhao*;
  - **Publication**: "Attractive Deep Morphology-aware Active Contour Network for Vertebral Body Contour Extraction in Heterogeneous MR " accepted by *Medical Image Analysis* (link).
  - **Contribution**: Investigating latest literature on semantic segmentation methods for comparison with proposed contour-based segmentation model; preprocessing publicly accessible datasets; carrying out additional comparison experiments.
- **Boundary-aware Osteosarcoma Segmentation based on Multi-modality MRIs** Feb 2023 - May 2023
  Third Author; under the guidance of *Prof. Shen Zhao*;
  - **Publication**: "DECIDE: A decoupled semantic and boundary learning network for precise osteosarcoma segmentation by integrating multi-modality MRI" accepted by *Computers in Biology and Medicine* (link).
  - **Innovation**: Context Attention Module is introduced into the existing segmentation framework to form a prediction module of tumor contour, which was supervised and learned in training to refine segmentation results.

Skills Summary

- **Languages**: English, Chinese
- **Programming Languages**: Python, Matlab, Javascript, Latex, C#, C, C++
- **Tools**: Git, Jira, Origin, PyCharm, VsCode, VMware, Unity, AutoCAD, Creo