

Yu Shi

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EDUCATION

University of California, Los Angeles (UCLA) — *Ph.D. in Bioengineering*
Los Angeles, California | Sep 2022 – Jun 2027 (Expected)

- Advisor: Dr. Debiao Li
- Research Focus: Machine learning for early detection and medical image analysis, e.g., organ segmentation, disease prediction, and radiomics-based confidence modeling.

Peking University — *B.Eng. in Electronics Engineering and Computer Science*
Beijing, China | Sep 2018 – Jun 2022

- Coursework: Signal Processing, Computer Vision, Deep Learning, Embedded IoT Development
- Programming skills: Python, MATLAB, C++, Cadence Allegro, Verilog, Latex

PUBLICATIONS

- Shi, Y., Wang, L., Qureshi, T. A., Deng, Z., Xie, Y., & Li, D. (2025). Deep Learning with Domain Randomization in Image and Feature Spaces for Abdominal Multiorgan Segmentation on CT and MRI Scans. *Radiology: Artificial Intelligence*, e240586.
- Shi, Y., Deng, Z., Wang, L., Qureshi, T. A., Xie, Y., Gaddam, S., ... & Li, D. (Under Review). Leveraging Radiomic Features for Confidence Estimation in Medical Image Segmentation and Classification. *Medical Image Analysis*.
- Wang, L., Shi, Y., Qureshi, T. A., Xie, Y., Gaddam, S., ... & Li, D. (2025). Predicting Pancreatic Ductal Adenocarcinoma Occurrence Up to 10 Years in Advance Using Features of the Main Pancreatic Duct in Pre-Diagnostic CT Scans. *Cancers*, 17(11), 1886.
- Shi, Y., & Yang, C. (2022). Point cloud inpainting with normal-based feature matching. *Multimedia Systems*, 28(2), 521-527.
- Huang, Y., Yang, C., Shi, Y., Chen, H., Yan, W., & Chen, Z. (2023). PLGP: point cloud inpainting by patch-based local geometric propagating. *The Visual Computer*, 39(2), 723-732.
- Shi, Y. (Patent). A Method and Device for Signal Repairment and Enhancement. Patent No. 202110172219.X

RESEARCH EXPERIENCE

Leveraging Radiomic Features for Confidence Estimation in Medical Image Segmentation and Classification

Independent Research | UCLA & Cedars-Sinai Medical Center 9/2024-7/2025

- Developed a model-agnostic uncertainty estimation framework for medical image segmentation and classification using radiomic feature distribution from large healthy control cohort.
- Designed demographics-conditioned normative reference distributions to quantify confidence as the proportion of features aligning with subgroup norms.
- Achieved high correlation with segmentation quality ($r = 0.954$) and improved classification AUC to 0.97 under severe class imbalance.
- Manuscript under review at *Medical Image Analysis* (2025).

Deep Learning-based Abdominal Multi-organ Segmentation with Domain Randomization

Independent Research | UCLA & Cedars-Sinai Medical Center 9/2023-9/2024

- Proposed a domain randomization strategy in both image and feature spaces to improve cross-site and cross-modality generalization of segmentation networks.
- Validated approach on multi-center CT and MRI datasets, leading to publication in *Radiology: AI* (2025).

Image Super-Resolution Algorithm

Research Assistant | SenseTime 9/2021-4/2022

- Developed image super-resolution models based on Variational Autoencoder (VAE) and Generative Adversary Network (GAN).
- Proposed adaptive vector-quantized priors to improve image quality and reconstruction efficiency.

3D Point Cloud Reconstruction and Inpainting

Independent Research | Peking University 6/2020-6/2022

- Developed algorithms to address geometric deficiencies in 3D point clouds, including holes and surface discontinuities.
- Proposed a normal-based feature matching strategy that integrates local smoothness with non-local self-similarity, achieving a 14% PSNR improvement over state-of-the-art inpainting methods.
- Designed a multi-view reconstruction framework capable of generating accurate 3D face models (<2 mm error) from scans with limited overlap, demonstrating robustness in real-world LiDAR data.
- Conducted extensive simulation and validation experiments, optimizing performance for both synthetic and real-world point cloud datasets.
- Published two peer-reviewed papers (one first-author) and filed one national patent based on the proposed system.

AWARDS

Yang Fuqing & Wang Yangyuan Academician Scholarship, Peking University	10/2021
Merit Student, Peking University	10/2021