Jiasong Chen

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EDUCATION

Ph.D. in Computer Science Exp. Dec 2026
University of Miami, Coral Gables, FL
Advisor: Prof. Liang Liang

M.S. in Computer Science 2019
University of Denver, Denver, CO

B.S. in Mathematics 2017
University of Denver, Denver, CO

RESEARCH INTERESTS

Machine Learning, Medical Image Analysis, Imaging-Derived Phenotypes, Computational Geometry, Computational Biomechanics, Multimodal Clinical Data Analysis.

RESEARCH EXPERIENCE

Research Assistant Sep 2019 – Present
Department of Computer Science, University of Miami, Coral Gables, FL
Advisor: Prof. Liang Liang

- Developed **FEAorta**, a deep learning framework that predicts patient-specific aortic wall stress from 3D medical images.
- Developed computational methods for rupture risk assessment of thoracic aortic aneurysm, integrating imaging-derived phenotypes with EHR-derived features.
- Built reproducible pipelines for processing large-scale multimodal clinical data; 3D anatomical reconstruction; finite-element modeling; and quantitative analysis.
- Developed **SymTC**, a deep learning model for automated instance segmentation of lumbar spine MRI.
- Created and publicly released **SSMSpine**, a dataset of anatomically and biomechanically realistic synthetic lumbar spine MR images.

Research Assistant Mar 2018 – Dec 2018
Department of Mathematics and Computer Science, University of Denver, Denver, CO
Advisors: Prof. Paul Horn, Prof. Catherine S. Durso, and Dr. Pooran Negi

- Developed a Connection Laplacian-based spectral clustering method for facial image analysis.

Research Assistant Jan 2017 – Jun 2017
Department of Biological Sciences, University of Denver, Denver, CO
Advisor: Prof. Yan Qin

- Developed an image-processing tool to quantify changes of intracellular zinc concentration from fluorescent images.

TECHNICAL SKILLS

Programming: Python, Java, MATLAB, and R
Methods: Deep learning, statistical modeling, patient-specific modeling, medical image analysis, robustness analysis, finite-element analysis, survival analysis, and decision curve analysis.
Tools and Computing: PyTorch, scikit-learn, pandas, NumPy, statsmodels, SimpleITK, VTK, 3D Slicer, ParaView, Git, AWS.

TEACHING AND ACADEMIC SERVICE

Teaching Assistant: Data Science for the World (CSC 113), University of Miami, Spring 2023.
Journal Reviewer: *Artificial Intelligence in Medicine*; *Computerized Medical Imaging and Graphics*; *Expert Systems with Applications*; *Journal of Neuroradiology*; *Journal of Biomedical and Health Informatics*.

PUBLICATIONS

Peer-Reviewed Articles & Conference Proceedings

[1] **J. Chen**, L. Qian, R. Gong, C. Sun, T. Qin, T. Pham, C. Martin, M. Zafar, J. Elefteriades, W. Sun, and L. Liang, "A computational pipeline for patient-specific modeling of thoracic aortic aneurysm: From medical image to finite-element analysis," in *Medical Imaging 2026: Clinical and Biomedical Imaging*, 2026.

[2] L. Qian, **J. Chen**, R. Gong, W. Sun, M. Liu, and L. Liang, "Shape deformation networks for automated aortic valve finite element meshing from 3D CT images," in *Medical Imaging 2026: Clinical and Biomedical Imaging*, 2026.

[3] L. Qian, **J. Chen**, L. Ma, T. Urakov, W. Gu, and L. Liang, "A novel attention-based network for geometry reconstruction with error estimation from medical images," in *Medical Imaging 2025: Image Processing*, 2025.

[4] L. Qian, **J. Chen**, L. Ma, T. Urakov, W. Gu, and L. Liang, "Attention-based shape-deformation networks for artifact-free geometry reconstruction of lumbar spine from MR images," *IEEE Transactions on Medical Imaging*, 2025.

[5] **J. Chen**, L. Qian, L. Ma, T. Urakov, W. Gu, and L. Liang, "SymTC: A symbiotic transformer-cnn net for instance segmentation of lumbar spine MRI," *Computers in Biology and Medicine*, 2024.

[6] L. Ma, **J. Chen**, L. Qian, and L. Liang, "A general approach to improve adversarial robustness of DNNs for medical image segmentation and detection," in *Medical Imaging 2024: Image Processing*, 2024.

[7] L. Qian, **J. Chen**, L. Ma, T. Urakov, and L. Liang, "A sequential geometry-reconstruction-based deep learning approach to improve accuracy and consistence of lumbar spine MRI image segmentation," in *Medical Imaging 2024: Image Processing*, 2024.

[8] **J. Chen**, L. Qian, T. Urakov, W. Gu, and L. Liang, "Adversarial robustness study of convolutional neural network for lumbar disk shape reconstruction from MR images," in *Medical Imaging 2021: Image Processing*, 2021.

[9] L. Qian, **J. Chen**, T. Urakov, W. Gu, and L. Liang, "CQ-VAE: Coordinate quantized VAE for uncertainty estimation with application to disk shape analysis from lumbar spine MRI images," in *2020 19th IEEE International Conference on Machine Learning and Applications (ICMLA)*, 2020.

Preprints

[1] **J. Chen**, L. Qian, R. Gong, C. Sun, T. Qin, T. Pham, C. Martin, M. Zafar, J. Elefteriades, W. Sun, and L. Liang, "FEAorta: A fully automated framework for finite element analysis of the aorta from 3D CT images," *arXiv preprint*, 2025. arXiv: 2510.06621.