Xiao Liang

9115 Judicial Dr, San Diego, 92122
206-484-9957 x5liang@ucsd.edu Google scholar Personal website

Education

University of California San Diego **Sep. 2021 – present**
MS & PhD in Electrical and Computer Engineering *La Jolla, California*

University of Washington Seattle **Sep. 2017 – Jun. 2021**
BS in Computer Science and Engineering *Seattle, Washington*

Industrial Experience

Applied Scientist Co-op **Sep. 2025 – Mar. 2026**
Amazon Robotics, Manipulation Research *Boston, Massachusetts*

- Researched physics-informed video prediction models for robotic manipulation; submitted for publication.

Selected Publications

Xiao Liang, Lu Shen, Peihan Zhang, Soofiyan Atar, Florian Richter, Michael C. Yip. Towards Autonomous Tape Handling for Robotic Wound Redressing. *IEEE International Conference on Robotics and Automation (ICRA)*, 2026.

Zekai Liang, Xiao Liang, Soofiyan Atar, Sreyan Das, Zoe Chiu, Peihan Zhang, Calvin Joyce, Florian Richter, Shanglei Liu, Michael C. Yip. LapSurgie: Humanoid Robots Performing Surgery via Teleoperated Handheld Laparoscopy. *IEEE International Conference on Robotics and Automation (ICRA)*, 2026.

Soofiyan Atar, Xiao Liang*, Calvin Joyce*, Florian Richter, Ricardo Wood, Charles Goldberg, Preetham Suresh, Michael Yip. Humanoids in Hospitals: A Technical Study of Humanoid Surrogates for Dexterous Medical Interventions. *arXiv preprint arXiv:2503.12725*, 2025.

Xiao Liang*, Chung-pang Wang*, Nikhil Shinde, Fei Liu, Florian Richter, Michael C. Yip. MEDiC: Autonomous Surgical Robotic Assistance to Maximizing Exposure for Dissection and Cautery. *IEEE International Conference on Robotics and Automation (ICRA)*, 2025.

Xiao Liang*, Youcheng Zhang*, Fei Liu, Florian Richter, Michael C. Yip. AutoPeel: Adhesion-aware Safe Peeling Trajectory Optimization for Robotic Wound Care. *IEEE International Conference on Robotics and Automation (ICRA)*, 2025.

Xiao Liang*, Nikhil Shinde*, Fei Liu, Yutong Zhang, Florian Richter, Sylvia Herbert, Michael C. Yip. JIGGLE: An Active Sensing Framework for Boundary Parameters Estimation in Deformable Surgical Environments *Robotics: Science and Systems (RSS)*, 2024.

Xiao Liang*, Fei Liu*, Yutong Zhang, Yuelei Li, Shan Lin, Michael C. Yip. Real-to-Sim Deformable Object Manipulation: Optimizing Physics Models with Residual Mappings for Robotic Surgery. *IEEE International Conference on Robotics and Automation (ICRA)*, 2024.

Xiao Liang, Shan Lin, Fei Liu, Dimitri Schreiber, Michael C. Yip. ORRN: An ODE-based Recursive Registration Network for Deformable Respiratory Motion Estimation with Lung 4DCT Images. *IEEE Transactions on Biomedical Engineering (TBME)*, 2023

Research Experience

Graduate Student Research **Sep 2021 – present**
Advised by Professor Michael Yip, UCSD Advanced Robotics and Controls Lab *La Jolla, California*

- Developed high-fidelity simulation of deformable and fluids for surgical robotic learning.
- Built deformable object manipulation algorithms with differential simulation, and incorporated feedback from robot perception and probabilistic estimation.
- Worked in depth with multiple robotic system and teleoperation platform including dVRK, Panda robot, Taurus surgical robot, and humanoid teleoperation.

Undergraduate Research Assistant **Jan 2021 – Jun 2021**

Computer Vision, UW Graphics and Imaging Laboratory *Seattle, Washington*

- Extending a previous research Background Matting V2, developed a novel video matting neural network that generates high-resolution matte and estimates a static background in real time.
- Improved the matte prediction by utilizing motions and developed criteria for selecting key frames for background reconstruction in a video.

Undergraduate Research Assistant **March 2020 – Jun 2021**

Human Computer Interaction (Mixed Reality), UW Reality Lab *Seattle, Washington*

- Developed a deep learning-enabled Mixed Reality application using Unity for augmenting the cooking experience.
- Trained and deployed SOTA object recognition and detection neural networks on a cloud server.
- Developed near real-time communication scheme between an Magic Leap One headset and the cloud machine, providing semantic awareness to the mixed reality device.

Teaching Experience

Teaching Assistant **Mar. 2021 – Jun. 2021**

CSE 481V Virtual Reality Capstone, University of Washington *Seattle, Washington*

Teaching Assistant **Jun. 2020 – Dec. 2020**

CSE 457 Computer Graphics, University of Washington *Seattle, Washington*

Other Projects

Neural Process for Safe Exploration | *Neural Process*

- Developed a neural process guided safe exploration algorithm for a movie recommendation problem.

Volume Rendering in Virtual Reality System | *Unity, High Level Shading Language*

- Developed a real-time, interactive, volume rendering algorithm for visualizing 3D medical image in Virtual Reality.

Graph Neural Network Particle Simulator | *Graph Neural Network*

- Implemented a previous work on using Graph neural network for simulating fluid particle dynamics.

Human Pose-controlled Game | *Kinect, Unity, Neural Network*

- Made a Super Mario-like game that is controlled by player's poses classified by a neural network using Kinect's data.

Technical Skills

Languages: Python, Java, C++, Matlab, JavaScript
Tools & libraries: Nvidia Warp, Curobo, Omniverse, Pytorch, Jax, Numpy, OMPL, Unity, Blender, Slicer