Feiran Wang

fwang63@hawk.iit.edu | +1 (217) 305-3694 | Homepage | LinkedIn | Github

RESEARCH INTERESTS

Main Research: Image Generation, 3D Reconstruction, Medical image, Autonomous Vehicle

Education

ILLINOIS INSTITUTE OF TECHNOLOGY, PhD in Computer Science, Advisor Prof. Yan Yan	2024.01 - Present
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN, Master, Advisor Prof. David Forsyth	2022.08 - 2023.12
SHANGHAI UNIVERSITY, Bachelor in Computer Science	2018.09 - 2022.07
UNIVERSITY OF TORONTO, Exchange Program of Computer Science	2021.09 - 2021.12

Relevant Courses: Parallel Program (CUDA), Autonomous Vehicle System, Software Engineering

Publications

[1] **Feiran Wang***, Jiachen Tao*, Junyi Wu*, Haoxuan Wang, Bin Duan, Zongxin Yang, Yan Yan. *"X-Field: A Physically Grounded Representation for 3D X-ray Reconstruction."* 2024.09–2024.11. (ICCV in submission)

[2] **Feiran Wang**, Bin Duan, Jiachen Tao, Nikhil Sharma, Gaowen Liu, Dawen Cai, Yan Yan. *"ZECO: ZeroFusion Guided 3D MRI Conditional Generation."* 2024.07–2024.10.

[3] **Feiran Wang**, Xiaoqiang Li, Jitao Liu. *"PCCN-RE: Point Cloud Colourisation Network Based on Relevance Embedding."* IET Computer Vision (2022).

Professional Experience

University of Michigan, Cai Lab, *Research Assistant*, Remote	2024.09 - Present

- Led the development of the generation model for 3D image synthesis as part of an NIH-funded AI project in biological sciences, specifically addressing the challenge of limited labeled data for neuron segmentation.
- Developed a 3D latent diffusion model for neuron image generation, integrating a 3D zero convolutional module to enhance generative control; this approach was later extended to MRI data in the ZECO paper submission.
- Created a synthetic 3D neuron dataset **100x** larger than the original and validated training a 3D segmentation network, achieving accurate neuron segmentation on out-of-domain data with similar structural features.

Foxconn Interconnect Technology, *Robotics Software Engineer*, San Jose	2023.05 - 2023.08

- Transferred research outcomes from the UIUC lab to industrial applications by developing a simulation system in Mujoco for robotic arm manipulation, enabling pick-and-place tasks with a real-time monitoring dashboard.
- Developed a flexible pipeline to construct robotic arms in Mujoco using **only** CAD components, incorporating path-planning with MoveIt and control strategies for precise movement and efficient task execution.

NPLACE Startup, *Algorithm Engineer*, Shanghai	2022.04 - 2022.08

- Implement LiDAR-free 3D reconstruction by rebuilding and optimizing MVSNet for efficient image-based model generation, testing in Unity through C#, improving image-based 3D model generation efficiency by **10%**.
- Enhanced the visual quality of scanned 3D point clouds by designing an effective 3D clustering algorithm.

ZIPLUNCH, *Software Engineer*, Toronto	2021.09 - 2021.12

- Developed and maintained the backend of a web platform using Flask (Javascript), enabling managers to seamlessly register, manage their profiles, and receive new orders in real-time.

Project Experience

Autonomous Vehicle System, CS 588 Course Project at UIUC, Video Here

- Developed a system-level solution based on ROS on real car hardware, integrating a braking system with pedestrian detection, a lane detection model, SLAM using Lego-LOAM, and GPS-based navigation.

Optimizing Convolutional Layers with CUDA Acceleration, ECE 408 Course Project at UIUC

- Optimized the forward pass of a convolutional layer using CUDA, leveraging shared memory, memory coalescing, and tiling techniques to significantly improve the parallel computation efficiency.

TECHNICAL PROFICIENCY

Proficient: PyTorch, C++, AWS, GCP, Tencent Cloud, Python, CUDA, JavaScript, ROS, Git, LaTeX, Flask.

Experienced: TensorFlow, C, C#, Java, SQL, React, HTML, CSS, Blender, Open3D, Linux, etc.