

Feiran Wang

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Ann Arbor, Michigan - 48103, United States

RESEARCH FOCUS & INTERESTS

- **3D Vision:** Physically-based 3D Reconstruction, 3D Segmentation, Visual SLAM
- **Embodied AI:** World Models, Vision-Language-Action Models, Sim-to-Real Transfer
- **Generative AI:** Diffusion Models, 3D Generation, Synthetic Data Generation

EDUCATION

- **University of Michigan Ann Arbor** Jan. 2026 - Present
Visiting Ph.D. Student, Advisor: [Prof. Dawen Cai](#) Ann Arbor, United States
- **Illinois Institute of Technology** Jan. 2024 – Expected 2028
Ph.D. Student in Computer Science, Advisor: [Prof. Yan Yan](#) Chicago, United States
- **University of Illinois Urbana-Champaign** Aug. 2022 – Dec. 2023
M.S. in Engineering, Advisor: [Prof. David Forsyth](#) Urbana, United States
- **Shanghai University** Aug. 2018 – Jul. 2022
B.Eng. in Computer Science, Advisor: [Prof. Xiaoqiang Li](#) Shanghai, China

PUBLICATIONS

C=CONFERENCE, J=JOURNAL, U=UNDER REVIEW

- [U.1] Feiran Wang, Yan Yan. **RayMap3R: Inference-Time RayMap for Dynamic 3D Reconstruction**.
- [C.1] Feiran Wang, Junyi Wu, Dawen Cai, Yuan Hong, Yan Yan. **CogniMap3D: Cognitive 3D Mapping and Rapid Retrieval**. ICLR 2026.
- [C.2] Junyi Wu, Van Nguyen Nguyen, ..., Feiran Wang, Terrence Chen, Yan Yan, Ziyang Wu. **Consistent Instance Field for Dynamic Scene Understanding**. CVPR 2026.
- [C.3] Feiran Wang*, Jiachen Tao*, Junyi Wu*, Haoxuan Wang, Bin Duan, Zongxin Yang, Yan Yan. **X-Field: A Physically Informed Representation for 3D X-ray Reconstruction**. NeurIPS 2025 (★Spotlight★).
- [C.4] Feiran Wang, Bin Duan, Jiachen Tao, Nikhil Sharma, Gaowen Liu, Dawen Cai, Yan Yan. **ZECO: ZeroFusion Guided 3D MRI Conditional Generation**. MVA 2025 (Oral).
- [J.1] Feiran Wang, Xiaoqiang Li, Jitao Liu. **PCCN-RE: Point Cloud Colourisation Network Based on Relevance Embedding**. IET Computer Vision, 2022.

SKILLS

- **Programming Languages:** Python, C++, C#, MATLAB, Javascript
- **Deep Learning & Training:** PyTorch, CUDA, TensorFlow, HPC Distributed Training
- **3D Vision & Reconstruction:** Open3D, OpenCV, SLAM, NeRF, 3DGS, VR
- **Cloud & Web:** Alibaba Cloud, Huawei Cloud, AWS, Flask, React, MySQL

EXPERIENCE

- **Robotics Software Engineer** May 2023 - Aug. 2023
Foxconn Interconnect Technology, San Jose, CA, Intern
 - **Simulation Development Platform:** Built Blender-to-MuJoCo toolchain for automatic URDF generation with joint dynamics calibration and collision geometry definition for rapid prototyping.
 - **Motion Planning & Control:** Integrated MoveIt for trajectory planning and collision detection in MuJoCo; designed PD controllers with real-time state feedback for precise trajectory tracking; developed visualization dashboard for monitoring joint positions, velocities, and torques.
 - **Sim-to-Real Deployment:** Optimized control parameters through simulation-hardware closed-loop iteration; validated grasping tasks on low-cost 3D-printed hardware platform.
- **Algorithm Engineer** Apr. 2022 - Aug. 2022
NPLACE Startup, Shanghai, China, Intern

- **Image-Based 3D Reconstruction:** Independently explored pure vision reconstruction as alternative to company's LiDAR solution; built end-to-end pipeline from multi-view image capture through MVS reconstruction to point cloud completion, providing lightweight solution for mobile 3D scanning.
- **MVS Network Optimization:** Applied network pruning and multi-scale feature aggregation to MVSNet; compressed model via knowledge distillation achieving 10% inference speedup.
- **Backend Engineer** Sep. 2021 - Dec. 2021
ZIPLUNCH, Toronto, Canada, Intern
 - **Backend System Development:** Built restaurant order management platform backend; led database schema design and Flask RESTful API development for order lifecycle management and user authentication.
 - **Data Migration & Testing:** Designed and implemented database merge solution for legacy system migration with transaction control and validation mechanisms; built comprehensive unit and integration test suites ensuring code quality and system stability.

PROJECTS

- **3D Medical Image Analysis** Sep. 2024 - Jan. 2026
University of Michigan Ann Arbor, Cai Lab [Project Page](#)
 - **3D Medical Data Generation:** Designed ControlNet-conditioned diffusion model for controllable 3D volume generation, achieving 50× synthetic data expansion to address medical image annotation scarcity.
 - **Semi-Automatic Annotation Platform:** Built interactive 3D annotation tool based on nnInteractive and nnUNet with morphological processing and connected component analysis, improving annotation efficiency.
 - **Neuron Instance Segmentation:** Benchmarked nnUNet and Mask2Former on neuron data; adapted architectures and loss functions for elongated topology and dense interweaving characteristics; explored SAM3 foundation model with domain-specific fine-tuning for 3D medical segmentation.
 - **Large-Scale Distributed Training:** Deployed 240-GPU multi-node training environment on HPC cluster with MPI optimization for large-batch parallel processing.
- **Multimodal Agent System** Dec. 2025 - Jan. 2026
Independent Development
 - **End-to-End AI Companion System:** Built from scratch a multimodal AI system integrating voice conversation, image understanding, and 3D virtual avatar; packaged as iOS native app.
 - **Large Model Deployment Optimization:** Deployed Qwen2.5-VL-72B with AWQ 4-bit quantization and multi-GPU auto-allocation, compressing memory from 150GB to 40GB.
 - **Streaming Voice Interaction:** Integrated FunASR speech recognition and GPT-SoVITS voice cloning for streaming TTS playback with response latency optimized to under 1 second.
 - **3D Virtual Avatar Engine:** Built Three.js + VRM rendering engine with automatic Mixamo skeleton to VRM mapping and 17 animation state transitions.
- **Depth Fusion Visual SLAM** Feb. 2023 - May 2023
UIUC, Advised by Prof. Shenlong Wang
 - **Outdoor NeRF-SLAM:** Extended NICE-SLAM to outdoor scenes with learned monocular depth prediction providing geometric priors for NeRF implicit mapping on a single GPU.
 - **Pose Optimization & Validation:** Adopted quaternion-based pose estimation with sliding window for long-sequence tracking; validated on driving data with ZED 2 stereo camera.
- **Autonomous Vehicle Perception System** Sep. 2022 - Dec. 2022
UIUC, Advised by Prof. David Forsyth [Project Video](#)
 - **End-to-End Autonomous Driving System:** Built complete ROS-based autonomous driving system on real vehicle platform covering perception, planning, and control.
 - **Multimodal Perception:** Integrated YOLO object detection for obstacle recognition and emergency braking; combined learning methods with Kalman filtering for robust lane tracking.
 - **Localization & Navigation:** Implemented LiDAR SLAM for environment mapping and localization.

ACADEMIC SERVICES & ACTIVITIES

Conference Reviewer: CVPR 2026, ICLR 2026, ICMR 2026 (PC), ICCV 2025, ICMR 2025, MVA 2025

Journal Reviewer: Computer Vision and Image Understanding (CVIU)

Invited Talk: Midwest Machine Learning Symposium (MMLS), 2025: Medical Imaging 3D Reconstruction

Competition: ALCF GPU Hackathon, Argonne National Laboratory, 2025

HONORS AND AWARDS

Cyrus Tang Scholarship, Illinois Institute of Technology	2024 – 2025
International Exchange Scholarship, Shanghai University	2020 – 2021
Academic Excellence Scholarship, Shanghai University	2019 – 2020