Ziyue Feng

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Research Summary

My research focuses on **world and spatiotemporal modeling**, enabling machines to represent, understand, and predict real-world physical environments. My work spans learning-based 3D reconstruction, active perception, and generative world models, with applications in autonomous systems, robotics, and spatial computing. I have contributed original research across academia and industry, and actively serve as a peer reviewer for leading AI and robotics venues.

Education

- **Clemson University** — SC, USA
  Ph.D. Degree — *Aug 2019 – Dec 2024*
- **Clemson University** — SC, USA
  Master-en-route Degree — *Aug 2019 – Aug 2023*
- **Xi'an Jiaotong University** — Xi'an, China
  Bachelor's Degree — *Aug 2015 – Jun 2019*

Selected Publications

- **Ziyue Feng**, Huangying Zhan, etc.. "NARUTO: Neural Active Reconstruction from Uncertain Target Observations", (Active NeRF style 3D Reconstruction. **CVPR 2024**.)
- **Ziyue Feng**, Leon Yang, Pengsheng Guo, Bing Li. "CVRecon: Rethinking 3D Geometric Feature Learning for Neural Reconstruction" (Proposed a novel 3D geometric feature learning paradigm for neural reconstruction based on improved cost volumes. **ICCV 2023**.)
- **Ziyue Feng**, Liang Yang, Longlong Jing, Haiyan Wang, YingLi Tian, and Bing Li. "Disentangling Object Motion and Occlusion for Unsupervised Multi-frame Monocular Depth", **ECCV 2022** (2/3 of reviews are **strong accept**).
- **Ziyue Feng**, Longlong Jing, Peng Yin, Yingli Tian, Bing Li. "Advancing Self-supervised Monocular Depth Learning with Sparse LiDAR", **CoRL 2021**.
- **Ziyue Feng**, Shitao Chen, Yu Chen, Nanning Zheng. "Model-based decision making with imagination for autonomous parking", IEEE IV 2018.
- P Yin, L Xu, **Z Feng**, A Egorov, B Li. "PSE-Match: A Viewpoint-Free Place Recognition Method With Parallel Semantic Embedding", IEEE Transactions on Intelligent Transportation Systems.
- Weihan Wang, Chieh Chou, Ganesh Sevagamoorthy, Kevin Chen, Zheng Chen, **Ziyue Feng**, Youjie Xia, Feiyang Cai, Yi Xu, Philippos Mordohai. "Stereo-nec: Enhancing stereo visual-inertial slam initialization with normal epipolar constraints", IEEE International Conference on Robotics and Automation (**ICRA 2024**).
- Zheng Chen, Qingan Yan, Huangying Zhan, Changjiang Cai, Xiangyu Xu, Yuzhong Huang, Weihan Wang, **Ziyue Feng**, Lantao Liu, Yi Xu. "Planarnerf: Online learning of planar primitives with neural radiance fields", IEEE International Conference on Robotics and Automation (**ICRA 2025**).

Experience & Research Contributions

- **Apple** — San Diego, CA
  Machine Learning Engineer — World & Spatiotemporal Modeling — *Oct 2024 – Present*
  - Conduct research on learning-based world and spatiotemporal modeling, developing generative and predictive models that enable machines to represent, understand, and forecast real-world environments from visual data, with an emphasis on geometric consistency, temporal coherence, and physical plausibility.
- **Matterport** — Sunnyvale, CA
  Senior Machine Learning Engineer — *Apr 2024 – Aug 2024*
  - Worked on learning-based large-scale 3D reconstruction and spatial data systems for digitizing and modeling real-world physical environments, advancing robust scene representation and geometric understanding in real-world deployments.

- **Google** San Francisco, CA
  Ph.D. Research Intern *Sep 2023 – Dec 2023*
  - Conducted advanced research on learning-based approaches to visual computing and modeling of complex real-world environments, focusing on neural representations supporting consistent geometric and spatiotemporal understanding.

- **OPPO US Research Center** Palo Alto, CA
  Ph.D. Research Intern — Active Neural SLAM *Jun 2023 – Aug 2023*
  - Developed active perception and NeRF-based SLAM methods enabling embodied agents to explore, localize, reconstruct, and plan in unknown environments. Published at CVPR 2024.

- **Clemson University** Greenville, SC
  Ph.D. Research Assistant *Aug 2019 – Jun 2023*
  - Proposed a novel 3D geometric feature learning paradigm for neural reconstruction, advancing learning-based world representation through improved cost-volume reasoning (ICCV 2023).
  - Developed self-supervised multi-frame depth estimation frameworks addressing object motion and occlusion, enabling temporally consistent depth prediction in dynamic scenes (ECCV 2022).
  - Introduced learning-based multi-modal depth modeling integrating sparse LiDAR with monocular vision, advancing world modeling for autonomous systems (CoRL 2021).

- **MEGVII (Face++) Research**
  Research Intern *Jan 2019 – May 2019*
  - Early Research in Learning-based Perception: Conducted early research on learning-based gaze estimation, investigating model generalization under domain shift in real-world visual sensing scenarios.

- **Institute of Artificial Intelligence and Robotics (IAIR), Xi'an Jiaotong University** Xi'an, China
  Research Intern *Oct 2016 – Jan 2019*
  - Autonomous Parking: Proposed a model-based decision-making framework for autonomous parking, including an imagination-based module for RRT path planning and kinematic-aware trajectory refinement. Published at IEEE IV 2018.

Professional Service and Peer Review

- Served as a Program Committee member and peer reviewer for leading international conferences and journals, including ICLR, ICML, NeurIPS, CVPR, ICCV, ECCV, ICRA, IROS, CoRL, RA-L, IEEE Transactions on Image Processing, IEEE Transactions on Intelligent Vehicles, IEEE Transactions on Multimedia, and Journal of Robotics.
- Completed over 50 peer reviews, contributing expert evaluation of original research in machine learning, computer vision, robotics, and world modeling.