Yifeng Xiong

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Research Interests: Parameter-Efficient Fine-Tuning, Vision Language Models, Diffusion Models

EDUCATION

University of California, Irvine — **Irvine, CA**

PhD in Computer Science — Sep 2024 – Jun 2029

- **Cumulative GPA: 3.964/4.00**
- **Rewards:** Computer Science Department Research Fellowship

University of California, Irvine — **Irvine, CA**

Bachelor of Science in Computer Science — Sep 2019 – Jun 2024

Bachelor of Science in Mathematics — Sep 2019 – Jun 2024

- **Cumulative GPA: 3.944/4.00**
- **Rewards:** ICS Honor, Dean's Honor List, Phi Beta Kappa, Pi Mu Epsilon, UROP 2022 Research Experience Fellowship

PUBLICATIONS / PREPRINTS

[1] **Yifeng Xiong**, Xiaohui Xie. "OPLoRA: Orthogonal Projection LoRA Prevents Catastrophic Forgetting during Parameter-Efficient Fine-Tuning" *arXiv:2510.13003*

[2] Shanlin Sun*, Yifan Wang*, Hanwen Zhang*, **Yifeng Xiong**, Qin Ren, Ruogu Fang, Xiaohui Xie, Chenyu You. " Ouroboros: Single-step Diffusion Models for Cycle-consistent Forward and Inverse Rendering " *ICCV 2025*

[3] **Yifeng Xiong**, Haoyu Ma, Shanlin Sun, Kun Han, Hao Tang, Xiaohui Xie. "Light Field Diffusion for Single-View Novel View Synthesis" *IEEE ACCESS 2025*

[4] Kun Han, **Yifeng Xiong**, Chenyu You, Pooya Khosravi, Shanlin Sun, Xiangyi Yan, James Duncan, Xiaohui Xie. "MedGen3D: A Deep Generative Framework for Paired 3D Image and Mask Generation" *MICCAI 2023*

[5] Che Yu Lee*, Dylan Riffle*, **Yifeng Xiong***, Nadia Momtaz, Yutong Lei, Joseph M. Pariser, Diptanshu Sikdar, Ahyeon Hwang, Ziheng Duan, Jing Zhang. "Characterizing dysregulations via cell-cell communications in Alzheimer's brains using single-cell transcriptomes" *BMC Neuroscience 2024*

RESEARCH EXPERIENCE

Orthogonal Projection LoRA (Paper [1])

- Developed a theoretically grounded fine-tuning framework that applies double-sided orthogonal projections to LoRA updates, preserving the dominant singular subspaces of pre-trained weights and preventing catastrophic forgetting.
- Conducted comprehensive experiments on LLaMA-2 7B and Qwen2.5 7B across reasoning, math, and code generation tasks, demonstrating superior knowledge retention and competitive adaptation performance compared to other LoRA variants.

Ouroboros (Paper [2])

- Proposed a cycle-consistent diffusion framework unifying forward and inverse rendering through two single-step diffusion models, achieving 50× faster inference while maintaining state-of-the-art accuracy across indoor and outdoor scenes.
- Extended the 2D model to video, proposing a training-free pseudo-3D diffusion inference method that achieves temporally consistent results.

Light Field Diffusion (Paper [3])

- Proposed a diffusion-based approach for single-view novel view synthesis by transforming camera transformations into light field encoding to enforce pixel-wise constraints.
- Trained and fine-tuned conditional diffusion models on ShapeNet Car and Objaverse datasets, achieving competitive results and robust zero-shot generalization.

MedGen3D (Paper [4])

- Developed a deep generative framework for synthesizing paired 3D medical images and segmentation masks by representing 3D data as 2D sequences.
- Enhanced segmentation performance on thoracic CT and brain MRI datasets, achieving superior Sørensen-Dice scores by pretraining on synthetic data and fine-tuning with real-world data.

Cell-Cell Communication (Paper [5])

- Analyzed snRNA-seq data to investigate dysregulated ligand-receptor interactions and built a high-confidence communication network using CellChat and NicheNet.
- Enhanced pathway analysis and visualization by modifying source code for clearer representation of Alzheimer's disease communication networks.

TEACHING EXPERIENCE

Teaching Assistant	**CS 175**	**Project in AI**
Teaching Assistant	**CS 171**	**Intro to AI**
Teaching Assistant	**CS 206**	**Scientific Computing**

SKILLS

Language: Mandarin (Native); English (Fluent)

Skills: Python, R, MATLAB, Mathematica, PyTorch, Accelerate, SLURM, Git, LaTeX.