

Yifeng Xiong

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Research Interests: Parameter-Efficient Fine-Tuning, Vision Language Models, Long Term Memory

EDUCATION

University of California, Irvine

PhD in Computer Science

Irvine, CA

Sep 2024 – Jun 2029

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

University of California, Irvine

Bachelor of Science in Computer Science

Irvine, CA

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" *AAAI 2026*
- [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.