

# Zonglin Lyu

Email | Phone: (646) 445-9529 | Website | Google Scholar

## EDUCATION

University of Central Florida, Orlando, FL  
Ph.D. in Computer Science

Jan 2025 —

University of Utah, Salt Lake City, UT (transferred)  
Ph.D. in Computer Science

Aug 2024 — Dec 2024

Columbia University, New York, NY  
M.S. in Operations Research

Sept 2021 — Dec 2022

University of California San Diego, La Jolla, CA  
B.S. in Applied Mathematics

Sept 2017 — June 2020

## RESEARCH INTERESTS

- Computer Vision
- Multi-modal Learning
- Generative Models

## PUBLICATION

\*: equal in contribution

†: corresponding author

1. Zonglin Lyu and Chen Chen<sup>†</sup>. TLB-VFI: Temporal-Aware Latent Brownian Bridge Diffusion for Video Frame Interpolation. (Submitted to CVPR 2025)
2. Zonglin Lyu, Ming Li, Jianbo Jao, and Chen Chen<sup>†</sup>. Frame Interpolation with Consecutive Brownian Bridge Diffusion. ACM MM 2024. [pdf](#)
3. Zonglin Lyu, Juexiao Zhang, Mingxuan Lu, Yiming Li, and Chen Feng<sup>†</sup>. *Tell me where you are*: Multimodal LLMs Meet Place Recognition. (submitted to ICRA 2025). [pdf](#)
4. Yiming Li\*, Zhiheng Li\*, Nuo Chen\*, Moonjun Gong\*, Zonglin Lyu\*, Zehong Wang, Peili Jiang, Chen Feng<sup>†</sup>. Multiagent Multitraversal Multimodal Self-Driving: The MARS Dataset. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR). 2024.
5. Yiming Li\*, Zonglin Lyu\*, Mingxuan Lu, Chao Chen, Michael Milford, and Chen Feng<sup>†</sup>. "Collaborative Visual Place Recognition." (Arxiv 2023).[pdf](#)
6. Xuande Feng\*, Zonglin Lyu\*,<sup>†</sup>. "How Features Benefit: Parallel Series Embedding for Multivariate Time Series Forecasting with Transformer." In 2022 IEEE 34th International Conference on Tools with Artificial Intelligence (ICTAI) (Oral presentation). [pdf](#)

## RESEARCH EXPERIENCE

### Video Frame Interpolation

University of Central Florida, FL

Advisor: Chen Chen

Feb 2024 - present

- Conduct a literature review on Video Frame Interpolation and Diffusion Models.
- Design a Diffusion-based Frame Interpolation method that achieves SOTA performance. Further enhancement with temporal-aware model design is available soon.
- Implemented with PyTorch. Codebase can be found [here](#).

### AI4CE Lab

New York University, NY

Advisor: Chen Feng

Jan 2023 - Feb 2024

- Conduct a literature review on Test Time Training, Visual Place Recognition, Point Cloud Prediction, VLMs.
- Formulate the first framework for Collaborative Visual Place Recognition and develop an effective and robust algorithm. Multi-agent collaboration achieves at most a 50% reduction in error rate than single-agent. The paper is available [here](#).
- Collect and benchmark a large-scale outdoor dataset. The paper is accepted to CVPR 2024.
- Study how and when Multimodal LLMs benefit VPR tasks. Design a training-free, data-free, and label-free pipeline to incorporate Multimodal LLMs into VPR. The paper is available [here](#).
- Implemented with PyTorch.

### Transformer in Multivariate Time Series Prediction

Columbia University, NY

Self-designed research

March 2022 - July 2022

- Conduct literature reviews on time series prediction based on Neural Networks.

- Propose Parallel Series Embedding method applied in transformer-based models to predict time series, achieving notable improvements (at most 50% reduction in RMSE) over the baseline. The [paper](#) was accepted to ICTAI 2022.
- Implemented with PyTorch. Codebase can be found [here](#).

## PROJECT EXPERIENCE

---

### SE-(3) Equivariant Performer

Advisor: Krzysztof Choromanski

Columbia University, NY

Oct 2022 - Dec 2022

- Conduct literature reviews on equivariant neural networks for point clouds.
- Prove that SE3 equivariance is compatible with Performer (linear transformer).
- Design a novel model based on SE(3)-Transformer, making it compatible to performer. The model achieves a 10% performance increase and 2x speedup over the baseline, and the performer variant archives a 5% performance improvement and more than 20% memory efficiency.
- Implemented with PyTorch. Codebase can be found [here](#).

### Supervising OCR models with LLMs

Advisor: Peter N. Belhumeur

Columbia University, NY

Oct 2022 - Dec 2022

- Conduct literature reviews on Language Models, OCR Models, and Diffusion Models.
- Design a method to supervise an OCR Model with LLMs, which achieves a small improvement over the baseline.
- Implemented with PyTorch. Codebase can be found [here](#) and [here](#).

## ACADEMIC SERVICES

---

- Reviewer: IROS 2024

## SKILLS

---

- **Relevant Coursework:** Deep Learning, Machine Learning, Simulation, Reinforcement Learning (audit), Computer Vision, Probability, Statistics, Stochastic Processes, Optimization, Numerical Analysis, Linear Algebras
- **Online Courses:** Analysis of Algorithm, Data Structure
- **Programming and Software** Python (Pytorch, Numpy, Pandas, Matplotlib, etc), Java, C, C++, SQL, R, MATLAB, LaTeX.