

## Jiageng Liu

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### EDUCATION

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**University of Massachusetts Amherst**

Massachusetts, United States

*Master in Computer Science, First year*

09/2024-

**Zhejiang University**

Hangzhou, China

*B.E. in Artificial Intelligence*

**GPA:** 3.75/4.00

**Major GPA (Third year):** 3.96/4.00

09/2020-07/2024

*Courses:* Natural Language Processing (97), Machine Learning (92), Computer Vision (90), Design of AI Product (96)

### PUBLICATIONS

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- Yian Wang\*, Xiaowen Qiu\*, **Jiageng Liu\*** et al. Architect: Generating Vivid and Interactive 3D Scenes with Hierarchical 2D Inpainting. *Advances in Neural Information Processing Systems (NeurIPS2024)*.

[Program Website](#)

- Zeyuan Yang\*, **Jiageng Liu\***, Peihao Chen, Anoop Cherian, Tim K. Marks, Jonathan Le Roux, Chuang Gan. RILA: Reflective and Imaginative Language Agent for Zero-Shot Semantic Audio-Visual Navigation. *Advances in Computer Vision and Pattern Recognition (CVPR2024)*.

[Program Website](#)

- Wang Zehan, Yang Zhao, Xize Cheng, Haifeng Huang, **Jiageng Liu** et al. Connecting multi-modal contrastive representations. *Advances in Neural Information Processing Systems (NeurIPS2023)*.

[Program Website](#)

- Yuhang Xu, Wanxu Xia, Yipeng Chen, **Jiageng Liu** et al. WordDiffuser: Helping beginners cognize and memorize glyph-semantic pairs using diffusion. *In Proceedings of the IEEE International Symposium on Computational Intelligence and Design (ISCID2023)*.

[Program Website](#)

### RESEARCH EXPERIENCES

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**Virtual Community for Scalable 3D Scene and Embodied Agents (CVPR2025 under review)**

Umass, United States

*Research Participant, Advisor:* [Chuang Gan](#)

07/2024-10/2024

- Built on [Genesis Platform](#), the motivation of Virtual Community is to feature large-scale community scenarios derived from the real world and construct a social world simulation to support embodied AI research.
- Scalable 3D Scene creation: which supports the generation of expansive outdoor and indoor environments at any location and scale, addressing the lack of a large-scale, interactive, open world scene for embodied AI research.
- Embodied agents with grounded characters and social relationship networks: the first to simulate socially connected agents at a community level, that also have scene-grounded characters.
- I take responsibility of multi-room and multi-scene indoor scene automatic generation, which based on Architect.
- Co-authored the paper that was under review in CVPR2025.

**Lifting 2D Inpaint to Interactive 3D Scene Generation (NeurIPS2024 accepted)** MIT-IBM Watson AI lab, United States

*Research Leader, Advisor:* [Chuang Gan](#)

11/2023-06/2024

- Built on [Genesis Platform](#), the project aims to create a general framework for generating sufficient and delicate interactive 3D scenes for Robotics and Embodied AI research, such as RL training.
- Created a framework name Architect, which utilizes pre-trained 2D image generative models to inpaint, and visual foundation model for perception to lift 2D image into 3D scene. Implement the inpainting iteratively and hierarchically.
- Architect is capable to generate infinity context-rich, fine-grind, interactive, indoor scenes.
- Co-authored the paper that was accepted as poster in NeurIPS2024.

## LLM Commonsense Assisted Navigation (CVPR2024 accepted)

MIT-IBM Watson AI lab, United States

Research Leader; Advisor: [Chuang Gan](#)

06/2023-11/2023

- Researched the spatial reasoning and multi-modal information processing capabilities of LLM.
- Utilized a zero-shot framework on Semantic Audio-Visual Navigation (SAVN) embodied AI task in simulation environment Habitat. Integrated LLM to imagine room layout, give high-level guidance into our framework Reflective and Imaginative Language Agent (RILA).
- Achieved results surpassed previous baselines (SOTA) that requires training, using LLM's commonsense.
- Co-authored the paper that was accepted as poster in CVPR2024.

## Connecting Multi-modal Contrastive Representations (NeurIPS2023 accepted)

Zhejiang University, China

Research Participant; Advisor: [Zhou Zhao](#)

02/2023-05/2023

- Conducted research on Multi-modal Contrastive Representation (MCR) learning, which aims to encode different modalities into a semantically aligned shared space.
- Devised a novel training-efficient method Connecting-MCR (C-MCR) for learning MCR without paired data.
- Designed a framework of connecting frozen CLIP and CLAP using our C-MCR to train an audio-visual model, dataset comes from six cross-modal. Analyzed the model on zero-shot downstream tasks comparing with SOTA methods.
- Wrote a paper that was published to NeurIPS2023 with the title Connecting Multi-modal Contrastive Representations.

## WordDiffuser: Help Cognize Character Using Diffusion (ISCID2023 accepted)

Zhejiang University, China

Research Leader; Advisor: [Lingyun Sun](#)

03/2023-06/2023

- Proposed WordDiffuser, an AI-assisted and LLM-augmented framework generating images to help beginners understand the relationship between abstract characters and their meanings.
- Designed two stage image generation directed by Latent Diffusion Model (LDM). Utilized three loss functions to balance the structure, semantic consistence of the generated image and implemented stable diffusion for generation.
- Led the project and Summarized the project in a paper published to ISCID2023, an IEEE&EI conference.

## COVID-19 Propagation Model and Simulation Research Based on Small-world Network Zhejiang University, China

Research Participant; Advisor: [Hong Mi](#)

04/2022-02/2023

- Derived the mathematical model and optimized it based on COVID-19 transmission features.
- Modified states in the pre-existing SEIR transmissive dynamic model and simulated it on the Small World Network.
- Implemented the model fitting procedure using Pytorch, and realized the visualization.
- Presented result at the International Conference on Reform and Innovation: Global Long-term Care Problems and Strategies, and submitted three reports to think tank. Patent is in application process.

## HONORS & AWARDS

National Scholarship (Top 0.2%)	Ministry of Education, China
Top ten raising star in College of CS	College of Computer Science & Technology, Zhejiang University, China
First-class Scholarship (Top 3%)	Zhejiang University, China
Learnings' Innovation Scholarship (Top 1.5%)	College of Computer Science & Technology, Zhejiang University, China
First-class of Basic Top Subject Scholarship (Top 10%)	Zhejiang University, China
Second prize in Chinese High School Mathematics League	Chongqing, China

## SKILLS & INTERESTS

**Research Interest:** Embody AI, 3D Generation, Generative Models

**Skills:** Python(mainly, pytorch, numpy, tensorflow), C++, C#, HTML, CSS, JavaScript, SQL, MATLAB

**Hobby:** Jogging, Cooking, Piano