

# Kaiwen Zhou

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**Github:** [//github.com/KevinZ-01](https://github.com/KevinZ-01)

**Webpage:** <https://kevinz-01.github.io/>

## Research interests

Multi-modal Learning, Foundation models, LLMs, Embodied AI

## Education

### University of California, Santa Cruz

Ph.D. in Computer Science and Engineering

Sep. 2021 – Present

Advisor: Prof. Xin Eric Wang. *GPA: 3.64.*

### Zhejiang University

B.S. in Statistics

Sep. 2017 – June 2021

Advisor: Prof. Kewei Liang. *GPA: 3.89.*

## Work experience

### Honda Research Institute

Research intern

April 2023 – Now

Mentor: Kwonjoon Lee

### Samsung Research America

Research intern

June 2022 – Sep. 2022

Mentor: Yilin Shen

## Publications

### **ViCor: Bridging Visual Understanding and Commonsense Reasoning with Large Language Models**

**Kaiwen Zhou**, Kwonjoon Lee, Teruhisa Misu, Xin Eric Wang.

*In arxiv 2023.*

### **ESC: Exploration with Soft Commonsense Constraints for Zero-shot Object Navigation**

**Kaiwen Zhou**, Kaizhi Zheng, Connor Pryor, Yilin Shen, Hongxia Jin,

Lise Getoor, Xin Eric Wang.

*40th International Conference on Machine Learning (ICML), 2023.*

### **FedVLN: Privacy-preserving Federated Vision-and-Language Navigation**

**Kaiwen Zhou**, Xin Eric Wang.

*17th European Conference on Computer Vision (ECCV), 2022.*

### **JARVIS: A Neuro-Symbolic Commonsense Reasoning Framework for Conversational Embodied Agents**

Kaizhi Zheng\*, **Kaiwen Zhou**\*, Jing Gu\*, Yue Fan\*, Jialu Wang\*, Zonglin Di,

Xuehai He, Xin Eric Wang.

*Socal NLP 2022*

### **Winner Model of the Alexa Prize SimBot Public Benchmark Challenge**

### **Navigation as the Attacker Wishes? Towards Building Byzantine-Robust Embodied Agents under Federated Learning**

Yunchao Zhang, Zonglin Di, **Kaiwen Zhou**, Cihang Xie, Xin Eric Wang.

*In arxiv 2022*

Selected research  
experience

**Visual Commonsense Reasoning with LLM and VLMs**

Advisor: Dr. Kwonjoon Lee, Prof. Xin Eric Wang March 2023 – Sep. 2023

We studied the problem of visual commonsense reasoning and defined it into two sub-tasks: visual commonsense inference and visual commonsense understanding. Then, we proposed a framework maximizing the capability of LLMs and VLMs to solve them.

**Commonsense Reasoning for Zero-shot Object Navigation**

Advisor: Prof. Xin Eric Wang, Dr. Yilin Shen June 2022 – Jan. 2023

We proposed a framework that combines the commonsense reasoning of pre-trained LLM and classical navigation methods via Probabilistic Soft Logic (PSL) for training-free zero-shot object navigation. We achieve SOTA zero-shot object navigation performance.

**Neuro-Symbolic Commonsense Reasoning Framework for Conversational Embodied Agents**

Advisor: Prof. Xin Eric Wang Mar. 2022 – May 2022

We proposed a neuro-symbolic method which uses neural methods to acquire symbolic representation about the task and environment, then uses symbolic reasoning module to reason on the symbolic representation for action generation. *Our method won the simbot public challenge.*

**Privacy-preserving Federated Vision-and-Language Navigation**

Advisor: Prof. Xin Eric Wang Sep. 2021 – Mar. 2022

We study the data privacy problem of VLN and propose a federated learning framework for vision and language navigation. Under this framework we not only preserve the training and inference data privacy with comparable results with centralized training, but also outperforms other pre-exploration methods.

Teaching experience

Teaching assistant, UC Santa Cruz Winter 2023

CSE 20: Beginning Programming in Python

Teaching assistant, UC Santa Cruz Winter 2022

CSE 20: Beginning Programming in Python

Other experience

**Amazon Alexa Prize SimBot Challenge**

Advisor: Prof. Xin Eric Wang Jan. 2022 – Apr. 2023

We investigated the problem of dialog-based embodied instruction following on TEACH benchmark and won the **first place** public challenge in the first phase. In the second phase, we are building an interactive embodied agent that can finish diverse tasks cooperating with human players. We won the **third place** in the second phase.

Honors and scholarships	Third Place in Amazon Alexa Prize SimBot Challenge	2023
	Outstanding undergraduate graduate (Zhejiang University)	2021
	Second-class scholarship (Zhejiang University)	2020
	First-class scholarship (Hailiang Group)	2020
	Second-class scholarship (Zhejiang University)	2019
	Provincial Government Scholarship (Zhejiang Province)	2019

## Skills

### **Programming**

Python, C++, Matlab, R, Pytorch, Tensorflow.

### **Languages**

English, Chinese, Cantonese

## Other interests

Singing, Working out, Traveling, Photographing.