Kaiwen Zhou

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Email: kzhou35@ucsc.edu **Github**: //github.com/KevinZ-01 **Webpage**: https://kevinz-01.github.io/

Research interests

AI agents, (Multimodal) LLM, AI safety

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

Work experience

Samsung Research America
Research intern — June 2024 – Sep. 2024
Mentor: Yilin Shen

Honda Research Institute
Research intern — April 2023 – Dec. 2023
Mentor: Kwonjoon Lee

Samsung Research America
Research intern — June 2022 – Sep. 2022
Mentor: Yilin Shen

Publications

Multimodal Situational Safety
Kaiwen Zhou, Chengzhi Liu, Xuandong Zhao, Anderson Compalas, Dawn Song, Xin Eric Wang
Arxiv 2024.

Muffin or Chihuahua? Challenging Large Vision-Language Models with Multipanel VQA
Yue Fan, Jing Gu, **Kaiwen Zhou**, Qianqi Yan, Shan Jiang, Ching-Chen Kuo, Xinze Guan, Xin Eric Wang
ACL 2024.

ViCor: Bridging Visual Understanding and Commonsense Reasoning with Large Language Models
Kaiwen Zhou, Kwonjoon Lee, Teruhisa Misu, Xin Eric Wang.
Findings of ACL 2024.

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.
NAACL 2024

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.
ICML 2023

FedVLN: Privacy-preserving Federated Vision-and-Language Navigation
Kaiwen Zhou, Xin Eric Wang.
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

Selected research

Multimodal Situational Safety
Advisor: Prof. Xin Eric Wang — April. 2024 – Sep. 2024
- We propose a novel safety problem where the situation indicated by the visual input is a critical factor that influences the safety of the user's intent behind the query.
- We benchmark SOTA MLLMs and perform in-depth analysis.
- We propose multi-agent pipelines to improve situational safety performance.

Visual Commonsense Reasoning with LLM and VLMs
Advisor: Dr. Kwonjoon Lee, Prof. Xin Eric Wang — Mar. 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.
- We proposed a framework maximizing the capability of LLMs and VLMs to solve them.

LLM 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 zero-shot object navigation.
- We achieve SOTA zero-shot object navigation performance.

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.
- We preserve the training and inference data privacy with comparable results with centralized training and achieve the best performance in pre-exploration.

Skills

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

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.

Service

Reviewer

ICCV 2023 CLVL workshop, Neurips 2023, ICLR 2024, ICML 2024

Teaching experience

Teaching assistant, UC Santa Cruz — Spring 2024
CSE 142: Machine Learning

Teaching assistant, UC Santa Cruz — Winter 2024
CSE 30: Programming Abstractions: Python

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

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