



# JIAWEI REN

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## EDUCATION

**Master of Science** | *Computer Science*

University of California, San Diego

Sep. 2024 – Present

San Diego, CA

**Bachelor of Engineering** | *Software Engineering*

Tsinghua University

Sep. 2020 – Jul. 2024

Beijing, China

## PUBLICATION

- Yan Zhuang\*, **Jiawei Ren\***, Xiaokang Ye\*, Xuhong He, Zijun Gao, Ryan Wu, Mrinaal Dogra, Cassie Zhang, Kai Kim, Berth Wolfinger, Ziqiao Ma, Tianmin Shu, Zhiting Hu, Lianhui Qin. SimWorld: A World Simulator for Scaling Photorealistic Multi-Agent Interactions (CVPR Demo 2025).
- Xiaokang Ye\*, **Jiawei Ren\***, Yan Zhuang, Xuhong He, Yiming Liang, Yiqing Yang, Mrinaal Dogra, Xianrui Zhong, Eric Liu, Kevin Benavente, Rajiv Mandya Nagaraju, Dhruv Vivek Sharma, Ziqiao Ma, Tianmin Shu, Zhiting Hu, Lianhui Qin. SimWorld-Agent: An Open-ended Simulator for Agents in Physical and Social Worlds (NeurIPS Main 2025 Spotlight).
- Yan Zhuang, **Jiawei Ren**, Xiaokang Ye, Jianzhi Shen, Ruixuan Zhang, Tianai Yue, Muhammad Faayez, Xuhong He, Xiyan Zhang, Ziqiao Ma, Lianhui Qin, Zhiting Hu, Tianmin Shu. SimWorld-Robot: Synthesizing Photorealistic and Dynamic Urban Environments for Multimodal Robot Navigation and Collaboration (NeurIPS Main 2025).
- Gengyuan Shi, Chaokun Wang, Yabin Liu, **Jiawei Ren**. Adaptive and Robust Translation from Natural Language to Multi-model Query Languages (ACL Main 2025).

## EXPERIENCE

**Research Assistant**

UC San Diego

Sep. 2024 – Present

La Jolla, CA

**Research Assistant**

Tsinghua University

Sep. 2023 – Jul. 2024

Beijing, China

**Data Engineer Intern**

Data and Intelligence Development Group, Technology R&D and Data Center, JD Retail

Jun. 2023 – Sep. 2023

Beijing, China

## PROJECT

**SimWorld Simulator**

UC San Diego

Sep. 2024 – Present

La Jolla, CA

- Developed **SimWorld**, a next-generation simulator on Unreal Engine 5 for building and evaluating LLM/VLM agents in complex, realistic environments.
- Enabled (1) open-ended world simulation with accurate physical and social dynamics, plus language-driven procedural environment generation; (2) a rich multi-modal interface for LLM/VLM agents with world inputs/feedback and open-vocabulary action outputs across abstraction levels; and (3) diverse, customizable social and physical reasoning scenarios.

**SimWorld Agent Task Suite**

UC San Diego

Feb. 2025 – Jun. 2025

La Jolla, CA

- Designed a task suite on top of SimWorld to evaluate LLM/VLM agents in social and physical reasoning.

- Social reasoning task: multiple agents collaborate and compete in an urban delivery environment, involving bidding, investment, and order sharing.
- Physical reasoning task: agents navigate a dynamic city using visual input while avoiding obstacles and adhering to traffic rules.

### Natural Language to Multi-model Query Translation

Nov. 2023 – Jun. 2024

Tsinghua University

Beijing, China

- Formally defined the novel Text-to-MMQL task and created the first benchmark dataset, covering three heterogeneous query languages (AQL, ECQL, SQL++).
- Supervised fine-tuned a T5 model as the initial baseline, analyzing its strengths and limitations for cross-language generalization.

### SKILL

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**Programming:** Python, C/C++, Java, JavaScript

**Web development:** Vue3, Flutter, Flask, Django, Spring Boot

**Database management systems:** MySQL, SQLite, PostgreSQL, Neo4J

**Operating systems:** Windows, Linux

**Languages:** English (fluent), Chinese (Native)