

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

PUBLICATIONS

(* equal contribution)

- **Jiawei Ren***, Yan Zhuang*, Xiaokang Ye*, et al. SimWorld: An Open-ended Realistic Simulator for Autonomous Agents in Physical and Social Worlds. **Arxiv Technical Report, 2025 (Demonstrated at CVPR 2025)**. Website: simworld.org.
- Xiaokang Ye*, **Jiawei Ren***, et al. SimWorld: An Open-ended Simulator for Agents in Physical and Social Worlds. **NeurIPS 2025 (Spotlight)**.
- Yan Zhuang, **Jiawei Ren***, Xiaokang Ye*, et al. Synthesizing Photorealistic and Dynamic Urban Environments for Multimodal Robot Navigation and Collaboration. **NeurIPS 2025**.
- Gengyuan Shi, Chaokun Wang, Yabin Liu, **Jiawei Ren**. Adaptive and Robust Translation from Natural Language to Multi-model Query Languages. **ACL 2025**.
- Lingjun Mao, **Jiawei Ren**, Kun Zhou, Jixuan Chen, Ziqiao Ma, Lianhui Qin. DeliveryBench: Can Agents Earn Profit in Real World? **Under Review at CVPR 2026**.

EXPERIENCE

Research Assistant

Sep. 2024 – Present

Project Leader

UC San Diego

- Led the development of **SimWorld**, a next-generation simulator built on Unreal Engine 5 for training and evaluating embodied and agentic AI systems. The platform supports open-ended realistic world simulation, provides a flexible interface for LLM/VLM agents, and enables diverse physical and social reasoning tasks.
- Designed and implemented two case studies for large-scale multimodal reasoning evaluation: (1) **social reasoning scenarios** involving collaborative and competitive multi-agent delivery tasks, and (2) **physical reasoning scenarios** where agents navigate dynamic urban environments using visual perception under realistic traffic conditions.
- Contributed to the development of a long-horizon embodied benchmark **DeliveryBench** in which agents must operate and improve over time in a simulated city under constraints such as budget and energy. Implemented and evaluated several baseline methods, including in-context learning and supervised fine-tuning.

Research Assistant

Sep. 2023 – Jul. 2024

Core Member

Tsinghua University

- Conducted research on **Multi-Model Query Optimization and AI4DB**, proposing a method to accelerate cross-engine query execution by directly accessing low-level storage layers, reducing query translation overhead.
- Formulated the **Text-to-Multi-Model Query Language (Text-to-MMQL)** task to enable natural language interaction with heterogeneous databases (AQL, ECQL, SQL++). Constructed a benchmark dataset covering multiple query languages for systematic evaluation.
- Fine-tuned pre-trained models for multi-model query generation and performed in-depth generalization analysis across heterogeneous schemas to advance unified semantic understanding across query languages.

Data Engineer Intern

Jun. 2023 – Sep. 2023

Intern

Data and Intelligence Development Group, JD.com

- Developed a **high-throughput data tracking and management platform** using Spring Boot and MySQL, supporting real-time data ingestion and improving backend scalability and data reliability. The system provided a stable data foundation for downstream analytics and machine learning workloads.
- Designed and implemented **ETL pipelines** for integrating heterogeneous data sources, including data cleaning, transformation, and normalization. These pipelines improved data quality and consistency, supporting feature engineering and model training.

SKILLS

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)