



# JIAWEI REN

+1 858-396-4050

[jir015@ucsd.edu](mailto:jir015@ucsd.edu)

[rjw0238@gmail.com](mailto:rjw0238@gmail.com)

<https://www.linkedin.com/in/jiawe-ren-606936345/>

<https://github.com/renjw02>

## 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. Accepted by CVPR 2025 demo track.
- Gengyuan Shi, Chaokun Wang, Liu Yabin, **Jiawei Ren**. Adaptive and Robust Translation from Natural Language to Multi-model Query Languages (Under Review at ACL 2025).

## EXPERIENCE

### Research Assistant

UC San Diego

Sep. 2024 – Present

San Diego, CA

- Sim2Real and Multi-Agent Benchmark (Mentored by Assistant Prof. Zhiting Hu and Assistant Prof. Lianhui Qin, UC San Diego)
- Simulator Development: Developing SimWorld, a city-scale photorealistic simulator based on Unreal Engine, featuring procedurally generated city layouts, a dynamic traffic system, high-quality assets, and diverse agent action spaces.
- Benchmark Design: Designing a multi-agent delivery benchmark within the simulator to study collaboration and competition among multiple LLM-based agents, as well as outdoor visual-language navigation. (In progress.)

### Research Assistant

Tsinghua University

Sep. 2023 – Jul. 2024

Beijing, China

- Polystore Query Optimization and AI4DB (Mentored by Assoc. Prof. Wang Chaokun, Tsinghua University)
- Polystore Query Optimization: Developed an innovative approach to enhance query performance across multiple database engines by directly accessing storage file locations, bypassing traditional query execution layers.
- Natural Language to Polystore Query Language (NL2PQL): Designed datasets and formulated an NLP task for translating natural language questions into polystore queries. Fine-tuned a pre-trained T5 model, achieving state-of-the-art performance against all baselines.

### Data Engineer Intern

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

Jun. 2023 – Sep. 2023

Beijing, China

- Contributed to the development of a high-capacity end-to-end data tracking algorithm platform using Spring Boot, demonstrating strong back-end programming skills.
- Managed and integrated various databases and data warehouses while performing ETL operations with precision.

## PROJECT

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### **Design and Implementation of Android-based Campus Forum Application**

Apr. 2023 – Jun. 2023

Project Leader

Beijing, China

- Led the development of a fully functional Android application, delivering a feature-rich campus forum with support for posting, private messaging, and user interactions.
- Developed the front end using the Flutter framework, implemented back-end functionality with Flask, and utilized SQLite for lightweight database management.

### **Web IDE Development**

Jul. 2022 – Sep. 2022

Project Leader

Beijing, China

- Spearheaded the design and implementation of a Web Integrated Development Environment (Web IDE) supporting C++ and Python development.
- Designed the system with extensibility in mind, enabling straightforward integration of additional programming languages.
- Implemented critical features including syntax highlighting, auto completion, debugging with breakpoints, and an integrated terminal.

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