Kaiyue Zhao

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EDUCATION

Shanghai Jiao Tong University, Software Engineering, *Bachelor's Degree*   Sep 2022 - Present
- Academic Score: 90.1, GPA: 3.85/4.3
- Related Courses: Advanced Data Structures, Introduction to Computer Systems, Computer System Engineering, Machine Learning, Architecture of Applications, Design and Implementation of data intelligence platform, Discrete Mathematics, Linear Algebra

PUBLICATIONS AND RESEARCH

Goal-Driven Reasoning in DatalogMTL with Magic Sets (AAAI 25), Co-First Author   Nov 2024
- Aimed at exploring goal-driven reasoning methods in the DatalogMTL language by integrating Magic Sets techniques to optimize temporal reasoning computational efficiency.
- Designed algorithms for Magic Sets in DatalogMTL, discussed and optimized implementation details with team members; implemented the algorithms proposed in the paper, ensuring accurate and efficient reasoning and querying using Magic Sets in DatalogMTL; designed the experimental process, prepared datasets, and completed empirical evaluation.
- Experimental results showed that our method significantly and consistently outperformed state-of-the-art reasoning techniques on multiple public benchmarks, with optimization speeds ranging from 2x to 10,000x per query, demonstrating the potential of Magic Sets in DatalogMTL. The paper was selected for an oral presentation at the AAAI 2025 conference.

Incremental Maintenance of DatalogMTL Reasoning   Present
- Developed an incremental reasoning algorithm, named DRedMTL, for the DatalogMTL language with bounded intervals. The goal was to address the lack of support for efficient dynamic data updates in existing DatalogMTL reasoning approaches by building on the classical Delete/Rederive (DRed) algorithm.
- Designed a novel seminaïve evaluation operator and a revised period identification algorithm specifically for DatalogMTL to handle incremental updates. Implemented and tested the DRedMTL approach on several publicly available datasets.
- Experimental results demonstrated that DRedMTL consistently and significantly outperforms rematerialization from scratch, particularly for small updates, with speedups reaching over 120 times on certain benchmarks. This work provides the first incremental maintenance algorithm for DatalogMTL reasoning.

PROJECT EXPERIENCE

StrategyStorm: F1 Multi-Agent Simulation Platform, Team Leader   Feb 2025 - Apr 2025
- Built a multi-agent F1 race simulation platform using Unity and LLM to model collaborative decision-making. Developed decision system with agents' memory for race strategies (e.g., pit stops) using RAG and fine-tuned LLM; created Unity scenes, game UI, and visualization for agents' thoughts and behavior; deployed the project to a cloud server.
- This project achieved a top-tier award in a national-level competition.
- Tools Used: Python, Unity, Docker

INTERNSHIP EXPERIENCE

Shanghai Langsha Information Technology Co., Ltd., Test Analyst   2024.7 - 2024.9
- Conducted functional and performance testing for an e-commerce ERP system, including real-time monitoring of system. Applied Robot Framework for automated regression testing, used Python for report generation, and utilized JMeter for stress testing.
- Improved testing efficiency through automation; identified performance bottlenecks by database analysis.
- Tools Used: Python, MySQL, Java

SKILLS

Programming Languages: C++, Python, Java, SQL
Technologies: React, Spring Boot, Docker, MySQL

SOCIAL SERVICE AND EXTRACURRICULAR

Social Service: Provided interpretation for helicopter aerial photography in F1 Chinese GP and assisted in the TV broadcast area. Bridged communication between Chinese and international production teams.   Apr 2024
Extracurricular: Captain of the school Overwatch team; led the team to a top 3 national ranking.   Sep 2023