Yibo Wang

wangyibo321.github.io Wangyibo321 wangyibo2@stu.scu.edu.cn

Education

Sichuan University, College of Computer Science **Sept. 2021 - Jun. 2025**

B.Eng *in Computer Science (Yuzhang Honors Class, awarded for Top 3%)* *Sichuan, China*

- Major GPA: 3.85/4
- IELTS: 6.5
- Advisor: Prof. Mingjie Tang

Publications

GPTuner: A Manual-Reading Database Tuning System via GPT-Guided Bayesian Optimization

- Jiale Lao, **Yibo Wang**, Yufei Li, Jianping Wang, Yunjia Zhang, Zhiyuan Chen, Wanghu Chen, Mingjie Tang, Jianguo Wang
- Accepted by **VLDB** 2024

A Demonstration of GPTuner: A GPT-Based Manual-Reading Database Tuning System

- Jiale Lao, **Yibo Wang**, Yufei Li, Jianping Wang, Yunjia Zhang, Zhiyuan Chen, Wanghu Chen, Yuanchun Zhou, Mingjie Tang, Jianguo Wang
- Accepted by **SIGMOD** 2024

Research Experience

Automatic Optimization of Database with Large Language Model **Sept. 2023 – Feb. 2024**

Advisors: Prof. Jianguo Wang (Purdue); Prof. Mingjie Tang (SCU) ***Research Assistant***

- Designed and implemented GPTuner, a novel manual-reading database tuning system that automatically exploits domain knowledge to enhance the knob tuning process.
- Developed a LLM-based data pipeline, a prompt ensemble algorithm, a workload-aware and training-free knob selection strategy, and a Coarse-to-Fine Bayesian Optimization Framework.
- Evaluated GPTuner under different benchmarks, metrics and DBMS. It identifies better configurations **16x** faster and achieves **30%** performance improvement over the **best-performing** alternative.
- Outcomes: a research paper accepted by **VLDB 2024**.

LLM-Powered Interactive Tool to Explore and Exploit Domain Insights **Jan. 2024 – Jan. 2024**

Advisors: Prof. Jianguo Wang (Purdue); Prof. Mingjie Tang (SCU) ***Research Assistant***

- Engaged users to probe into the ingenious LLM-powered pipeline which refines and unifies heterogeneous knowledge to guide system optimization.
- Unleashed the potential of everyday users, enabling them to delve into the nuances of knob features and maximize the efficiency of their tailored DBMS seamlessly.
- Empowered DBAs to supercharge GPTuner with their priceless tuning expertise expressed in natural language and witness how it can be customized to the Coarse-to-Fine Optimization Framework.
- Outcomes: a demo paper accepted by **SIGMOD** 2024, and an open-source project with more than **3000 views, 200 clones and 50 stars** on GitHub.

Automatic Optimization for Stream Processing Systems **Aug. 2023 – Sept. 2023**

Advisors: Prof. Mingjie Tang (SCU); Dr. Xiaojun Zhan (AntGroup) ***Research Asistant***

- Collaborated with AntGroup to develop an automated optimization system for Flink, reducing resource consumption to cope with tight budget while maintaining SLA adherence.
- Proposed a rule-based method to get pod features based on the degree of parallelism of vertexes.
- Implemented an ML-based evaluator to estimate resource utilization of a pod given its features.

Services

Subreviewer of VLDB 2024 and ICDE 2024