Keming Li

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EDUCATION

PhD of Computer Science	Sept. 2023 – Now
University of California, Irvine (UCI), GPA: 3.88/4.0	Supervisor: Prof. Sharad Mehrotra
Master of Computer Science and Engineering	Aug. 2020 – June 2023
Southern University of Science and Technology (SUSTech), GPA: 3.32/	/4.0 Supervisor: Prof. Bo Tang
Bachelor of Computer Science and Engineering	Aug. 2016 – June 2020
Southern University of Science and Technology (SUSTech), GAP: 3.69,	/4.0 Supervisor: Prof. Bo Tang

RESEARCH INTEREST

Algorithms and systems for data processing, including spatial information retrieval, vector searching, and graph searching. Recently exploring systems for ML models and applying generative model on systems.

PUBLICATIONS

- Quantifying the Competitiveness of a Dataset in Relation to General Preferences. VLDBJ'23. Kyriakos Mouratidis, Keming Li, and Bo Tang.
- τ -LevelIndex: Towards Efficient Query Processing in Continuous Preference Space. In SIGMOD'22. Jiahao Zhang, Bo Tang, Man Lung Yiu, Xiao Yan, and Keming Li.
- Marrying Top-k with Skyline Oueries: Relaxing the Preference Input while Producing Output of Controllable Size. In SIGMOD'21. Kyriakos Mouratidis, Keming Li, and Bo Tang.

SKILLS

Programming Languages: mainly in C/C++ and Python, familiar with Java, Matlab, and SQL Languages: Mandarin (native), Cantonese (native), and English (fluent) Tools: Jetbrains (Clion, PyCharm, IntelliJ IDEA), Jupyter Notebooks, Git, and Linux

HONORS/AWARDS

- UCI Computer Science Department \$10000 Research Fellowship (2023-2024)
- SUSTech Excellent Graduate with a Postgraduate Degree (2023)
- SUSTech CSE Outstanding Academic Achievement Award for Undergraduates (2020)
- SUSTech CSE Outstanding Academic Achievement Award for Undergraduates (2020)
- SUSTech Zhiren College Outstanding Undergraduate Award (2020)
- Freshman Coding Award of Huawei Data Communication Product Line (2019)
- SUSTech Excellent Teaching Assistant Award (2018, 2019)
- University Merit Student Scholarship (2017, 2018, 2019)
- National Endeavor Scholarship (2017)

MISCELLANEOUS

System for ML inferences	First Author	Aug. 2024 – present
• Under certain amount of computation	resources, predicting ML inf	erence workloads and schedul-
ing inference jobs to reduce query lat	ency while avoiding starvation	on problem.

Access Control on RAG	Coauthor	Sept. 2	2024 – present
• Solving access control problems in Re	trieval-Augmented Generation	n for LLMs.	Target is to build
an efficient access control framework	for both graph-based and tree	e-based indi	ces in vectorDB.

Single View 3D Gaussian Splatting Coauthor Oct. 2024 – present

• Try to train a generative model completes the task such that given a single view/photo input, generate its 3D Gaussian Splatting structure. Challenge is about efficient pixel alignment, zero-shot learning, single view upsampling, pathological problem definition (e.g., given a frontal portrait of a person, how can we tell if the back of their head is round or flat), and etc. Possible solution could be GAN, preprocessing using diffusion model to generate multi-view images, and etc.

LLM pruning

The Course Project Author Apr. 2024 – June 2024

• I proposed using evolution strategy to prune LLMs' parameters for given sparsity level in structural/unstructured pruning, achieving 10-20% improvement on perplexity compared to SOTA.

Many queries subgraph matching

• Given a set of small query graphs, search them simultaneously on a dynamic data graph. Key idea is to merge partial searching of similar query graphs. Submitted to SIGMOD'25.

Coauthor

Efficient ORU Top-k retrievalCoauthorOct. 2023 – Sept. 2024

• Basic on the computation geometric nature in spatial data, we proposed an exact order-insensitive ORU Top-*k* retrieval algorithm and an approximate one, which both achieving several degree efficiency improvement compared to SOTA. Submitted to TODS.

SUSTech Thesis LaTeX Template Initiator and Maintainer Sept. 2021 – present

• This project provides official LaTeX thesis template for bachelor, master, and Ph.D students. https://github.com/SUSTech-CRA/sustech-master-thesis

Mentor of projects

Mentor

Sept. 2021 – present

Apr. 2023 – Oct. 2024

- I co-supervised a undergrad named <u>Lan Lu</u> on her thesis on subgraph matching, who won Best 10 Graduates (2020) in SUSTech and became a Ph.D. student in University of Pennsylvania.
- I co-supervised a undergrad named <u>Wendi Zhou</u> on her thesis on defining self-driving complexity, who became a master's student in New York University.
- Mentoring two undergrads in UCI working on trajectory prediction problem. Building a benchmark for different type of ML models (RNNs, transformers, generative models, and etc.) using a huge IoT dataset in UCI.

UCI/SUSTech CS Courses Teaching Assistant March 2018 – present

• Assisted in over 6 CS core courses including Computer Programming Fundamentals, C/C++ Programming, Data Structures and Algorithms, Operating System, Database, Discrete Math.