Chenghao Mo

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Objective

I am a Master of Science in Computer Science (MSCS) student specializing in Machine Learning (ML) and Systems. My research interests focus on developing scalable ML systems for big data, optimizing ML algorithms for distributed computing, and exploring ML applications in high-performance computing. With a strong foundation in CS principles, ML techniques, and systems design, as well as proficiency in Python and data analysis tools, I am eager to contribute to cutting-edge research that advances the integration of ML and systems architecture.

Education

UNIVERSITY OF ILLINOIS URBANA - CHAMPAIGN, IL, USA 2024.8 – Present

Master of Science in Computer Science

UNIVERSITY OF ILLINOIS URBANA - CHAMPAIGN, IL, USA 2020.8 – 2024.5

Bachelor of Science in Computer Engineering
GPA: 3.92/4.00

ZHEJIANG UNIVERSITY, Zhejiang, China 2020.9 – 2024.6

Bachelor of Engineering in Electronic and Computer Engineering
GPA: 3.98/4.00

- Dual Degree Program in partnership with University of Illinois Urbana - Champaign

Research Experience

Optimizing Query Efficiency in Unstructured Data Analysis with Machine Learning
AIDB Project *Supervised by* ***Professor Daniel Kang, Data and Information System****, UIUC* Since 2023.5

- **Innovative Query Optimization Techniques**: Developed an optimized batched method for query caching, integrated Approximate Selection with Guarantees using Proxies algorithm (SUPG), and designed a specialized estimator for approximate aggregation.
- **Rigorous Evaluation and Benchmarking**: Established custom datasets and a comprehensive framework for evaluating the AIDB engine's efficiency and accuracy in querying semantically rich unstructured data.
- **Data Analysis and Visualization**: Implemented advanced data visualization techniques to represent complex query results and performance metrics, enhancing data interpretability.

Publication

- Tengjun Jin, Akash Mittal, **Chenghao Mo**, Jiahao Fang, Chengsong Zhang, Timothy Dai, Daniel Kang. "AIDB: a Sparsely Materialized Database for Queries using Machine Learning."
  DEEM '24: Proceedings of the Eighth Workshop on Data Management for End-to-End Machine Learning, Pages 23–28.
  DOI: 10.1145/3650203.3663329

Course Project

CS 411 Database Systems Fall 2022

- Developed a full-stack web application with ReactJS frontend and GCP-connected backend database.
- Implemented data visualization features for complex datasets.
- Designed efficient database queries for handling large volumes of user data.
- Integrated advanced search functionality, demonstrating skills in data filtering and segmentation.
- Ensured data security and privacy compliance, crucial for handling sensitive information.

ECE 385 Digital Systems Laboratory Spring 2023

- Developed an FPGA game inspired by mechanics of Celeste using SystemVerilog, the game incorporates C code for keyboard interactions and VGA monitor display via the NIOS-II processor.
- The game is a 2D platformer emphasizing advanced physics like gravity and collisions, detailed animations of walking, jumping, dashing and hairstyles changes when moving.

Honors and Awards

- Zhejiang University Outstanding Graduate, Spring 2024
- Dean's List for Academic Excellence at UIUC, Spring 2023
- Zhejiang University Scholarship - Third Prize, 2022
- Bronze Prize in the 15th "Dandelion" University Student Entrepreneurship Competition at Zhejiang University, Spring 2023
- Zhejiang University Scholarship - Third Prize, 2021
- Honorable Prize at The Mathematical Contest in Modeling, Winter 2021

Skills

- Programming Languages: C/C++, Python, CUDA, MySQL, MongoDB, Neo4j, Golang, SystemVerilog
- Framework: Pytorch, Flask, React.js, gin
- Softwares: Git, PyCharm, Docker, MATLAB, Quartus, COMSOL