

# CHENGHAO MO

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## EDUCATION

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**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

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### 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

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- 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

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**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

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- 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

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