Enhao Zhang

thang-eh.github.io

 \boxtimes enhaoz@cs.washington.edu

 \mathbf{a} (734)882-8895

Education

• University of Washington

Seattle, WA

 $Ph.D\ in\ Computer\ Science$

Sept. 2020 - Present

o Advisors: Prof. Magdalena Balazinska and Prof. Ranjay Krishna

• University of Michigan

Ann Arbor, MI

 $Bachelor\ of\ Science\ Engineering\ in\ Computer\ Science$

Sept. 2018 - Apr. 2020

 \circ Overall GPA: 4.00/4.00

o Advisors: Prof. Nikola Banovic and Prof. Michael Cafarella

• Shanghai Jiao Tong University

Shanghai, China

Bachelor of Science in Electrical and Computer Engineering

• Overall GPA: 3.97/4.00 (Ranking: $1^{st}/202$)

Sept. 2015 - Aug. 2020

Publications

• Optimizing Sequential Multi-Step Tasks with Parallel LLM Agents. **Enhao Zhang**, Erkang Zhu, Gagan Bansal, Adam Fourney, Hussein Mozannar, Jack Gerrits. MAS@ICML 2025. [Paper][Code]

- Self-Enhancing Video Data Management System for Compositional Events with Large Language Model. **Enhao Zhang**, Nicole Sullivan, Brandon Haynes, Ranjay Krishna, Magdalena Balazinska. SIGMOD 2025. [Paper][Code]
- Bootstrapping Compositional Video Query Synthesis with Natural Language and Previous Queries from Users. Manasi Ganti, Enhao Zhang, Magdalena Balazinska. HILDA@SIGMOD 2025. [Paper]
- VOCALExplore: Pay-as-You-Go Video Data Exploration and Model Building. Maureen Daum, **Enhao Zhang**, Dong He, Stephen Mussmann, Brandon Haynes, Ranjay Krishna, Magdalena Balazinska. VLDB 2024. [Paper][Code]
- EQUI-VOCAL: Synthesizing Queries for Compositional Video Events from Limited User Interactions. Enhao Zhang, Maureen Daum, Dong He, Brandon Haynes, Ranjay Krishna, Magdalena Balazinska. VLDB 2023. [Paper][Code]
- EQUI-VOCAL Demonstration: Synthesizing Video Queries from User Interactions. **Enhao Zhang**, Maureen Daum, Dong He, Manasi Ganti, Brandon Haynes, Ranjay Krishna, Magdalena Balazinska. VLDB 2023 Demo. [Paper]
- VOCAL: Video Organization and Interactive Compositional AnaLytics. Maureen Daum*, Enhao Zhang*, Dong He,
 Magdalena Balazinska, Brandon Haynes, Ranjay Krishna, Apryle Craig, Aaron Wirsing. CIDR 2022. (* indicates equal contributions) [Paper]
- Method for Exploring Generative Adversarial Networks (GANs) via Automatically Generated Image Galleries. **Enhao Zhang**, Nikola Banovic. CHI 2021. [Paper][Website]

Honors and Awards

- Madrona Prize (Recognizing the most commercializable research project) (Link), Paul G. Allen School of Computer Science & Engineering, UW, 2022
- Cheng Family Scholarship, Joint Institute, Shanghai Jiao Tong University, 2018
- Interdisciplinary Contest in Modeling, Honorable Mention, 2017
- Distinguished Academic Achievement Award (Academic performance in the top 2% of class), Joint Institute, Shanghai Jiao Tong University, 2016
- Undergraduate National Scholarship (Top 7 students in Joint Institute), Ministry of Education of People's Republic of China, 2016

Research and Work Experience

• University of Washington

Seattle, WA

Research assistant | Advisors: Prof. Magdalena Balazinska, Prof. Ranjay Krishna

Sept. 2020 - Present

- VOCAL-UDF: Built a self-enhancing system enabling compositional video queries without the need for predefined
 modules. Leveraged large language models (LLMs) with a unified data model to construct missing modules as
 user-defined functions (UDFs), generated both Python programs and distilled models to handle diverse visual concepts,
 utilized active learning to select optimal implementations, and proposed techniques to enhance LLM reliability.
- **EQUI-VOCAL**: Designed a novel system to automatically synthesize queries over videos from limited user interactions to find complex events. Introduced an expressive data model and a query language based on spatio-temporal scene graphs, employed beam search and active learning to efficiently synthesize user's intended queries from examples, and implemented a set of optimizations to reduce computational effort.
- **VOCALExplore**: Developed an interactive system that supports users in building domain-specific models over videos, with a dynamic sampling strategy to maximize model quality, a rising bandit algorithm to select optimal video features for model training, and a task scheduler to ensure low user-visible latency.

• Microsoft Research

Redmond, WA

Research intern, AI Frontiers Team | Mentor: Erkang (Eric) Zhu

Jun. 2024 - Sept. 2024

• Optimized LLM-based multi-agent systems for sequential multi-step tasks via parallel agents. Showed that parallel agents with early termination reduces latency and parallel agents with aggregation improves task completion rates.

Snowflake

San Mateo, CA

PhD software engineer intern, SQL Query Language Team | Mentor: Dmitry Lychagin

Jun. 2023 - Sept. 2023

• Developed end-to-end solutions of null handling improvements for SQL functions and operators in Java and C++.

• University of Michigan

Ann Arbor, MI

Research intern | Advisor: Prof. Nikola Banovic

Sept. 2019 - Sept. 2020

• GAN Explorer: Designed an interactive tool for Generative Adversarial Network (GAN) exploration and evaluation, where users can assess capabilities and limitations of a GAN via interactive visual examination. Used a Markov Chain Monte Carlo (MCMC) method for automated image gallery generation, which enabled quick creation of many diverse, photo-realistic image galleries to support qualitative evaluation of GANs.

Mentoring Experience

- Undergraduate students: Manasi Ganti, Brian Yao, Chongjiu Gao, Lyons (Daoyi) Lu, Yichi Zhang
- High school students: Anish Chaudhuri, Parie Kumar

Professional Service

- Reviewer CHI 2022, CSCW 2022, MAS@ICML 2025
- Session host CS Education Week, University of Washington

Tutoring Experience

• TA, CSE 444: Database Systems Internals, University of Washington

Winter 2023, 2025

• TA, VY200: Academic Writing II, Shanghai Jiao Tong University

Spring 2017

• TA, VY100: Academic Writing I, Shanghai Jiao Tong University

Fall 2016

Skills

- Programming Languages: Python, C/C++, Java, SQL, JavaScript, HTML
- Frameworks & Libraries: PyTorch, scikit-learn, pandas, Django, PyTorch Lightning, PEFT, NVIDIA DALI
- Other Tools: PostgreSQL, DuckDB, Hugging Face, AWS, Docker, Git, LATEX, Slurm