

# Enhao Zhang

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## Education

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- **University of Washington** Seattle, WA  
*Ph.D in Computer Science* *Sept. 2020 – Present*
  - Advisor: Prof. [Magdalena Balazinska](#)
- **University of Michigan** Ann Arbor, MI  
*Bachelor of Science Engineering in Computer Science* *Sept. 2018 – Apr. 2020*
  - Overall GPA: 4.00/4.00
  - Advisors: Prof. [Nikola Banovic](#) and Prof. [Michael Cafarella](#)
- **Shanghai Jiao Tong University** Shanghai, China  
*Bachelor of Science in Electrical and Computer Engineering* *Sept. 2015 – Aug. 2020*
  - Overall GPA: 3.97/4.00 (Ranking: 1<sup>st</sup>/202)

## Academic Publications

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- VOCALExplore: Pay-as-You-Go Video Data Exploration and Model Building. Maureen Daum, **Enhao Zhang**, Dong He, Stephen Musmann, 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

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- **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

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- **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, and incorporated user feedback through active learning to select optimal implementations.
  - **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 application 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 | Mentor: Erkang (Eric) Zhu* *Jun. 2024 - Sept. 2024*
  - Optimized multi-agent systems for sequential multi-step tasks via parallel sampling. Showed that parallel sampling with early termination reduces latency and parallel sampling with aggregation improves 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.
- **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

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- **Current undergrad student:** Manasi Ganti
- **Past undergrad students:** Brian Yao, Chongjiu Gao, Lyons (Daoyi) Lu, Yichi Zhang
- **Past high school students:** Anish Chaudhuri, Parie Kumar

## Professional Service

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- **Reviewer** – CHI 2022, CSCW 2022
- **Session host** – CS Education Week, University of Washington

## Tutoring Experience

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- **TA, CSE 444: Database Systems Internals**, University of Washington *Winter 2023*
- **TA, VY200: Academic Writing II**, Shanghai Jiao Tong University *Spring 2017*
- **TA, VY100: Academic Writing I**, Shanghai Jiao Tong University *Fall 2016*

## Skills

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- **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, L<sup>A</sup>T<sub>E</sub>X, Slurm