

# Enhao Zhang

🌐 zhang-eh.github.io

✉ enhaoz@cs.washington.edu

☎ (734)882-8895

## Research Interests

---

Databases, Data Management for Unstructured Data, Human-Computer Interaction

## Education

---

- **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

---

- 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** ([🔗 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 | Advisor: Prof. Magdalena Balazinska* *Sept. 2020 – Present*
  - **VOCAL-UDF**: Built a self-enhancing system enabling compositional video queries without the need for predefined modules. Formulated a unified data scheme to construct missing modules as user-defined functions (UDFs), automatically identified and generated new UDFs to handle diverse visual concepts, and incorporated user feedback 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 scheme 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 efficiently exploring and analyzing video data, by avoiding expensive preprocessing, dynamically selecting the best data sampling strategy and feature extractor for each dataset, and ensuring low user-visible latency via a task scheduler.
- **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.

## Mentoring Experience

---

- **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

---

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

## Tutoring Experience

---

- **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

---

- **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