Yiheng Su

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EDUCATION

University of Wisconsin-Madison **Aug. 2024 – Present**
Ph.D. in Computer Science **GPA: 3.86/4.00**

Colby College, Waterville, ME **Sep. 2020 – May 2024**
Bachelor of Arts in Computer Science and Mathematics **GPA: 4.00/4.00**
Honors: Marston Morse Prize in Mathematics, Dean's List (Spring 2022, Fall 2022, Fall 2023, Spring 2024)

SKILLS & INTERESTS

- Languages: [advanced proficiency] Python, Java, R, MATLAB; [proficiency] C#, C++, JavaScript.
- Tools & Frameworks: NumPy, pandas, scikit-learn, TensorFlow, SQL, GitHub, LaTeX.

PROFESSIONAL EXPERIENCE

Research Assistant, *Alfréd Rényi Institute of Mathematics*, Budapest, Hungary **Feb. 2023 – Aug. 2024**
Project GitHub Link: Machine Learning on Unit Distance Graphs | *Python*
Preprint Link: Diverse Beam Search to Find Densest-Known Planar Unit Distance Graphs

- Conducted research on unit distance graphs, using tree and beam search algorithms to construct graph datasets.
- Optimized algorithm performance with multiprocessor and GPU techniques to handle complex graph structures.
- Created an open-source database of 60M+ unit distance graphs at the time of publication.

National Science Foundation REU Researcher, *University of Connecticut*, Storrs **May. 2023 – Aug. 2023**
Project: Laplacian Eigenmaps and Eigencoordinates | *Python, MATLAB, Mathematica*
Preprint Link: Convergence, Optimization and Stabilization of Laplacian Eigenmaps

- Researched on Laplacian eigenmaps, a nonlinear dimensionality reduction method, and exploring its applications.
- Investigated the relationship between different eigenvectors using Monte Carlo simulation.
- Employed Python and Mathematica to generate diverse plots and experiment with different parameter values.

Research Assistant, *Computer Science Department, Colby College*, Waterville, Maine **May 2022 – Apr. 2023**
Project: Human-Robot Interaction Research | *C++, Python*
Publication Link: Dimensional Design of Emotive Sounds for Robots, HRI 2024

- Implemented a vision processor, non-linguistic utterances sound player, and movements on a DARwIn-OP robot.
- Conducted user studies and designed surveys to gather insights on human-robot interaction.
- Analyzed both qualitative and quantitative survey data to evaluate sounds, identify patterns and improve design.

Database Engineer, *Bigelow Laboratory for Ocean Sciences*, Boothbay, Maine **Dec. 2022 – Feb. 2023**
USDA-funded Database Engineering Project | *Python, MySQL*

- Engineered a scalable database system to manage and analyze diverse datasets for Coast-Cow-Consumers project.
- Designed efficient data pipelines ensuring data accuracy and accessibility and efficient data management.
- Collaborated with a multidisciplinary team to integrate diverse data sources and optimize data pipelines.

SELECTED PROJECTS

Disneyland Magic Kingdom Itinerary Optimization Tools **Oct. 2024 – Dec. 2024**
Project GitHub Link | *Python, GAMSpy, Gurobi, Folium*

- Built optimization models using GAMSpy and Gurobi to plan efficient one-day itineraries for Disneyland.
- Designed schedules balancing travel and wait times, achieving a comprehensive and enjoyable park experience.
- Reduced play time, minimized travel time, and maximized attractions visited through mixed integer programming.

Browntail Moth Infestation Analysis and Prediction, *Davis AI / Dataiku Datathon* **Sep. 2022**
Project GitHub Link | *Dataiku, Python*

- Developed predictive models using random forest and logistic regression to address caterpillar infestation.
- Conducted geospatial clustering and analysis to inform actionable solutions for public works initiatives.
- Presented insights and recommendations to technical and non-technical audiences, receiving the award.