

# Yiheng Su

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## EDUCATION

### University of Wisconsin-Madison

*Ph.D. in Computer Science*

Madison, WI

Aug. 2024 – Present

### Colby College

*Bachelor of Arts in Computer Science and Mathematics, GPA: 4.0, Phi Beta Kappa*

Waterville, ME

Sep. 2020 – May 2024

- Honors: *The Marston Morse Prize in Mathematics, Dean's List (Fall '21, '22, '23, Spring '22, '24).*

## SKILLS & INTERESTS

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

## PROFESSIONAL EXPERIENCE

### Alfréd Rényi Institute of Mathematics

*AI Research Assistant*

Budapest, Hungary

Feb. 2023 – Dec. 2023

- Researched on using AI to optimize the maximum number of edges in unit distance graphs with up to 100 vertices.
- Implemented a tree search and a beam search algorithm in Python using NumPy to find candidate graphs.
- Used multiprocessing and Numba in Python to optimize the efficiency of the search algorithms.
- ☆ Publication: Diverse beam search to find densest-known planar unit distance graphs, [arXiv](#).

### Department of Mathematics, University of Connecticut

*National Science Foundation REU Researcher*

Storrs, CT

May 2023 – Aug. 2023

- Researched on Laplacian eigenmaps, a nonlinear dimensionality reduction method, and exploring its applications.
- Investigated the relationship between different eigenvectors and analyzing the patterns using Mathematica.
- Employed NumPy and Matplotlib to generate diverse plots and experiment with different parameter values.
- Used Python and MATLAB to run Monte Carlo simulations of eigencoordinates on fractals.
- ☆ Publication: Convergence, Optimization and Stabilization of Laplacian Eigenmaps, [arXiv](#).

### Interactive Media Lab, Colby College

*Human-Robot Interaction Research Assistant*

Waterville, ME

May 2022 – Apr. 2023

- Implemented a vision processor and movements on a DARwIn-OP robot in C++.
- Designed a non-linguistic utterance sound player in Python using music21.
- Analyzed experimental data to explore the correlation between non-linguistic utterances and emotions using pandas.
- ☆ Publication: Dimensional Design of Emotive Sounds for Robots, HRI 2024, [full article](#).

## PROJECTS & COMPETITIONS

### Data Engineer, Bigelow Laboratory for Ocean Sciences,

*Database Engineering Project / Python, MySQL*

Boothbay, ME

Dec. 2022 – Feb. 2023

- Contributed to \$10 million U.S. Department of Agriculture grant recipient project, Coast-Cow-Consumers.
- Collaborated with a multidisciplinary team to integrate diverse data sources and optimize data pipelines.
- Utilized Python and MySQL to design and build the database.

### Full Stack Developer, Computer Visualizations of the Snake Game on a Hyperbolic Plane

[Project and Paper](#) | JavaScript

Oct. 2022 – Dec. 2023

- Developed a computer visualization to show snake's movements in the disk model of the hyperbolic plane.
- Gained proficiency in the Hyperbolic Canvas JavaScript library to visualize some surfaces in the hyperbolic plane.
- Designed and implemented the visualization using HTML.

### Team Leader, Davis AI / Dataiku Datathon, awarded ~Best Usage of Dataiku Award~

[Project and Presentation](#) / Dataiku, Python

Sep. 2022

- Conducted an analysis of the Browntail Moth Caterpillar infestation situation in Waterville on distribution pattern.
- Designed models for classifying the infestation situation using random forest and logistic regression on Dataiku.