Yiheng Su

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EDUCATION

University of Wisconsin-Madison   Madison, WI
M.S./Ph.D. in Computer Science   Aug. 2024 – Present

Colby College   Waterville, ME
Bachelor of Arts in Mathematics and Computer Science, GPA: 4.0, Phi Beta Kappa   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   Budapest, Hungary
AI Research Assistant   Feb. 2023 – Dec. 2023
- Researched on using AI to optimize the maximum number of edges in unit distance graphs with up to 100 vertices.
- Developed tree search and beam search algorithms in Python using NumPy to construct a graph dataset.
- 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   Storrs, CT
National Science Foundation REU Researcher   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 Montel Carlo simulations of eigencoordinates on fractals.
- ☆ Publication: Convergence, Optimization and Stabilization of Laplacian Eigenmaps, arXiv.

Interactive Media Lab, Colby College   Waterville, ME
Human-Robot Interaction Research Assistant   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,*   Boothbay, ME
Database Engineering Project / *Python, MySQL*   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.