Jesse He

Curriculum Vitae

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Education

Halıcıoğlu Data Science Institute, UC San Diego, San Diego, California
PhD Student, Advised by Profs. Yusu Wang, Gal Mishne

The Ohio State University, Columbus, OH
Bachelor of Science in Mathematics (Honors), *magna cum laude* May 2022
Bachelor of Arts in Computer and Information Science, *magna cum laude* May 2022

Research Interests

My research interests lie in the intersection of interpretable machine learning and geometric data analysis. In particular, I am interested in explainability methods for graph neural networks and interpretable manifold learning.

Publications

Dhruv Kohli, **Jesse He**, Chester Holtz, Gal Mishne, and Alexander Cloninger. *Robust estimation of boundary using doubly stochastic scaling of Gaussian kernel*. 2024. arXiv: 2411.18942 [math.ST]. URL: https://arxiv.org/abs/2411.18942.

Jesse He, Helen Jenne, Herman Chau, Davis Brown, Mark Raugas, Sara Billey, and Henry Kvinge. *Machines and Mathematical Mutations: Using GNNs to Characterize Quiver Mutation Classes*. Extended abstract in the 4th Workshop on Mathematical Reasoning and AI at NeurIPS'24. 2024. arXiv: 2411.07467 [cs.LG]. URL: https://arxiv.org/abs/2411.07467.

Herman Chau, Helen Jenne, Davis Brown, **Jesse He**, Mark Raugas, Sara C. Billey, and Henry Kvinge. "Machine Learning meets Algebraic Combinatorics: A Suite of Datasets to Accelerate AI for Mathematics Research". In: *The 4th Workshop on Mathematical Reasoning and AI at NeurIPS'24*. 2024. URL: https://openreview.net/forum?id=KQ1gI5qzAf.

Jesse He, Tristan Brugère, and Gal Mishne. "Product Manifold Learning with Independent Coordinate Selection". In: *Proceedings of 2nd Annual Workshop on Topology, Algebra, and Geometry in Machine Learning (TAG-ML)*. Ed. by Timothy Doster, Tegan Emerson, Henry Kvinge, Nina Miolane, Mathilde Papillon, Bastian Rieck, and Sophia Sanborn. Vol. 221. Proceedings of Machine Learning Research. PMLR, 2023, pp. 267–277. URL: https://proceedings.mlr.press/v221/he23a.html.

Employment

Research

SU2024 **National Security Internship, AI and Data Analytics**, *Pacific Northwest National Laboratory*, Richland, WA (online)
Supervised by Dr. Henry Kvinge

SU2021 **Emerging Issues in Cybersecurity REU**, *New Mexico Tech*, Sorocco, NM (online)
Supervised by Prof. Subhasish Mazumdar

Teaching

Graduate Teaching Assistant, *UC San Diego, Halıcıoğlu Data Science Institute*

WI 2024 DSC 206: Algorithms for Data Science

Undergraduate Grader, *The Ohio State University Department of Mathematics*

SP2022 Math 3345H: Honors Foundations of Higher Mathematics

SP2022 Math 5591H/5112: Honors Abstract Algebra II

AU2021 Math 5590H/5111: Honors Abstract Algebra I

Undergraduate Grader, *The Ohio State University Department of Computer Science and Engineering*

AU2020-SP2021 CSE 3521: Survey of Artificial Intelligence I

AU2019 CSE 2221: Software Components

Digital Sandbox Project Group Instructor, *The Ohio State University Media, Marketing, and Communications Scholars*

SP2020 Introduction to LaTeX

Awards

Qualcomm Innovation Fellowship 2024 Winner

Skills

Programming Python, Matlab, R, C, C++, C#, Java

Other Git, LaTeX, Max/MSP/Jitter, Cockos REAPER

Languages

Mandarin Conversational Japanese Basic Spanish Basic