Jesse He
Curriculum Vitae

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Education

Halıcıoğlu Data Science Institute, UC San Diego, San Diego, California
PhD Student, Advised by 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

D. Kohli, **J. He**, C. Holtz, G. Mishne, and A. Cloninger, *Robust estimation of boundary using doubly stochastic scaling of Gaussian kernel*, Preprint, 2024. arXiv: `2411.18942` `[math.ST]`.

J. He, H. Jenne, H. Chau, D. Brown, M. Raugas, S. Billey, and H. Kvinge, *Machines and mathematical mutations: Using GNNs to characterize quiver mutation classes*, Preprint. Accepted to ICML 2025. arXiv: `2411.07467` `[cs.LG]`.

H. Chau, H. Jenne, D. Brown, **J. He**, M. Raugas, S. Billey, and H. Kvinge, *Machine learning meets algebraic combinatorics: A suite of datasets capturing research-level conjecturing ability in pure mathematics*, Preprint. Accepted to ICML 2025 (Spotlight). arXiv: `2503.06366` `[cs.LG]`.

J. He, T. Brugère, and G. Mishne, "Product manifold learning with independent coordinate selection," in *Proceedings of 2nd Annual Workshop on Topology, Algebra, and Geometry in Machine Learning (TAG-ML)*, 2023. Available: `https://proceedings.mlr.press/v221/he23a.html`.

Employment

Research

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

SU2021 **Emerging Issues in Cybersecurity REU**, *New Mexico Tech*, Sorocco, NM (remote)
Supervised by 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