

# Jesse He

## Curriculum Vitae

HDSI 432, 3234 Matthews Lane  
La Jolla, CA, 92093  
☎ (419) 378-5584  
✉ jeh020@ucsd.edu  
✉ jessehe.inbox@gmail.com  
🌐 he-jesse.github.io

### Education

**Halicioğlu 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*. Preprint. 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*. Preprint. 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 Billey, and Henry Kvinge. *Machine Learning meets Algebraic Combinatorics: A Suite of Datasets Capturing Research-level Conjecturing Ability in Pure Mathematics*. Preprint. Extended abstract in the 4th Workshop on Mathematical Reasoning and AI at NeurIPS'24. 2025. arXiv: 2503.06366 [cs.LG]. URL: <https://arxiv.org/abs/2503.06366>.

**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 (remote)

Supervised by Dr. Henry Kvinge

SU2021 **Emerging Issues in Cybersecurity REU**, New Mexico Tech, Socorro, NM (remote)

Supervised by Prof. Subhasish Mazumdar

#### Teaching

**Graduate Teaching Assistant**, UC San Diego, Halicioğlu 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 L<sup>A</sup>T<sub>E</sub>X

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## Awards

Qualcomm Innovation Fellowship 2024 Winner

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## Skills

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

Other Git, L<sup>A</sup>T<sub>E</sub>X, Max/MSP/Jitter, Cockos REAPER

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## Languages

Mandarin Conversational

Japanese Basic

Spanish Basic