

Joseph Dehoney

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Education

Stanford University

Stanford, CA

M.S. in Computer Science

Sep 2024 – Jun 2026 (exp.)

- GPA: 4.0

Oregon State University

Corvallis, OR

B.S. in Computer Science

Jan 2022 – Jun 2023

- GPA: 4.0; *Summa Cum Laude*, Dean's List, Honor Roll, Engineering Scholarship.

University of California, San Diego

San Diego, CA

B.A. in International Business; Minor in History

Sep 2015 – Jun 2019

- GPA: 3.9 (Major), 3.2 (Cumulative); Provost Honors.

Work Experience

Quantum Information and Computing Group, Stanford University

Stanford, CA

Graduate Research Assistant

May 2025 – Curr.

- Investigated QCMA containment for the Kronecker coefficient positivity problem; as part of this work, extended a known hardness result for certain 2-point correlation functions to the 3-point setting.
- Developed a SageMath toolkit to compute Kronecker coefficients and related representation-theoretic data, enabling systematic testing of candidate witnesses and conjectures across different bases.

Pediatric Vascular Lab, Stanford University

Stanford, CA

Graduate Research Assistant

Jun 2025 – Curr.

- Built unit-tested Python pipelines for multimodal Fontan data (CPET, endothelial function, DEXA ALMI z , PedsQL, REDCap), standardizing scoring, de-identification, and cohort curation.
- Assisted manuscript writing by translating pipelines and analysis metrics into clear methods/results text and publication-ready figures.

Computational Neuroscience Laboratory, Stanford University

Stanford, CA

Graduate Research Assistant

Sep 2024 – Curr.

Research Data Analyst

May 2022 – Sep 2024

- Led multi-site harmonization for national, multimodal datasets (MRI, cognitive, clinical) with continuous, event-driven ingestion and rolling validation via APIs and site uploads.
- Cut QC resolution time by ~80% via CI validators (pytest; schema/consistency) that prevent errors from entering the pipeline.
- Lowered the open-issue backlog by ~30% with GitHub Actions that trigger Python services to reproduce errors, apply fixes, open PRs, and auto-close resolved items.
- Delivered annual public releases as reproducible builds (Docker/Singularity on Slurm and AWS) across ~1 PB of data using release manifests and input-output lineage to guarantee exact rollback, and auditability.
- Presented to NIH and consortium stakeholders on study schema, variable catalog, and release changes.
- Trained staff on workflows and study structure; authored SOPs that standardized processes.

CoolWine

Santa Rosa, CA

Product Manager

Jul 2019 – Apr 2021

- Assisted in design, fabrication, and deployment of industrial beverage facility coolant systems.

Permanent Value Inc.

San Diego, CA

Team Lead

Jul 2016 – May 2018

- Managed 60 client investment portfolios totaling over \$15M in assets.

Publications

- [1] M. Lui, L. Palaniappan, M. Leonard, J. Long, J. **Dehoney**, J. P. Cooke, I. Olson, T. R. Damase, S. Chen, J. Myers, D. Bernstein, and S. Tierney, “Exercise capacity, endothelial function, muscle mass, and strength in pediatric patients with fontan circulation,” *CJC Pediatric and Congenital Heart Disease*, 2025, ISSN: 2772-8129. DOI: <https://doi.org/10.1016/j.cjcpc.2025.10.010>.
- [2] A. M. Morales, S. A. Jones, B. Carlson, D. Klamovich, J. **Dehoney**, B. L. Simpson, K. A. Dominguez-Savage, K. O. Hernandez, D. A. Lopez, F. C. Baker, D. B. Clark, D. B. Goldston, B. Luna, K. B. Nooner, E. M. Muller-Oehring, S. F. Tapert, W. K. Thompson, and B. J. Nagel, “Associations between mesolimbic connectivity, and alcohol use from adolescence to adulthood,” *Developmental Cognitive Neuroscience*, vol. 70, 101478, 2024, ISSN: 1878-9293. DOI: <https://doi.org/10.1016/j.dcn.2024.101478>.
- [3] Q. Zhao, M. Paschali, J. **Dehoney**, F. C. Baker, M. de Zambotti, M. D. De Bellis, D. B. Goldston, K. B. Nooner, D. B. Clark, B. Luna, B. J. Nagel, S. A. Brown, S. F. Tapert, S. Eberson, W. K. Thompson, A. Pfefferbaum, E. V. Sullivan, and K. M. Pohl, “Identifying high school risk factors that forecast heavy drinking onset in understudied young adults,” *Developmental Cognitive Neuroscience*, vol. 68, 101413, 2024, ISSN: 1878-9293. DOI: <https://doi.org/10.1016/j.dcn.2024.101413>.
- [4] L. Kupis, Z. T. Goodman, S. Kornfeld, S. Hoang, C. Romero, B. Dirks, J. **Dehoney**, C. Chang, R. N. Spreng, J. S. Nomi, and L. Q. Uddin, “Brain dynamics underlying cognitive flexibility across the lifespan,” *Cerebral Cortex*, vol. 31, no. 11, 5263–5274, 2021. DOI: [10.1093/cercor/bhab156](https://doi.org/10.1093/cercor/bhab156).

Ongoing Projects

- [5] J. **Dehoney**, T. Kohler, and A. Bouland, “Towards qcma containment for kronecker coefficient positivity,” In preparation, 2025.

Graduate Projects & Presentations

Learning Quantum Gibbs States Locally & Efficiently [Report] Spring 2025

- Established when local Hamiltonian learning from thermal data is identifiable by linking a Gibbs-state inner product to exponential clustering and Lieb–Robinson locality at finite temperature.
- Analyzed sample/time complexity against classical Markov random field learning, reproducing variance bounds and delineating failure regimes driven by operator spreading and low-temperature effects.

Quantum Optimization of MIS with Rydberg Atom Arrays [Slides] Spring 2025

- Demonstrated how Max Independent Set on unit-disk graphs can be encoded in Rydberg arrays and implemented two variational schemes: shallow-depth QAOA and a piecewise-linear detuning-sweep VQAA.
- Evaluated both methods against simulated annealing (SA) using a tensor-network–based hardness score, showing that VQAA outperforms SA on harder graphs with gains correlated to larger spectral gaps.

Scaling PyG: Taming Massive Graphs [Article] [Colab] Fall 2025

- Enabled memory-safe GNN training on commodity GPUs by using neighbor/hierarchical sampling and distributed loaders in PyG.
- Assessed accuracy–time–memory trade-offs on public datasets and released a minimal, reproducible template with documented throughput metrics and an accompanying tutorial.

Technical Skills

Languages: Python, Bash, C++, SQL

Libraries: pandas, NumPy, SciPy, scikit-learn, PyTorch, PyG, TensorFlow, Matplotlib, Plotly

Quantum: Qiskit (Aer/Transpiler/Pulse), Cirq, QuTiP, Stim, Mitiq, pyGSTi, TKET

Tools: Airflow, Apptainer, AWS, CUDA, Docker, Git, Linux, OpenCL, OpenMP, REDCap, Slurm, XNAT