

JACOB HELWIG

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Education

Texas A&M University, College Station, TX

August 2021-May 2026

- Ph.D. candidate, Computer Science
- Advised by Dr. Shuiwang Ji

GPA: 3.75 (24 hours)

The University of Texas at Austin, Austin, TX

August 2016-May 2021

- Bachelor of Science, Mathematics
- Certificates in Elements of Computing (3.67 GPA/18 hours), Scientific Computing (3.83 GPA/18 Hours), and Applied Statistical Modeling (3.95 GPA, 18 Hours)

Upper Division GPA: 3.74 (73 Hours)

Research

*=Equal Contribution

Equivariance via Minimal Frame Averaging for More Symmetries and Efficiency, *Yuchao Lin, Jacob Helwig, Shurui Gui, Shuiwang Ji* ([paper](#))

- 2024 International Conference on Machine Learning (**spotlight poster**)

Artificial Intelligence for Science in Quantum, Atomistic, and Continuum Systems, *Xuan Zhang*, Limei Wang*, Jacob Helwig*, Youzhi Luo*, Cong Fu*, Yaochen Xie*, . . . , Alán Aspuru-Guzik, Erik Bekkers, Michael Bronstein, Marinka Zitnik, Anima Anandkumar, Stefano Ermon, Pietro Liò, Rose Yu, Stephan Günnemann, Jure Leskovec, Heng Ji, Jimeng Sun, Regina Barzilay, Tommi Jaakkola, Connor W. Coley, Xiaoning Qian, Xiaofeng Qian, Tess Smidt, Shuiwang Ji* ([paper](#))

- Under review

SineNet: Learning Temporal Dynamics in Time-Dependent Partial Differential Equations, *Xuan Zhang*, Jacob Helwig*, Yuchao Lin, Yaochen Xie, Cong Fu, Stephan Wojtowytsch, Shuiwang Ji* ([paper](#))

- 2024 International Conference on Learning Representations (**poster**)

High-fidelity Fluid Flow Reconstruction, *Cong Fu, Jacob Helwig, Shuiwang Ji* ([paper](#), [code](#))

- 2023 Learning on Graphs Conference (**poster**)

Group Equivariant Fourier Neural Operators for Partial Differential Equations, *Jacob Helwig*, Xuan Zhang*, Cong Fu, Jerry Kurtin, Stephan Wojtowytsch, Shuiwang Ji* ([paper/talk](#), [code](#))

- 2023 International Conference on Machine Learning (**poster**)

A Covariate-Dependent Approach to Gaussian Graphical Modeling in R, *Jacob Helwig, Sutanoy Dasgupta, Peng Zhao, Bani K. Mallick, Debdeep Pati* ([paper](#), [R package](#))

- ACM Transactions on Mathematical Software (*Algorithms Track paper*)

An Approximate Bayesian Approach to Covariate-dependent Graphical Modeling, *Sutanoy Dasgupta, Peng Zhao, Jacob Helwig, Prasenjit Ghosh, Debdeep Pati, Bani K. Mallick* ([paper](#))

- Preprint

Work Experience

LinkedIn, Sunnyvale, CA — [Artificial Intelligence Engineering Intern](#)

June 2024 - August 2024

- Team: Foundational AI Technologies
- Mentors: Dr. Fedor Borisyyuk, Dr. Peng Du
- Project: Sequential item recommendation with large transformer models

Work Experience (cont.)

DIVE Lab, College Station, TX — Research Assistant

June 2022 -

- Advisor: Dr. Shuiwang Ji

Los Alamos National Laboratory, Los Alamos, NM — Applied Machine Learning Fellow

June 2023 -

August 2023

- Project: Solving the Elastic Wave Equation Using Deep Learning
- Mentors: Dr. Hanchen Wang, Dr. Youzuo Lin

Texas A&M University, College Station, TX — Graduate Teaching Assistant

August 2021 - May 2022

- STAT 404: Statistical Computing (*Fall 2021*)
- STAT 651: Statistics in Research (*Spring 2022*)

John Deere, HX Factory Automation — Data Science and Analytics Intern

May 2021-August 2021

- Optimization: enabled digital twin of manufacturing system for validating modifications
- Safety: developed automated human detection and proximity estimation software (Python) using computer vision (YOLO)

The University of Texas at Austin, Austin, TX — Teaching Assistant

August 2020-May 2021

- M 348: Scientific Computation in Numerical Analysis (*Fall 2020*)
- M 368K: Numerical Methods for Applications (*Spring 2021*)

TIDES, Austin, TX — Evaluation Fellow

January 2020-January 2021

- Texas Institute of Discovery Education in Science
- Statistical analysis of student achievement under an alternative teaching method

Honors

Ruth J. & Howard F. Newton Memorial Graduate Student Teaching Award In Statistics, 2022 Recipient

- “Jacob was selected to receive the Newton Teaching Award based on his outstanding evaluations by the instructors he was Teaching Assistant for during the Fall 2021 and Spring 2022 semesters.” ([award details](#))

UT Austin University Honors, Fall 2019, Spring 2020, Fall 2020, & Spring 2021

- “To be included, a student must earn at least 45 grade points [and] a grade point average of at least 3.50”

Skills

Coding Languages

- Advanced: [Python](#), [R](#)
- Basic: Bash, Slurm, [C++](#), [SQL](#)

Software

- PyTorch, Excel, Git, \LaTeX

Appointed Positions

Statistics Graduate Student Association

September 2021 - May 2022

- Departmental delegate to GPSG (Graduate and Professional Student Government)