

# BO ZHAO

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## RESEARCH INTEREST

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Parameter space symmetry, deep learning theory, optimization

## EDUCATION

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**University of California San Diego** 2021–present

*Ph.D. in Computer Science*

**Georgia Institute of Technology** 2019–2021

*M.S. Computer Science*

**University of Illinois at Urbana-Champaign** 2016–2019

*B.S. Computer Science (with highest honors)*

*B.S. Physics (cum laude and departmental highest distinction)*

## EXPERIENCE

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**IBM** Cambridge, MA

*AI Intern (Mentor: Nima Dehmamy)* 2022/6–2022/9

- Studied parameter space symmetry and conserved quantities in gradient flow.

## PUBLICATIONS

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### Conference

- [1] Understanding the Difficulty of Solving Cauchy Problems with PINNs.  
Tao Wang, [Bo Zhao](#), Sicun Gao, Rose Yu.  
*The 6th Annual Learning for Dynamics and Control Conference (L4DC)*, 2024.
- [2] Improving Convergence and Generalization Using Parameter Symmetries.  
[Bo Zhao](#), Robert M. Gower, Robin Walters, Rose Yu.  
*International Conference on Learning Representations (ICLR)*, 2024.  
**Oral presentation (top 1.2%).**
- [3] DYffusion: A Dynamics-informed Diffusion Model for Spatiotemporal Forecasting.  
Salva Rühling Cachay, [Bo Zhao](#), Hailey James, Rose Yu.  
*Advances in Neural Information Processing Systems (NeurIPS)*, 2023.
- [4] Symmetries, Flat Minima, and the Conserved Quantities of Gradient Flow.  
[Bo Zhao](#)<sup>\*</sup>, Jordan Ganev<sup>\*</sup>, Robin Walters, Rose Yu, Nima Dehmamy. (<sup>\*</sup>equal contribution)  
*International Conference on Learning Representations (ICLR)*, 2023.
- [5] Symmetry Teleportation for Accelerated Optimization.  
[Bo Zhao](#), Nima Dehmamy, Robin Walters, Rose Yu.  
*Advances in Neural Information Processing Systems (NeurIPS)*, 2022.
- [6] LIMO: Latent Inceptionism for Targeted Molecule Generation.  
Peter Eckmann, Kunyang Sun, [Bo Zhao](#), Mudong Feng, Michael Gilson, Rose Yu.  
*International Conference on Machine Learning (ICML)*, 2022.

- [7] Concentric Spherical Neural Network for 3D Representation Learning.  
James Fox, Bo Zhao, Beatriz Gonzalez Del Rio, Sivasankaran Rajamanickam, Rampi Ramprasad, Le Song.  
*International Joint Conference on Neural Networks (IJCNN)*, 2022.

## Journal

- [1] Multiple Aging Mechanisms in Ferroelectric Deuterated Potassium Dihydrogen Phosphate.  
Gregory A. Fields, Samuel F. Cieszynski, Bo Zhao, Kidan A. Tadesse, Mohammed A. Sheikh, Eugene V. Colla, and M. B. Weissman.  
*Journal of Applied Physics* 125, 194102, 2019.

## Recent Workshop Abstracts

- [1] Understanding Mode Connectivity via Parameter Space Symmetry.  
Bo Zhao, Nima Dehmamy, Robin Walters, Rose Yu.  
*Unifying Representations in Neural Models Workshop (UniReps)* at NeurIPS 2023.

## AWARDS & HONORS

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Qualcomm Innovation Fellowship finalist, 2024  
DeepMind Fellowship, 2023

## TEACHING

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Teaching Assistant, CS 4641 Machine Learning, Georgia Tech	Fall 2020
Lead Course Assistant, CS 225 Data Structures, UIUC	Spring 2019
Course Assistant, CS 225 Data Structures, UIUC	Fall 2017, Spring 2018, Fall 2018

## SERVICE

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### Reviewer

ICML (2022-2024), NeurIPS (2022-2024), ICLR (2024), AISTATS (2024)

### Volunteering

Student volunteer at NeurIPS 2023, ICML 2023, NeurIPS 2022 WiML Workshop