BO ZHAO

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RESEARCH INTEREST

Deep learning, optimization, parameter space symmetry

EDUCATION

University of California San Diego *2021 - present*
Ph.D. in Computer Science
· Advisor: Rose Yu

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

IBM *June - September 2022*
AI Intern (Mentor: Nima Dehmamy) Cambridge, MA
· Studied parameter space symmetry and conserved quantities in gradient flow.

PUBLICATIONS

Conference & Journal

[1] **Bo Zhao***, Iordan Ganev*, Robin Walters, Rose Yu, Nima Dehmamy. (*equal contribution) Symmetries, Flat Minima, and the Conserved Quantities of Gradient Flow. *International Conference on Learning Representations (ICLR)*, 2023.

[2] **Bo Zhao**, Nima Dehmamy, Robin Walters, Rose Yu. Symmetry Teleportation for Accelerated Optimization. *Advances in Neural Information Processing Systems (NeurIPS)*, 2022.

[3] Peter Eckmann, Kunyang Sun, **Bo Zhao**, Mudong Feng, Michael Gilson, Rose Yu. LIMO: Latent Inceptionism for Targeted Molecule Generation. *International Conference on Machine Learning (ICML)*, 2022.

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

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

In Submission

[1] **Bo Zhao**, Robert Gower, Robin Walters, Rose Yu. Improving Convergence and Generalization by Exploiting Symmetry. *In submission*, 2023.

Workshop Abstracts

[1] **Bo Zhao**, Iordan Ganev, Robin Walters, Rose Yu, Nima Dehmamy. Charting Flat Minima Using the Conserved Quantities of Gradient Flow. *Symmetry and Geometry in Neural Representations Workshop (NeurReps)* at NeurIPS 2022.

[2] **Bo Zhao**, Nima Dehmamy, Robin Walters, Rose Yu. Symmetry Teleportation for Accelerated Optimization. **Contributed talk** at *Conference on the Mathematical Theory of Deep Neural Networks (DeepMath)*, 2022.

TEACHING

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

ACADEMIC SERVICE

Reviewer ICML 2022, NeurIPS 2022

SKILLS

Programming Python (PyTorch), C++/C, MATLAB