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Marc Finzi

Education

2019 - 2023 (expected) **Ph.D. Candidate in Computer Science**, *NYU Courant*, NYC
Supervised by Andrew Gordon Wilson

2017 - 2019 **Ph.D. Student**, *Cornell*, Ithaca, NY
Supervised by Andrew Gordon Wilson, obtained masters in Operations Research and transferred to NYU

2013 - 2017 **B.S. Physics**, *Harvey Mudd College*, Claremont, CA, GPA: 3.7

Industry Experience

Summer 2022 **Research Intern at Google**, *with Fei Sha and simulation team*
- Forecasting chaotic dynamical systems with diffusion models. Paper submitted to ICML2023.

Summer 2021 **Deep Learning Research Intern at NVIDIA**, *with Jose Alvarez on lidar perception*
- Improving object detection from Lidar point clouds

Summer 2020 **Research Intern at Qualcomm**, *with Max Welling*
- Developed probabilistic numeric convolutional neural networks,culminating in a patent application and ICLR2021 paper

Summer 2019 **Applied Scientist intern at Amazon**
- Applying deep learning methods for ranking and recommendation

Summers 2014, 2015 **Applied Physics Intern at NASA**, *Alexander Kutyrev's lab*, NASA Goddard Space Flight Center
- Embedded systems programming, analogue and digital circuit design, PCB design, computer vision

Technical Skills

Relevant Coursework: Advanced Machine Learning Systems, Computer Vision, Bayesian Machine Learning, Topics in ML optimization, Numerical Analysis for Data Science, Approximate Dynamic Programming, Algorithms, Stochastic Processes

Fluency: PyTorch, Jax, Python, C++, LaTeX

Talks

Fall 2022 **Oxford University CSML Group**
An Algorithm for Constructing Equivariant Layers and Equivariance Priors in Neural Networks

Spring 2022 **University of Pennsylvania Grasp Laboratory**
Embedding Symmetries and Conservation Laws in Deep Learning Models for Dynamical Systems

Fall 2021 **University of Washington Math of Data Science Seminar**
A Polynomial Time Algorithm for Constructing Equivariant Neural Networks

Awards

2021 **Jacob T. Schwartz Fellowship**
Awarded for outstanding research performance in the PhD program

Publications

ICLR 2023 **A Stable and Scalable Method for Solving Initial Value PDEs with Neural Networks**
Marc Finzi*, Andres Potapczynski*, Matthew Choptuik, Andrew Gordon Wilson

ICLR 2023 **The Lie Derivative for Measuring Learned Equivariance**
Nate Gruver*, **Marc Finzi***, Micah Goldblum, Andrew Gordon Wilson

NeurIPS 2022 **PAC-Bayes Compression Bounds So Tight That They Can Explain Generalization**
Sanae Lotfi*, **Marc Finzi***, Sanyam Kapoor*, Andres Potapczynski*, Micah Goldblum, Andrew Gordon Wilson

ICLR 2022 **Deconstructing the Inductive Biases of Hamiltonian Neural Networks**
Nate Gruver, **Marc Finzi**, Samuel Stanton, Andrew Gordon Wilson

NeurIPS 2021 **Residual Pathway Priors for Soft Equivariance Constraints**
Marc Finzi*, Greg Benton*, Andrew Gordon Wilson

ICML 2021 **A Practical Method for Constructing Equivariant Multilayer Perceptrons for Arbitrary Matrix Groups**
Marc Finzi, Max Welling, Andrew Gordon Wilson

ICML 2021 **SKIing on Simplices: Kernel Interpolation on the Permutohedral Lattice for Scalable Gaussian Processes**
Sanyaam Kapoor*, **Marc Finzi***, Ke Alexander Wang, Andrew Gordon Wilson

ICLR 2021 **Probabilistic Numeric Convolutional Neural Networks**
Marc Finzi, Roberto Bondesan, Max Welling

NeurIPS 2020 **Simplifying Hamiltonian and Lagrangian Neural Networks via Explicit Constraints**
Marc Finzi*, Ke Alexander Wang*, Andrew Gordon Wilson

NeurIPS 2020 **Learning Invariances in Neural Networks from Training Data**
Greg Benton, **Marc Finzi**, Pavel Izmailov, Andrew Gordon Wilson

ICML 2020 **Generalizing Convolutional Neural Networks for Equivariance to Lie Groups on Arbitrary Continuous Data**
Marc Finzi, Samuel Stanton, Pavel Izmailov, Andrew Gordon Wilson

ICML 2020 **Semi-Supervised Learning with Normalizing Flows**
Pavel Izmailov*, Polina Kirichenko*, **Marc Finzi***, Andrew Gordon Wilson

ICLR 2019 **There Are Many Consistent Explanations of Unlabeled Data: Why You Should Average**
Ben Athiwaratkun, **Marc Finzi**, Pavel Izmailov, Andrew Gordon Wilson

Workshop Papers

ICML CompBio 2021 **Effective Surrogate Models for Protein Design with Bayesian Optimization**
Nate Gruver, Samuel Stanton, Polina Kirichenko, **Marc Finzi**, Phillip Maffettone, Vivek Myers, Emily Delaney, Peyton Greenside, Andrew Gordon Wilson

ICML INNF 2019 **Invertible Convolutional Networks**
Marc Finzi*, Pavel Izmailov*, Wesley Maddox*, Polina Kirichenko*, Andrew Gordon Wilson

ICML INNF 2019 **Semi-Supervised Learning with Normalizing Flows**
Pavel Izmailov*, Polina Kirichenko*, **Marc Finzi***, Andrew Gordon Wilson

Reviewing

AISTATS 2019, ICML 2019, NeurIPS 2019, ICLR 2020, NeurIPS 2020