

Marc Finzi

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Education

- 2019 - Now **Ph.D. in Computer Science**, *NYU Courant*, NYC.
2017 - 2019 **Masters in Operations Research**, *Cornell*, Ithaca, NY.
2013 - 2017 **B.S. Physics**, *Harvey Mudd College*, Claremont, CA, GPA: 3.7.

Experience

- 2017 - Present **PhD Student**, *Andrew G. Wilson's lab*, NYU.
Deep Learning: Building in inductive biases for structured data outside of images, video, text such as with
 - Equivariance and Symmetries
 - Physical Priors and Dynamical Systems
 - Irregularly sampled spatial data
 - Probabilistic and Generative models
- Summer 2020 **Research Intern at Qualcomm**, with *Max Welling*, Amsterdam, NL.
 - Developed probabilistic numeric convolutional neural networks, an approach that reasons about internal discretization errors probabilistically
 - Project culminating in ICLR2021 Submission and patent application
- Summer 2019 **Applied Scientist intern at Amazon**, Seattle, WA.
 - Applying deep learning methods for ranking and recommendation
 - Experience with models traditionally used for NLP such as LSTM and Transformer
- 2015 - 2017 **Undergraduate Thesis in Physics**, *Tom Donnelly's lab*, Harvey Mudd College.
 - Led three-man HMC team at UT Austin to conduct laser physics experiment
 - Applied computer vision to detect and register microspheres in SEM images, achieving 95% accuracy.
- Summers **Applied Physics Intern at NASA**, *Alexander Kuttyrev's lab*, NASA Goddard Space Flight Center.
2014, 2015
 - Implemented a camera based image registration system to measure of mechanical positioning to sub-micron precision.
 - Embedded systems programming, analogue and digital circuit design, PCB design

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
- Languages Python: 30k+ LoC, C++: 4k+ LoC, \LaTeX .
- Reviewing AISTATS 2019, ICML 2019, NeurIPS 2019, ICLR 2020, NeurIPS 2020

Publications

- M. Finzi, M. Welling, and A. G. Wilson. A practical method for constructing equivariant multilayer perceptrons for arbitrary matrix groups. *Under Review at ICML*, 2021.
- M. Finzi, R. Bondesan, and M. Welling. Probabilistic numeric convolutional neural networks. *ICLR*, 2021.
- P. Izmailov, P. Kirichenko, M. Finzi, and A. G. Wilson. Semi-supervised learning with normalizing flows. *ICML*, 2020.
- M. Finzi, A. Wang, and A. G. Wilson. Simplifying hamiltonian and lagrangian neural networks via explicit constraints. *NeurIPS*, 2020.
- M. Finzi, S. Stanton, P. Izmailov, and A. G. Wilson. Generalizing convolutional neural networks for equivariance to lie groups on arbitrary continuous data. *ICML*, 2020.
- G. Benton, M. Finzi, P. Izmailov, and A. G. Wilson. Learning invariances in neural networks from training data. *NeurIPS*, 2020.
- M. Finzi, P. Izmailov, W. Maddox, P. Kirichenko, and A. G. Wilson. Invertible convolutional networks. *ICML 2019 INN Workshop*, 2019.
- B. Athiwaratkun, M. Finzi, P. Izmailov, and A. G. Wilson. There are many consistent explanations of unlabeled data: Why you should average. *ICLR*, 2019.

