

Marc Finzi

Education

- 2019 - ???? **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.

Research Experience

- 2019 - Present **PhD Student**, *Andrew G. Wilson's lab*, NYU.
Building in inductive biases for structured data outside of Images, Video, Text such as with
- Irregularly spatial data
 - Equivariance and Symmetries
 - Physical Priors and Dynamical Systems
 - 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
- Spring 2017 **PhD Student**, *Andrew G. Wilson's lab*, Cornell University.
-2019 Semi Supervised Learning
 - Achieved leading semi-supervised performance on CIFAR10 and CIFAR100, provided theoretical connection between consistency regularization and graph methods for SSL
 - Obtained Masters degree and transferred to NYU
- 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.
 - LabView automation of laser experiments, using NiDAQs, and ThorLab components.
- Summers 2014, 2015 **Applied Physics Intern at NASA**, *Alexander Kuttyrev's lab*, NASA Goddard Space Flight Center.
 - Implemented a camera based image registration system to measure of mechanical positioning to sub-micron precision.
 - Prototyped a control circuit and PCB to regulate the cryo temperature sensors control heating elements.
 - Embedded systems programming in C++ for PID control, interfacing with an external microcontroller over SPI.

Publications

- M. Finzi, R. Bondesan, and M. Welling. Probabilistic numeric convolutional neural networks. *ICLR Submission*, 2021.
- 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.
- P. Izmailov, P. Kirichenko, M. Finzi, and A. G. Wilson. Semi-supervised learning with normalizing flows. *arXiv preprint arXiv:1912.13025*, 2019.
- M. Finzi, P. Izmailov, W. Maddox, P. Kirichenko, and A. G. Wilson. Invertible convolutional networks. *ICML 2019 INNFW 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.

