

Marc Finzi

Education

2017 - ??? **Ph.D. in Operations Research**, *Cornell University*, Ithaca, NY.

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

2009 - 2013 *Georgetown Day School*, Washington, DC.

Research Experience

2017 - Present **Deep Learning Research**, *Andrew Wilson's lab*, Cornell University, Ithaca, NY.

- Achieved best preported results for Semi-Supervised Image Classification (SSL) on CIFAR10 and CIFAR100 using Stochastic Weight Averaging with Consistency Methods
- Provided theoretical justification for the use of Consistency Regularization in SSL
- Proposed the FlowGMM model, a new approach SSL using normalizing flows, giving calibrated uncertainty estimates and enabling realtime feature visualization.
- Demonstrated a method by which ordinary convolutional networks can be inverted directly and efficiently, allowing for use as a normalizing flow.

Summer 2019 **Applied Scientist intern at Amazon**, Seattle, WA.

- Applying deep learning methods for ranking and recommendation

2015 - 2017 **Undergraduate Thesis in Physics**, *Tom Donnelly's lab*, Harvey Mudd College, Undergraduate.

- Led three-man HMC team to set up an experiment at UT Austin to test the theory of multipass Stochastic Heating using the high-power GHOST laser
- Applied techniques from computer vision to detect and register microspheres in SEM images, achieving 95% accuracy.
- LabView automation of laser experiment, using NiDAQs, and ThorLab components.

Summers **NASA Internship**, *Alexander Kuttyrev's lab*, Goddard Space Flight Center, Greenbelt, MD.

- 2014, 2015
- Implemented a camera based image registration system to measure precision of mechanical elements to sub-pixel and sub-micron accuracy.
 - Designed and prototyped a control circuit and PCB to monitor/regulate the cryo temperature sensors and provide linear control over heating elements
 - Embedded systems programming in C++ for sensor readings and PID control, interfacing with an external microcontroller over SPI.

Publications

Ben Athiwaratkun, Marc Finzi, Pavel Izmailov, and Andrew Gordon Wilson. There are many consistent explanations of unlabeled data: Why you should average. *ICLR 2019*, 2019.

Marc Finzi, Pavel Izmailov, Wesley Maddox, Polina Kirichenko, and Andrew Gordon Wilson. Invertible convolutional networks. *ICML 2019 INNMF Workshop*, 2019.

Pavel Izmailov, Polina Kirichenko, Marc Finzi, and Andrew Gordon Wilson. Semi-supervised learning with normalizing flows. *ICML 2019 INNMF Workshop*, 2019.

Reviewing

Conferences AISTATS 2019, ICML 2019, NeurIPS 2019

Technical Skills

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

Languages Python: 25k LoC, C++: 3k LoC, \LaTeX .

Hobby Projects

Chess Engine using MCTS and Deep Learning, trained on 4 Million Chess games labeled by Stockfish

Traditional $\alpha - \beta$ search Chess Engine in C++ w/ iterative deepening and transposition tables

Interactive Numerical Schrodinger & KdV equation simulators using Eigen and Split Step Fourier methods

Numerical N-Body gravitation simulator using symplectic integrators