

Stanford University
Department of Statistics

DEPARTMENTAL SEMINAR

*** Extra Seminar ***

1pm, Thursday, May 16, 2019

Sloan Mathematics Center Room 380C

Speaker: Nathan Srebro, *University of Chicago*

Title: **Optimization's Hidden Gift to Learning:
Implicit Regularization**

Abstract:

It is becoming increasingly clear that implicit regularization afforded by optimization algorithms plays a central role in machine learning, and especially so when using large, deep neural networks. We have a good understanding of the implicit regularization afforded by stochastic approximation algorithms, such as SGD, for convex problems, and we understand and can characterize the implicit bias of different algorithms, and can design algorithms with specific biases. But in this talk I will focus on implicit biases of local search algorithms for non-convex underdetermined problems, such as deep networks. In an effort to uncover the implicit biases of gradient-based optimization of neural networks — which holds the key to their empirical success — I will discuss recent work on implicit regularization for matrix factorization, linear convolutional networks, and two-layer ReLU networks, as well as a general bottom-up understanding of implicit regularization in terms of optimization geometry.