

University of Southern California

**DANIEL J. EPSTEIN DEPARTMENT OF
INDUSTRIAL AND SYSTEMS ENGINEERING**

EPSTEIN INSTITUTE SEMINAR • ISE 651 SEMINAR

***Stochastic Methods for Convex Optimization
with "Difficult" Constraints***

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ABSTRACT

Convex optimization problems involving large-scale data or expected values are challenging, especially when these difficulties are associated with the constraint set. We propose random algorithms for such problems, and focus on special structures that lend themselves to sampling, such as when the constraint is the intersection of many simpler sets, involves a system of inequalities, or involves expected values, and/or the objective function is an expected value, etc. We propose a class of new methods that combine elements of successive projection, stochastic gradient descent and proximal point algorithm. This class of methods also contain as special cases many known algorithms. We use a unified analytic framework to prove their almost sure convergence and the rate of convergence. Our framework allows the random algorithms to be applied with various sampling schemes (i.i.d, Markov, sequential, etc), which are suitable for applications involving distributed implementation, large data set, computing equilibriums, or statistical learning.

**TUESDAY, APRIL 8, 2014
VON KLEINSMID CENTER (VKC) ROOM 100
3:30 – 4:50 PM**

SPEAKER BIO

Mengdi Wang is currently an assistant professor at the Department of Operations Research and Financial Engineering, Princeton University. She received her PhD in Electrical Engineering and Computer Science from MIT in 2013. Her research interests include: large scale optimization, stochastic optimization algorithms, stochastic decision making, approximate dynamic programming, applications in statistical learning and finance, etc.