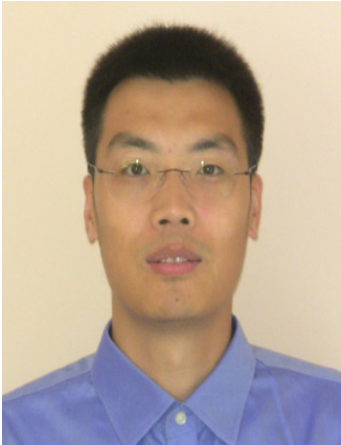# DEPARTMENT OF STATISTICS AND BIOSTATISTICS

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On the analysis of Bregman-surrogate algorithms for nonsmooth nonconvex optimization

April 26, 2017
3:20 – 4:20pm
Light refreshments will be served
110 Frelinghuysen Road
Hill Center, Room 552

Abstract: Modern statistical problems often involve minimizing objective functions that are not necessarily convex or smooth. This paper proposes and investigates a broad surrogate framework defined by generalized Bregman divergence functions for developing scalable algorithms. Local linear approximation, mirror descent, iterative thresholding, and DC programming can all be viewed as particular instances. The Bregman re-characterization enables us to choose suitable measures of computational error to establish global convergence rate results even for nonconvex problems in high-dimensional settings. Moreover, under some regularity conditions, the sequence of iterates in Bregman surrogate optimization can be shown to approach the statistical truth within the desired accuracy geometrically fast. These algorithms can be accelerated with a careful control of relaxation and stepsize parameters. Simulation studies are performed to support the theoretical results.

Bio: Yiyuan She obtained his PhD in statistics from Stanford University and is an Associate Professor at Florida State University. His current research interests lie in the fields of high dimensional statistics, statistical machine learning, optimization, signal processing, robust statistics, and network science.