

# JOINT SEMINAR

## BIOSTATISTICS, COMPUTER SCIENCE AND STATISTICS

UCLA

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**Friday, November 18, 2016**

**2:00pm - 3:00pm, KNSY PV 1220B** (see attached map)

### **Learning with Low Samples in High-Dimensions: Estimators, Geometry, and Applications**

#### **ABSTRACT:**

Many machine learning problems, especially scientific problems in areas such as ecology, climate science, and brain sciences, operate in the so-called 'low samples, high dimensions' regime. Such problems typically have numerous possible predictors or features, but the number of training examples is small, often much smaller than the number of features. In this talk, we will discuss recent advances in general formulations and estimators for such problems. These formulations generalize prior work such as the Lasso and the Dantzig selector. We will discuss the geometry underlying such formulations, and how the geometry helps in establishing finite sample properties of the estimators. We will also discuss applications of such results in structure learning in probabilistic graphical models, along with real world applications in ecology and climate science.

This is joint work with Soumyadeep Chatterjee, Sheng Chen, Farideh Fazayeli, Andre Goncalves, Jens Kattge, Igor Melnyk, Pradeep Ravikumar, Peter Reich, Franziska Schrodtr, Hanhuai Shan, and Vidyashankar Sivakumar.