Abstract

I will describe Gaussian graphical models (also called covariance selection models) and some of their uses. These models can be thought of as a method of regularization for covariance matrices when \( n \) is less than or equal to \( p \) and the covariance matrix is thought to be sparse, but also as a method for understanding the conditional independence structure of a set of data. I will compare a variety of penalized likelihood methods for fitting these models (lasso, adaptive lasso, and SCAD) with maximum a posteriori and model averaged Bayesian estimates. I will illustrate the talk with examples of moderate dimension (50-600 variables) from finance and bioinformatics.