STAT 7934: HW 3

Due in class on Wed April 1

Group Project:

Consider the Gaussian graphical model as presented in class. In a seminal paper Meinshausen and Bulmann (Annals of Statistics, 2006) showed that one can estimate the model by using node-wise penalized (lasso) regression, followed by post-processing to obtain a symmetric and positive definite estimate of Ω.

- Using your code from HW 2, estimate a Gaussian graphical model using the lasso node-wise regression method.
- Apply your algorithms to a chain network, a nearest neighbor network, and a scale free network of size p = 25 with n = 150 observations. Set the density level of your edge set at 10my Biometrika paper (see Section 4 of Guo et al. (Biometrika, 2011)).
- Replicate the setting in (2) 10 times and provide an estimate of the false positive and false negative rates, as well as the Frobenius norm of the difference between your estimate and the true Ω.