Recap

Gaussian Graphical Models

$$(G, P),\ P = \mathcal{N}(\mu, \Sigma)$$
$$(j,k) \in E \iff X^{(j)} \not\perp X^{(k)} | X^{(V \setminus \{j,k\})} \iff (\Sigma^{-1})_{j,k} \neq 0$$

- neighborhood selection and nodewise Lasso for estimator $\hat{E}$
- GLasso: gives also an estimate of Σ and $K = \Sigma^{-1}$
  $\hat{E} = \{(j,k); \hat{K}_{j,k} \neq 0\}$

The Nonparanormal Graphical Model

non-Gaussian distribution where conditional independence between two rv.'s is encoded as zero entries in a matrix

$\rightsquigarrow$ nonparanormal graphical model (G, P) where P is a semiparametric Gaussian copula model

$$(j,k) \in E \iff X^{(j)} \not\perp X^{(k)} | X^{(V \setminus \{j,k\})} \iff (\underbrace{\Sigma^{-1}}_{\neq \mathrm{Cov}(X)^{-1}})_{j,k} \neq 0$$

$\rightsquigarrow$ $\hat{E}$ from GLasso with rank-correlation matrix as input