Network Supervised Topic Modeling: General Idea [Mei et al. 08]

- Probabilistic topic modeling as optimization: maximize likelihood

$$\Lambda^* = \arg\max\nolimits_\Lambda p(\text{TextData} \mid \Lambda)$$

- Main idea: network imposes constraints on model parameters Λ
  - The text at two adjacent nodes of the network tends to cover similar topics
  - Topic distributions are smoothed over adjacent nodes
  - Add network-induced regularizers to the likelihood objective function

Any generative model　　　　　　**Any network**

$$\Lambda^* = \arg\max\nolimits_\Lambda f(p(\text{TextData} \mid \Lambda), r(\Lambda, \text{Network}))$$

Any way to combine　　　　　**Any regularizer**