

Instantiation: NetPLSA [Mei et al. 08]

Network-induced prior: Neighbors have similar topic distribution

Modified objective function

$$O(C, G) = (1 - \lambda) \cdot \left(\sum_d \sum_w c(w, d) \log \sum_{j=1}^k p(\theta_j | d) p(w | \theta_j) \right) + \lambda \cdot \left(-\frac{1}{2} \sum_{\langle u, v \rangle \in E} \frac{w(u, v)}{\sum_{j=1}^k (p(\theta_j | u) - p(\theta_j | v))^2} \right)$$

Text collection

PLSA log-likelihood

Network graph

Influence of network constraint

Weight of edge (u,v)

Quantify the difference in the topic coverage at node u and v