T-36 Support Consistency of Direct Sparse-Change Learning in Markov Networks

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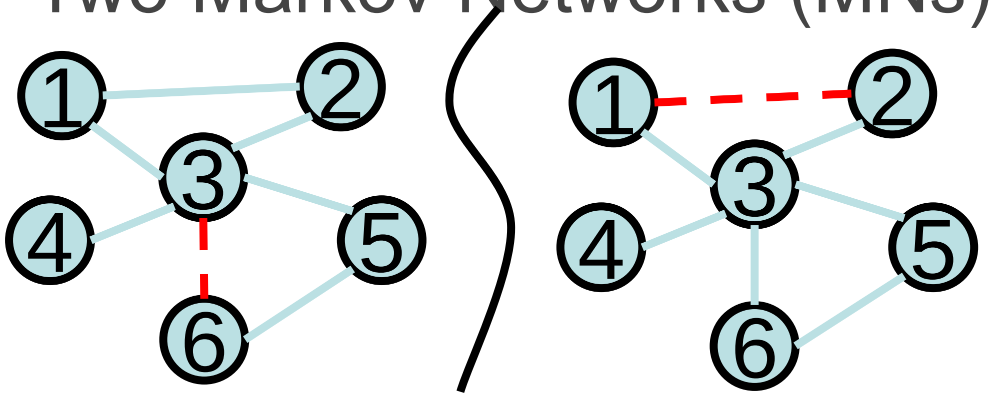
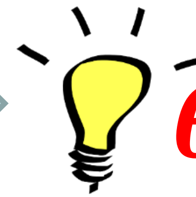
- Two Markov Networks (MNs)…

$$p(\boldsymbol{x}, \boldsymbol{\theta}_p) = \frac{1}{Z(\boldsymbol{\theta}_p)} \exp\left(\boldsymbol{\theta}_p^\top f(\boldsymbol{x})\right)$$



d changing edges

$p(\boldsymbol{x}; \boldsymbol{\theta}_p)$ $q(\boldsymbol{x}; \boldsymbol{\theta}_q)$



$$\boldsymbol{\theta} = \boldsymbol{\theta}_P - \boldsymbol{\theta}_q$$

- Learning Changes **directly** between MNs (Liu et al., 2013)
- Sufficient Conditions for Correct Change Detection
  - $n_p = \Omega\left(d^2 \log \frac{m^2+m}{2}\right)$, $n_q = \Omega\left(\frac{n_p^2}{d}\right)$, **Sparsistent!**