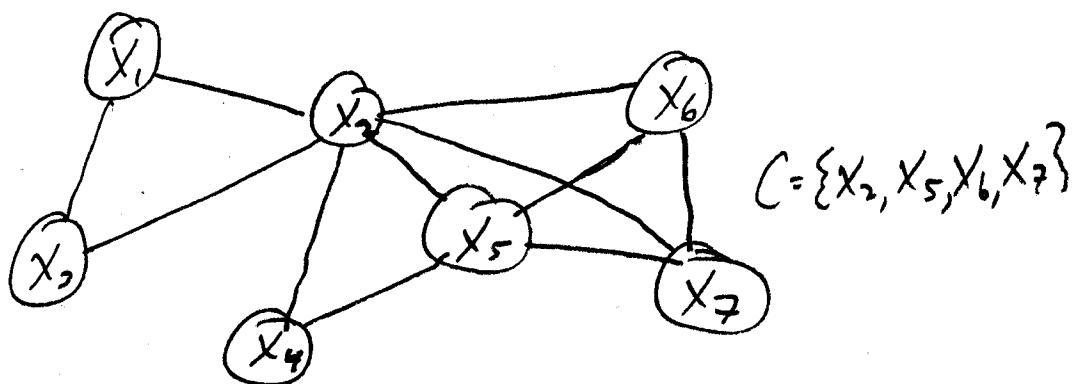




Markov nets - an undirected graphical model for joint distributions

Undirected graph G on variables X_1, \dots, X_n



Semantics:

With each maximal clique C , associate a real-valued potential function

Let \bar{x}_C denote \bar{x} restricted to variables in C

$$\text{Potential } \phi_C(\bar{x}) = \phi_C(\bar{x}_C)$$

Then the G & ϕ_c define a distribution:

$$\Pr[\bar{X} = \bar{x}] \triangleq \frac{1}{Z} \prod_{\substack{\text{all} \\ \text{maximal} \\ \text{cliques} \\ C}} \phi_c(\bar{x})$$

where

$$Z = \sum_{\bar{x}} \prod_C \phi_c(\bar{x}) \quad (\text{normalization factors})$$

Remarks

- Again, a compact model (+)
- No intuitions regarding causality (-)
- Fewer algorithmic complications regarding directionality (+)
- d-separation analogue: cutsets