

Bayesian Networks - Exercise 7

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December 7, 2016

Solutions need to be handed in until **Tuesday, December 13th 10:00 am (morning)**
via Learnweb as a PDF only

<https://www.uni-hildesheim.de/learnweb2016/?lang=en>

Exercise 1: Cluster Trees (10 Points)

- Look at the Markov network in figura 1 (a). Does it have a chain of cliques? write down all possible $k(i)$.
- Build a cluster tree for the given Markov network in a) with the chain of cliques in a).
- Look at the Bayes net in figure 1 (b). Write down this network as a Markov network.
- Does the resulting Markov network in b) have a chain of cliques? Write down all possible cliques $k(i)$!
- Build a cluster tree for the Markov network in c) with the chain of cliques in d).

Exercise 2: Inference in R with 'bnlearn'¹ (10 Points)

- Read the bayes network of the last exercise sheet into R (how it works see added links).
- What is the probability that a person goes to the doctor?
- Tim spent a lot of money in the Bio store but drinks neither tea not juice. What is the probability that Tim has fever?
- John drinks tea, but no juice. Is it more probable that he goes to the doctor than someone who drinks juice but no tea?
- What is the probability that someone with a cold has fever, goes to the doctor, drinks both tea and juice and spent a lot of money in the Bio store?

Please hand in the code or screenshots!

¹<http://www.bnlearn.com/bayesian-network-in-r-introduction.html>

and <http://hameddaily.blogspot.de/2015/02/>

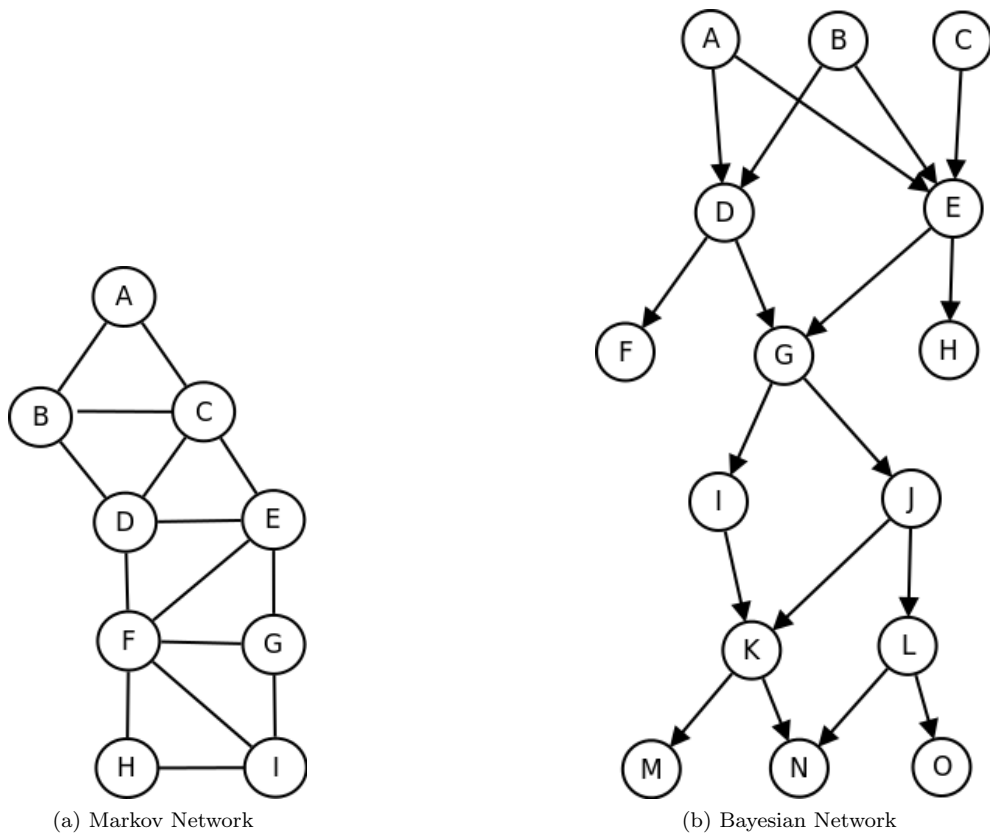


Figure 1: Markov and Bayes network