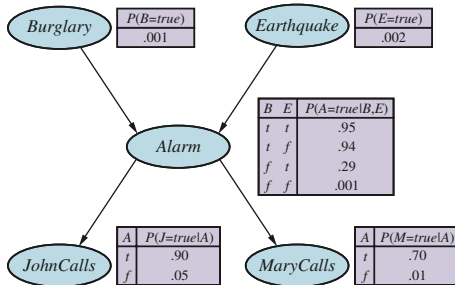


# Probabilistic Inference Study Guide (AIMA 13.3-13.4)

## Artificial Intelligence

### 1 Exact Inference in Bayesian Networks

1. Given the network:



$$Pr(b | j, m) = \alpha Pr(b) \sum_e Pr(e) \sum_a Pr(a | b, e) Pr(j | a) Pr(m | a) \quad (13.5)$$

Annotate the factors in the expression for the network.

### 2 Approximate Inference in Bayesian Networks

1. What is the difference between direct sampling and Markov chain Monte Carlo sampling?
2. What is the idea behind importance sampling?
3. The Metropolis-Hastings sampling algorithm is similar in structure to which local search algorithm?