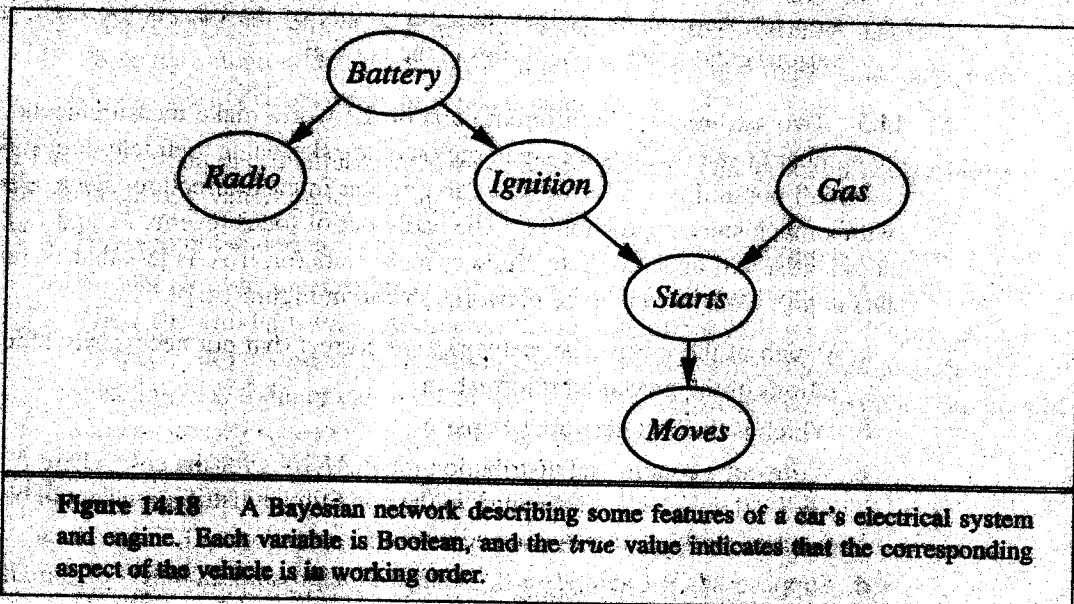


EXERCISES



- 14.1 Consider the network for car diagnosis shown in Figure 14.18.
- Extend the network with the Boolean variables *IcyWeather* and *StarterMotor*.
 - Give reasonable conditional probability tables for all the nodes.
 - How many independent values are contained in the joint probability distribution for eight Boolean nodes, assuming that no conditional independence relations are known to hold among them?
 - How many independent probability values do your network tables contain?
 - The conditional distribution for *Starts* could be described as a noisy-AND distribution. Define this family in general and relate it to the noisy-OR distribution.
- 14.2 In your local nuclear power station, there is an alarm that senses when a temperature gauge exceeds a given threshold. The gauge measures the temperature of the core. Consider the Boolean variables A (alarm sounds), F_A (alarm is faulty), and F_G (gauge is faulty) and the multivalued nodes G (gauge reading) and T (actual core temperature).
- Draw a Bayesian network for this domain, given that the gauge is more likely to fail when the core temperature gets too high.
 - Is your network a polytree?
 - Suppose there are just two possible actual and measured temperatures, normal and high; the probability that the gauge gives the correct temperature is x when it is working, but y when it is faulty. Give the conditional probability table associated with G .