

Wet Grass Problem: Sherlock Holmes

We have 4 variables “Rain”, “Sprinkler”, “Holmes” and “Watson” with directed edges “Rain” to “Holmes”, “Rain” to “Watson” and “Sprinkler” to “Holmes”. The Bayesian Network models the story of Holmes and Watson being neighbours. One morning Holmes goes outside his house and recognizes that the grass is wet. Either it rained or he forgot to turn off the sprinkler. So he goes to his neighbour Watson to see whether his grass is wet, too. As he sees that it is indeed wet he is quite sure that he didn’t forget the sprinkler but that it rained. So the information flowed from Watson to the sprinkler. This flow of information is modeled with BP in BNs.

In BP, we let the variables talk with each other to exchange their beliefs about each other. There are 2 kinds of messages: message from parents to children and messages from children to parents