Bayesian Network

Abstract

Bayesian Network is a graphical model which represent probabilistic relationships among a set of variables. It is also known as belief network because it shows person's degree of belief. The graphical is presented using Directed Acyclic Graph to show its relationship or network between variables. In addition to the Directed Acyclic Graph, we also need a Conditional Probability tables which probability values for the tables are gathered through observation or belief of a person. To determine the probability of events to occur with certain set of variable, Joint Probability Distribution can be built. The distribution will contains every possible values of variables. The weakness of building it is exponential growth. The probabilistic of an event is calculated using probability formula for Bayesian Network which is derived from Bayes' rule. Once the relationship and probabilities of Bayesian Network are defined, Bayesian Network is also being used to solve Probabilistic Inference Problem, or to predict consequences of intervention. Therefore, Bayesian Network is using Expert/Domain knowledge and Data to produce representation of knowledge, and then use the representation to do decision support, such as Optimization, Simulation, Diagnosis, and etc.

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