Factorization of Computations in Bayesian Networks: Interpretation of Factors

Authors : Linda Smail, Zineb Azouz

Abstract : Given a Bayesian network relative to a set I of discrete random variables, we are interested in computing the probability distribution P(S) where S is a subset of I. The general idea is to write the expression of P(S) in the form of a product of factors where each factor is easy to compute. More importantly, it will be very useful to give an interpretation of each of the factors in terms of conditional probabilities. This paper considers a semantic interpretation of the factors involved in computing marginal probabilities in Bayesian networks. Establishing such a semantic interpretations is indeed interesting and relevant in the case of large Bayesian networks.

Keywords : Bayesian networks, D-Separation, level two Bayesian networks, factorization of computation **Conference Title :** ICMOR 2015 : International Conference on Mathematics in Operational Research **Conference Location :** Copenhagen, Denmark **Conference Dates :** June 11-12, 2015