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Independence properties of directed Markov fields. (English) Zbl 0743.05065

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Summary: We investigate directed Markov fields over finite graphs without positivity assumptions on the densities involved. A criterion for conditional independence of two groups of variables given a third is given and named as the directed, global Markov property. We give a simple proof of the fact that the directed, local Markov property and directed, global Markov property are equivalent and — in the case of absolute continuity w.r.t. a product measure — equivalent to the recursive factorization of densities. It is argued that our criterion is easy to use, it is sharper than that given by Kiiveri, Speed, and Carlin and equivalent to that of Pearl. It follows that our criterion cannot be sharpened.

MSC:

05C99 Graph theory

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