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A model searching method based on marginal model stuctures. (English) Zbl 1157.68405

Gammerman, A. (ed.), Artificial intelligence and applications. Machine learning. As part of the 26th IASTED international multi-conference on applied informatics. Calgary: International Association of Science and Technology for Development (IASTED); Anaheim, CA: Acta Press (ISBN 978-0-88986-710-9/CD-ROM). 116-120 (2008).

Summary: Suppose that we are interested in modeling for a random vector X and that we are given a set of graphical decomposable models,$\mathcal{G}_1, \ldots, \mathcal{G}_m$, for subvectors of X each of which share some variables with at least one of the other models. Under the assumption that the model of X is graphical and decomposable, we propose an approach of searching for models of X based on the given decomposable graphical models. A main idea in this approach is that we combine $\mathcal{G}_1, \ldots, \mathcal{G}_m$ using graphs of prime separators (section 2). When the true graphical model for the whole data is decomposable, prime separators in a marginal model are also prime separators in a maximal combined model of the marginal models. This property plays a key role in model-combination. The proposed approach is applied to searching for a model of 100 variables for illustration.

For the entire collection see [Zbl 1154.68012].

MSC:

68R10 Graph theory (including graph drawing) in computer science

Cited in **1** Document

Keywords:

combined model structure; graph-separateness; interaction graph; Markovian subgraph; prime separator