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Decomposition of maximum likelihood in mixed graphical interaction models. (English)

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Biometrika 76, No. 3, 539-555 (1989).

Mixed graphical association models were developed to describe associations between variables that can be quantitative or qualitative. Each such model is represented by a so-called marked graph, which is a graph with two types of vertices, dots for qualitative and circles for continuous quantitative variables. The graph has edges between vertices to represent associations between the corresponding variables. Because both directed and undirected edges can be defined the models can be used to describe structures with both symmetric and directional association.

Models with only undirected edges are termed graphical interaction models. The paper is concerned only with this special case. It is shown how decompositions of marked graphs induce corresponding decompositions of maximum likelihood estimates. The results are used to obtain explicit formulae for the estimates in decomposable models and to obtain factorizations of likelihood ratio statistics.

Reviewer: [D.Rasch](#)

MSC:

[62H20](#) Measures of association (correlation, canonical correlation, etc.)

[62-07](#) Data analysis (statistics) (MSC2010)

[62F10](#) Point estimation

Cited in **15** Documents

Keywords:

cut; multiplicative model; decompositions of estimation and testing problems; Mixed graphical association models; symmetric and directional association; graphical interaction models; decompositions of marked graphs; decompositions of maximum likelihood estimates; decomposable models; factorizations of likelihood ratio statistics

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