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Parameterization of Binary Ancestral Graph Models. Preliminary report.

Graphical models are statistical models (sets of distributions) with conditional independence (Markov) structure described via a graph consisting of vertices and edges. Models corresponding to several different classes of graphs have been considered, including undirected (—), directed (→), and bi-directed (↔) edges. Ancestral graphs contain all three types of edge, subject to certain restrictions. The class of ancestral graphs has a Markov property which is closed under marginalization and conditioning. It has been known for some time how to parameterize Gaussian distributions with this Markov property. This talk will present new results describing how to parameterize multinomial distributions, corresponding to the case where all variables are binary. (Received September 28, 2005)