GRAPH STRUCTURES IN RELATIONAL DATABASES, CONSTRAINT SATISFACTION AND BAYESIAN NETWORKS

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The paper is devoted to the comparative analysis of systems of knowledge representation based on graph structures. Such systems include relational databases, constraint satisfaction problems, Bayesian belief networks and algebraic Bayesian networks. The article examines the application of the principle of decomposition for each of these systems. The given comparative analysis of the graph structuress shows that in acyclic case all these structures are equivalent whereas in general the requirements for a graph structure of algebraic Bayesian networks are more stringent than for the other three structures.

Keywords: probabilistic graphical models, secondary structure, primary structure, knowledge with uncertainty, decomposition of the system, Bayesian networks, constraint satisfaction problems, relational database, join graphs.

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