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Lukasiewicz-based merging possibilistic networks. (English) Zbl 1433.68457
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Summary: Possibility theory provides a good framework for dealing with merging problems when information is pervaded with uncertainty and inconsistency. Many merging operators in possibility theory have been proposed. This paper develops a new approach to merging uncertain information modeled by possibilistic networks. In this approach we restrict our attention to show how a “triangular norm” establishes a lower bound on the degree to which an assessment is true when it is obtained by a set of initial hypothesis represented by a joint possibility distribution. This operator is characterized by its high effect of reinforcement. A strongly conjunctive operator is suitable to merge networks that are not involved in conflict, especially those supported by both sources. In this paper, the Lukasiewicz t-norm is first applied to a set of possibility measures to combine networks having the same and different graphical structures. We then present a method to merge possibilistic networks dealing with cycles.

MSC:

68T37 Reasoning under uncertainty in the context of artificial intelligence

Keywords:

possibility theory; possibilistic networks; t-norm; Lukasiewicz operator

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