An algebraic approach for action based default reasoning. (English) Zbl 0745.00023

Summary: Often, we assume that an action is permitted simply because it is not explicitly forbidden; or, similarly, that an action is forbidden simply because it is not explicitly permitted. This kind of assumptions appear, e.g., in autonomous computing systems where decisions must be taken in the presence of an incomplete set of norms regulating a particular scenario. Combining default and deontic reasoning over actions allows us to formally reason about such assumptions. With this in mind, we propose a logical formalism for default reasoning over a deontic action logic. The novelty of our approach is twofold. First, our formalism for default reasoning deals with actions and action operators, and it is based on the deontic action logic originally proposed by Segerberg in [27]. Second, inspired by Segerberg’s approach, we use tools coming from the theory of Boolean Algebra. These tools allow us to extend Segerberg’s algebraic completeness result to the setting of Default Logics.

For the entire collection see Zbl 1446.68018.

MSC:

68T27 Logic in artificial intelligence

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References:
