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# Probabilistic Argumentation Systems and Abduction

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**Abstract**

Probabilistic argumentation systems are based on assumption-based reasoning for obtaining arguments supporting hypotheses and on probability theory to compute probabilities of supports. Assumption-based reasoning is closely related to hypothetical reasoning or inference through theory formation. The latter approach has well known relations to abduction and default reasoning. In this paper assumption-based reasoning, as an alternative to theory formation aiming at a different goal, will be presented and its use for abduction and model-based diagnostics will be explained. Assumption-based reasoning is well suited for defining a probability structure on top of it. On the base of the relationships between assumption-based reasoning on the one hand and abduction on the other hand, the added value introduced by probability into model based diagnostics will be discussed.

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