

Algorithms for Computing X-minimal Models

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Abstract

The problem of computing X-minimal models, that is, models minimal with respect to a subset X of all the atoms in a theory, is very relevant for computing circumscriptions and diagnosis. Unfortunately, the problem is NP-hard. In this paper we present two novel algorithms for computing X-minimal models. The advantage of these new algorithms is that, unlike existing ones, they are capable of generating the models one by one. There is no need to compute a superset of all minimal models before finding the first X-minimal one. Our procedures may use local search techniques, or, alternatively, complete methods. We have implemented and tested the algorithms and the preliminary experimental results are encouraging.