

Navigating ASP Solution Spaces (Invited Talk, Abstract)

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Abstract

A wide range of combinatorial search problems can be modelled and solved with Answer Set Programming (ASP). While modern ASP solvers allow to quickly enumerate solutions, the user faces the problem of dealing with a possibly exponential number of solutions, which may easily go into millions and beyond. To still be able to reach an understanding of the answer set space, we propose navigation approaches to reach subspaces that fulfil desirable criteria. With weighted faceted answer set navigation we allow for a quantitative understanding of the answer set space. Weights can be assigned to atoms depending on how much they restrict the remaining solution space, either by counting the number of answer sets (resp. supported models) or counting the number of atoms still available to choose. Then, we show an iterative approach to compute a diverse collection of answer sets that allows to exchange some answer sets to improve the size and diversity of the whole collection. In contrast to diverse collections, representative answer sets do not require to specify a diversity measure. We introduce a notion of representativeness based on entropy, and discuss algorithms to collect representative collections of answer sets. Finally, we will present a visual approach to explore solution spaces and apply it to the domain of abstract argumentation.

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