An extensible autonomous search framework for constraint programming

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Constraint programming is a modern programming paradigm devoted to solve constraint-based problems, in particular combinatorial problems. In this paradigm, the efficiency on the solving process is the key, which generally depends on the selection of suitable search strategies. However, determining a good search strategy is quite difficult, as its effects on the solving process are hard to predict. A novel solution to handle this concern is called autonomous search, which is a special feature allowing an automatic reconfiguration of the solving process when a poor performance is detected. In this paper, we present an extensible architecture for performing autonomous search in a constraint programming context. The idea is to carry out an "on the fly" replacement of bad-performing strategies by more promising ones. We report encouraging results where the use of autonomous search in the resolution outperforms the use of individual strategies.

Autonomous search

Constraint programming

Heuristic search