

# Enumeration strategies for solving constraint satisfaction problems: A performance evaluation

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Constraint programming allows to solve constraint satisfaction and optimization problems by building and then exploring a search tree of potential solutions. Potential solutions are generated by firstly selecting a variable and then a value from the given problem. The enumeration strategy is responsible for selecting the order in which those variables and values are selected to produce a potential solution. There exist different ways to perform this selection, and depending on the quality of this decision, the efficiency of the solving process may dramatically vary. A main concern in this context is that the behavior of the strategy is notably hard to predict. In this paper, we present a performance evaluation of 24 enumeration strategies for solving constraint satisfaction problems. Our goal is to provide new and interesting knowledge about the behavior of such strategies. To this end, we employ a set of wellknown benchmarks that collect general features that may be present on most constraint satisfaction and optimization problems. We believe this information will be useful to help users making better solving decisions when facing new problems. © Springer International Publishing Switzerland 2015.

Constraint programming

Constraint satisfaction problems

Enumeration strategies

Heuristics

Artificial intelligence

Computer programming

Constraint theory

Optimization

Problem solving

Social networking (online)

Constraint programming

Constraint Satisfaction

Enumeration strategies

Heuristics

Optimization problems

Search trees

Constraint satisfaction problems