

# Computational Complexity of Constraint Satisfaction Problems

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## **Abstract**

Abstract: " In many sciences and practical applications we come across a particular type of a problem which involves finding a solution to a certain set of constraints (requirements) from the given pool of objects. In artificial intelligence, this type of problem is referred to as a Constraint Satisfaction Problem (CSP). Constraint satisfaction problems arise in areas as diverse as molecular physics, scheduling of events, assignment of radio frequencies, computational biology, mathematical linguistics, etc. Of particular interest is the question of how difficult, from the computational point of view, an algorithm solving such a problem may be. In this talk, we will try to give a brief overview of how this complexity can be studied using techniques coming from areas of discrete mathematics as disparate as graph theory, logic, and equational algebra. We will also mention some related problems from theoretical computer science such as e.g. the entailment problem for finite relational databases. This problem is known to be computationally very hard in its full generality but can we say the same about a seemingly very restricted version of the problem in which all relations in the database are binary?"