

On the Difficulty of Approximating Boolean Max-CSPs

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I. INTRODUCTION

We discuss the approximability of Boolean Constraint Satisfaction Problems (CSPs). In this situation we are given a large number of constraints, each of the form of a fixed predicate P applied to a sequence of literals. The goal is to find an assignment that satisfies the maximum number of constraints.

In particular we are interested to understand for what predicates P there is an efficient approximation algorithm that, at least in some respect, significantly outperforms the trivial algorithm that only picks a random assignment.

There are at least three slightly different definitions related to this notion and we give some results, some joint with co-authors and some by other researchers, addressing which P admit some kind of efficient approximation algorithm.

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