Hw2

CS23 108062119 鄭幃謙

**1. The title, authors, and their affiliations of the paper**

**Title:** Solution Reuse in Dynamic Constraint Satisfaction Problems

**Author:** Gkrard Verfaillie, Thomas Schiex

**Affiliations:** ONERA-CERT

**2. The source of the paper**

Proceedings of the 12th National Conference on Artificial Intelligence, Seattle, WA, USA, July 31 – August 4, 1994, volume 1

(<https://www.aaai.org/Papers/AAAI/1994/AAAI94-302.pdf>)

**3. Point out what concepts are different in contrast to the traditional CSP**

Traditional CSP is static, the set of constraints is always fixed. So that each solution must satisfy all the constraints.

Dynamic CSP is not static, the set of constraints evolves according to the environment, the user, and other agents in the framework of a distributed system.

In other words, we can view dynamic CSP as a sequence of CSPs, where each one differs from the previous one by the addition or removal of some constraints.

**4. What methods and heuristics are used in the solving such a new CSP in order to find a solution fast**

The method used in this paper is an algorithm called Local Change. As below.

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And there are two heuristics:

**(1) choice of variable to be assigned, unassigned or reassigned**

Choose the variable whose domain is the smallest, which is the variable with the most constraints. This reduces the possibility of backtracking.

**(2) choice of the value for a variable**

Choose the value which minimize the numbers of unsatisfied constraints to increase the choices of the other unassigned variables.