




Grundlagen der Künstlichen Intelligenz

Übungen
09.11.2005

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Agententechnologien in betrieblichen Anwendungen und der Telekommunikation

Backtracking for CSP

Algorithmus BT

1. Form a one-element stack consisting of an empty assignment of the variables.
2. Until the first assignment in the stack is complete and consistent or the stack is empty
 - a) Remove the first assignment from the stack.
 - b) Select an unassigned variable of the current assignment.
 - c) Create new assignments by assigning all consistent values to the selected unassigned variable.
 - d) Push the new assignments, if any, to the top of the stack.
3. If a complete and consistent assignment is found, announce success; otherwise announce failure.

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Arc Consistency

Let $D(X_i)$ be the set all consistent values from the domain of X_i .

1. Form a queue consisting of all arcs between all pairs of variables related by a constraint.
2. Until the queue is empty
 - a) Remove the first arc (X_i, X_j) from the queue.
 - b) Delete each value x from the domain $D(X_i)$ for which there is no consistent value y from the domain $D(X_j)$ such that the assignment $\{X_i \leftarrow x, X_j \leftarrow y\}$ is consistent.
 - c) If an inconsistent value has been removed from the domain $D(X_i)$, then add all arcs of the form (X_k, X_i) to the queue, where $X_k \neq X_j$ is a variable related to X_i by a constraint.

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