CS 681 Fall 2008
Designing Expert Systems

Knowledge-Based Reasoning: Part II
Assessment Assistant

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Overview

Assessment-based Reasoning

Reading
Assessment Assistant

An assistant that allows the user and an agent to collaborate in problem solving by each solving different parts of a complex problem.

It also allows a user to solve problems in application domains with incomplete or uncertain information by hypothesizing alternative solutions to subproblems.
Assessment Assistant: Can be employed by the user to provide solutions to some of the sub-problems.

Solving: The purpose is to solve problems (as opposed, for instance, to learning)

Both: Show both the problems and their solutions
You can use either the **Reasoning Hierarchy tool** or the **Graphical Viewer** to browse the reasoning tree.

Solutions are associated both with problems and with question/answer pairs. You should only pay attention to the solutions associated with the problems.
1. Find and select a problem for which you want to define a solution

2. Select Assessment Assistant

3. Click on “New” to define a solution for the selected problem
Disciple displays one or more solution patterns for the selected problem.
Instantiation of the Solution Pattern

Click on a value you want to change and select (double-click) the desired one from the list.
1. Optional but recommended: Provide a justification of the solution

2. Insert values from the ontology by using the completion tool
Selecting another node while defining a new solution is equivalent with clicking on “Cancel”

Click on “Save” if you want to keep this solution

Click on “Cancel” if you do not want to keep this solution
The problem solver uses the new solution to update its reasoning.

Yellow background denotes solution provided by you.
Options to Browse User-defined Solutions

Show user solutions for the current problem “Node”

Show user solutions for the “Sub-tree” of the current problem node

Show “All” the user solutions in the reasoning tree
Browsing User-defined Solutions

User solutions in the “Sub-tree”

Click to navigate to the problem with this user solution
Operations on a User-defined Solution

- You can disable the user solution but keep it to enable it later.
- You can delete the solution.
- You can modify the solution.

“Node” selected
After you clicked on Modify, you can modify values in the solution. You can define or modify the justification.

Selecting another node while modifying a solution is equivalent with clicking on "Cancel".

Click on "Save" if you want to keep the modifications. Click on "Cancel" if you do not want to keep the modifications.
The same operations can be performed by using the Graphical Viewer to navigate the tree.

Click to navigate to the problem with this user solution.
Use of Graphical Viewer with the Assessment Asst

You can disable the solution but keep it to enable it later.

You can delete the solution.

You can modify the solution.

“Node” selected.
Selecting another node while modifying a solution is equivalent with clicking on “Cancel”.

You can modify values and define or modify the justification.

Selected problem:

- Click on “Save” if you want to keep the modifications.
- Click on “Cancel” if you do not want to keep the modifications.
You can define solutions for any problem.

Selected problem:

Assess whether *Al Qaeda* had reasons not to use *nuclear weapons*, assuming that it has them.

It is *unlikely* that *Al Qaeda* has reasons not to use its *nuclear weapons*, assuming that it has them.

Upper user solutions overwrite lower user solutions:

- *Almost certain* that *Al Qaeda* has not used its *nuclear weapons* in order to better prepare their use for achieving absolute success.
- *Almost certain* that *Al Qaeda* has not used its *nuclear weapons* because it wants to use them as a last resort -- if cornered and desperate.
- *Almost certain* that *Al Qaeda* has not used its *nuclear weapons* because it wants to use them to retain support of followers in case of complete loss of backing.
In the Web Believability domain there are 2 solution patterns for each problem node.
1. Select the desired pattern of your solution.
2. Modify it.
3. Save it, by clicking on the adjacent “Save” button.
In the interval pattern, the left value must be strictly smaller than the right value.
More than one solution can be defined for a problem, but at most one can be enabled at a time.
Tecuci G., Lecture Notes on Knowledge-Based Reasoning - Part II, 2008 (required).