

Actions

Assert

Input: A statement

Action: Build fact and add to Knowledge Base

Ask

Input: A statement

Action: Test to see if the statement is in the Knowledge Base

Returns: A lists of bindings lists based on the matches found

Ask+

Input: A list of statements

Action: Test to see if the statements are in the Knowledge Base and are consistent with regard to the bindings

Returns: A lists of bindings lists based on the matches found

Match

Input: Two statements

Action: Test to see if they can be interpreted as the same statement

Returns: The bindings that need to hold is they are interpreted as the same

Infer

Input: A fact and a rule

Action: Test the statement in the fact against the first statement of the LHS of the rule

If they match and there is only one statement in the LHS, add the instantiated RHS to the Knowledge Base

If they match and there are more than ones statements in the LHS, add the instantiated rule to the Knowledge Base with the first element removed

Instantiate

Input: A statement and a list of bindings

Action: Replace all of the variables with the constants they are bound to

Why

Input: A statement

Action: Test to see if the statement is in the Knowledge Base

For each fact that is true, print out the tree of fact/rule justifications for it

Returns: A list of top level facts that matched

Objects

Knowledge Base

Facts: A list of facts

Rules: A list of rules

Fact

Statement: The content of the fact itself

Supported By: List of fact/rule pairs that support it

Asserted: (T/F)

FactSupports: List of facts it supports

RuleSupports: List of rules it supports

Rule

LHS: A list of statements (tests)

RHS: A single statement

Supported By: List of fact/rule pairs that support it

Asserted: (T/F)

FactSupports: List of facts it supports

RuleSupports: List of rules it supports

Statement

A list of elements where the first element is the predicate followed by terms

Term

Either a constant or variable

Constant

An element that refers to a thing or idea in the world

Variable

An element that could refer to anything in the world

Binding

A pairing of a variable with a constant

Bindings List

A list of bindings

List of Bindings Lists

A list of the different bindings lists usually associated with the different set of objects over which a particular statement is true

Action

Preconditions: A list of statements that have to hold if an action can be taken

Add: A list of statements that will be true if an action is taken

Retract: A list of statements that will no longer be true is an action if taken