Fundamentals of Artificial Intelligence and Knowledge Representation – Module 4

Prof. Federico Chesani – 1st of July, 2022

Available time: 30 min.

1) The candidate is invited to define a Prolog meta-interpreter **`solve(Goal, PredToBeCounted, Count)`** that returns in **`Count`** the number of times the specified predicate **`PredToBeCounted`** has been invoked during the resolution of Goal.

   For example, given the following knowledge base:

```
p(1).
p(2).
r(1).
q(X) :- p(X).
```

   and the goal:

```
:- solve( (p(X),q(X),r(X)),   p(X),   Count ).
```

   The expected outcome is:

```
Yes, X/1, Count/2.
```

2) The candidate is invited to describe the predicates/terminology used in the definition of the Event Calculus Framework.

Fundamentals of Artificial Intelligence and Knowledge Representation – Module 4

Prof. Federico Chesani – 1st of July, 2022

Available time: 30 min.

Solution

1) The candidate is invited to …

```
p(1).
p(2).
r(1).
q(X) :- p(X).

solve(true, _Pred, 0) :- !.
solve((A,B), Pred, Count) :-
    !,
    solve(A, Pred, C1),
    solve(B, Pred, C2),
    Count is C1+C2.
solve(Pred, Pred, Count) :-
    !,
    clause(Pred, Body),
    solve(Body, Pred, CountBody),
    Count is CountBody + 1.
solve(Goal, Pred, Count) :-
    !,
    clause(Goal, Body),
    solve(Body, Pred, Count).
```

2) *The candidate is invited …*

See the slides