Introduction to AI
-Tutorial Logic for KRR -

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Colonel West again

Criminal(x) ← American(x), Weapon(y), Sells(x, y, z), Hostile(z)

Owns(Nono,M1)

Missile(M1)

Sells(West, x,Nono) ← Owns(Nono,x), Missile(x)

American(West)

Weapon(x) ← Missile(x)

Hostile(x) ← Enemy(x,America)

Enemy(Nono,America)

1) Compute using SLD resolution all possible answers for the query (∃**x)** Criminal(**x**)
2) Give the minimal Herbrand model of this set of definite clauses
3) Let S be the set of all these clauses. Determine $T_S\uparrow^1$, $T_S\uparrow^2$ and $T_S\uparrow^3$ and the least fixed point of T_S

Search for solutions by SLD resolution

Admires(Ann, Bob) Admires(Ann, Carla) Admires(x,y) ← Lecturer(x), Lecturer(y)

Lecturer(Ann) Lecturer(Dave) Lecturer(Eric)

Rich(Carla) Rich(Eric) Rich(Ann) ← Rich(Carla)

Which rich person does Ann admire?

Formulate this query and compute all possible answers obtainable by SLD resolution, using depth-first search with backtracking. Show all failed attempts explicitly.

More on search for solutions by SLD resolution

Consider the set of definite clauses (written using logic programming notation: variables start with capital letters)

S ={ p(X) ← q(X,Y), r(Y), q(2,3) ←, q(2,4) ←, r(4) ← , r(3) ← r(3) }

and query p(X). Apply 1 step of SLD resolution to obtain q(X,Y), r(Y):

1) Does it matter in which order q(X,Y) and r(Y) are selected for determining an answer?

2) Does it matter in which order clauses are chosen for determining an answer?