5 Exercise session 5

Exercises on ILP.

5.1 Theta Subsumption

Orden according to theta-subsumption.

1. $f(j,p) \leftarrow m(j), m(p), p(j,p).$
2. $f(X,Y) \leftarrow m(X), p(X,Y).$
3. $f(X,X) \leftarrow m(X), p(X,Y), p(X,Z).$
4. $f(X,X) \leftarrow m(X), p(X,X), m(X).$
5. $f(X,X) \leftarrow m(X), p(X,X).$
6. $f(X,X) \leftarrow m(X), p(X,Y).$

5.2 LGG

Compute the LGG of the following literals and clauses:

a. $m(a, c(a, nil))$
$m(b, c(c, nil))$

b. $add(s(s(0)), s(s(0)), s(s(s(s(0)))))$
$add(s(0), s(0), s(s(0)))$

c. $m(X, c(X, Y)) \leftarrow c(X), list(Y).$
$m(X, c(Y, Z)) \leftarrow c(X), c(Y), list(Z), m(X, Z).$

5.3 RLGG

Compute the RLGG of:

$gf(a, c)$
$gf(b, d)$

according to the following background:

$p(a,b)$, $p(b,c)$, $p(c,d)$, $m(a)$, $m(b)$, $f(c)$, $m(d)$

5.4 Using RLGG

Learn a definition for the mortal/1 predicate by using RLGG and the following learning examples:

$+ : mortal(socrates)$
$- : mortal(dracula)$
$+ : mortal(bobby)$

Background:

$man(socrates)$, $alive(socrates)$, $bat(dracula)$, $dead(dracula)$, $dog(bobby)$, $alive(bobby)$.

5.5 Inverse Resolution

Find an inverse resolution path that derives the clause

$$daughter(X, Y) :- parent(Y, X), female(X).$$

starting from

$$daughter(lisa, marge).$$
$$parent(marge, lisa).$$
$$female(lisa).$$