

Semantic Web

Rule Systems

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Hans wants to buy one new Lego toy from eBay.

- The toy should be a *Technic* model und should contain a least 300 bricks. He is willing to pay up to 30 Euro, if the toy has pneumatic he would pay up to 5 Euro more.
- If more toys fulfill his requirements he will buy the cheapest toy. If more toys are equal cheap, he will buy the pneumatic toy.

Create a defeasible logic program which represents these constraints.

Solution: Defeasible Rules

`technicmodel(L)` L ist a Lego Technic toy
`numberOfBricks(L,Z)` L has Z bricks
`price(L,X)` L has price X
`pneumatic(L)` L is a pneumatic toy

`acceptable(L)` toy L satisfies conditions

$r1 : \implies \text{acceptable}(L)$
 $r2 : \neg \text{technicmodel}(L) \implies \neg \text{acceptable}(L)$
 $r3 : \text{numberOfBricks}(L, Z), Z < 300 \implies \neg \text{acceptable}(L)$
 $r4 : \text{price}(L, X), X > 35 \implies \neg \text{acceptable}(L)$
 $r5 : \text{price}(L, X), X > 30, \neg \text{pneumatic}(L) \implies \neg \text{acceptable}(L)$

Where:

$r2 > r1, r3 > r1, r4 > r1, r5 > r1$

$$r6 : \neg \text{acceptable}(L) \implies \neg \text{buy}(L)$$

$$r7 : \text{cheapest}(L) \implies \text{buy}(L)$$

$$r8 : \text{cheapest}(L), \text{pneumatic}(L) \implies \text{buy}(L)$$

Where:

$$r8 > r7, r6 > r8$$