Human vs. AI interpretations

Statement: *Abelard and Heloise are in love.*
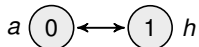
Human agent: $a\,(0)\longleftrightarrow(1)\,h$

AI (after NLP): *Abelard is in love and Heloise is in love.*

AI (after NLP2FOL): $\exists x,\ love(abelard, x) \land \exists x,\ love(heloise, x)$

How many models (e.g. MACE4)?

```
assign(max_models, -1).
assign(domain_size, 4).
formulas(assumptions).
    exists x love(abelard,x).
    exists x love(heloise,x).
end_of_list.
```

```
=========================== STATISTICS ===========
For domain size 4.

Current CPU time: 0.00 seconds (total CPU time: 5.66 seconds)
Ground clauses: seen=2, kept=2.
Selections=278522, assignments=557049, propagations=18, curr
Rewrite_terms=23, rewrite_bools=20, indexes=18.
Rules_from_neg_clauses=0, cross_offs=0.

=========================== end of statistics =========
User_CPU=5.66, System_CPU=10.18, Wall_clock=25.

Exiting with 278528 models.

------ process 4061 exit (all_models) ------
Process 4061 exit (all models) Sun Jul 28 11:51:49 2019
```

Reducing 278,528 models
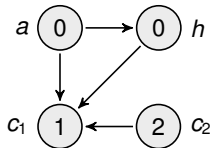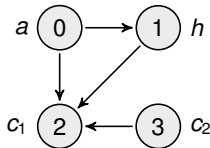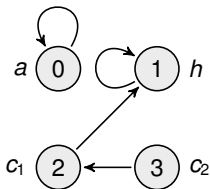
1. UNA: *abelard* $\neq$ *heloise* 163,840 models
2. Assume love is not narcissistic: $\forall x, \neg love(x,x)$. (5,120)
3. Assume someone can love only one person at a time:
   $love(x,y) \wedge love(x,z) \rightarrow y = z$. (80)
4. Remove isomorphic interpretations `isofilter` (74)
5. 2 Skolem consts: assume no interest in love relations between them (17)

Remarks

1. order of reductions is computationally relevant (186,976 models, ~2h)
2. which domain knowledge to add is subject to interpretation