

Unification in the Description Logic \mathcal{EL}_{trans}

- unification techniques for \mathcal{EL}_{trans}
- theoretical topic
- DL and Term Rewriting (desirable)

Barbara Morawska

Efficient Reasoning with Weighted Automata

- automata on infinite trees reasoning: P-hard
- special cases, can be improved (NLogSpace)
- is this true also for *weighted* automata?
- theoretical topic
- automata theory desirable

Rafael Peñaloza

Repairing Techniques in Prob- \mathcal{EL}

- Prob- \mathcal{EL} is probabilistic DL
- Undesirable consequences: how to fix them?
- Extend axiom-pinpointing techniques
- theoretical / practical topic
- DL (desirable)

Rafael Peñaloza

Implementation of a Monitor for *ALC*-LTL Formulae

- *ALC*-LTL monitoring has high complexity
- implement algorithm
- on-the-fly optimisations
- practical topic
- JAVA programming preferred
- DL, LTL and automata theory desirable

Marcel Lippmann

Towards fine-grained optimizations for the \mathcal{EL} reasoner jCEL

- \mathcal{EL} :
 - subsumption can be tested in polynomial time
- $\mathcal{EL}+$ implementation: jCEL reasoner
- Bottle necks:
 - Memory capacity: Loading of large KBs
 - Else?
- Profiling of the reasoner + adaptation of reasoning to OS conditions

Anni-Yasmin Turhan
(together with group of Prof. Härtig)

Build DL KBs from sensor data

- Sensor data: numeric
DL: symbolic
- DL TBoxes: defined concepts & primitive concepts
- How to “populate” primitive concepts?
Instances of ...
 - defined concepts can be inferred
 - primitive concepts are generated by *preprocessors* (e.g.: *high-load*, *medium-temperature*, ...)
- Example Application: virtual DB system

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