TECHNISCHE UNIVERSITÄT DRESDEN

Faculty of Computer Science Institute of Theoretical Computer Science, Chair of Automata Theory

Description Logics

Exercise Sheet 8

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Exercise 26

In the proof of Lemma 4.13, fill in the remaining case $C = \neg A$ in the inductive proof that $\mathcal{I}_\mathcal{A}$ satisfies every assertion $C(x) \in \mathcal{A}$.

Exercise 27

Show that the size of $|C|_\mathcal{T}$ of a concept C w.r.t. an acyclic TBox $\mathcal{T}$, as defined in the proof of Lemma 4.13 in the lecture, is well-defined.

Exercise 28

Use a tableau algorithm to decide whether the following knowledge base is consistent:

$$\mathcal{T} := \{A \sqcap \forall r.\neg A \sqsubseteq \bot\}$$
$$\mathcal{A} := \{(\forall r.\neg A)(a),\ (\exists r.A)(b),\ r(a,b)\}$$