Lehrstuhl für Automatentheorie

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12. Exercises for the Course 'Description Logics'

Exercise 39:

Consider the concrete domain N defined in Section 7.2 of the lecture. Show that N is admissible.

Exercise 40:

We call the composition of features feature paths. Let $f_1, \ldots f_m$ and $g_1 \ldots g_n$ be (not necessarily distinct) features. The concept constructor feature path agreement $(f_1 \circ f_2 \circ \ldots f_m) \downarrow (g_1 \circ g_2 \circ \ldots g_n)$ has the semantics

$$(f_1 \circ f_2 \circ \dots f_m) \downarrow (g_1 \circ g_2 \circ \dots g_n)^{\mathcal{I}} = \{ d \in \Delta^{\mathcal{I}} \mid f_m^{\mathcal{I}}(\dots f_2^{\mathcal{I}}(f_1^{\mathcal{I}}(a) = g_n^{\mathcal{I}}(\dots g_2^{\mathcal{I}}(g_1^{\mathcal{I}}(a)) \}.$$

Show that for the DL that extends \mathcal{ALC} with feature path agreements, satisfiability w.r.t. general TBoxes is undecidable.