NNF语义证明法

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(~~C)^{I} = Delta^{I} - (~C)^{I} = Delta^{I} - (Delta^{-} - C^{I}) = Delta^{I} - Delta^{I} + C^{I} = C^{I}
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推翻TBox语义蕴含

举反例I

Let $\mathcal{T} = \{A \sqsubseteq \exists r.B\}$. Then

$$\mathcal{T} \not\models A \sqsubseteq \forall r.B.$$

To see this, construct an interpretation $\mathcal{I}$ such that

Reasoning相关证明

EXAMPLE: we provide students with the following example that does a similar proof on the semantic level.

The problem is to show $A \sqsubseteq B, B \sqsubseteq C \models A \sqsubseteq C$. From the semantics viewpoint, this means that every model of $A \sqsubseteq B, B \sqsubseteq C$ is also a model of $A \sqsubseteq C$. We assume that there is a model I of $A \sqsubseteq B, B \sqsubseteq C$ such that I is not a model of $A \sqsubseteq C$. This means there is an element d in the domain, i.e., $d \in \Delta^I$ such that $d \in (\neg A \sqcup B)^I$ and $d \in (\neg B \sqcup C)^I$, but $d \notin (\neg A \sqcup C)^I$ (equivalently means $d \in A^I$ and $d \notin C^I$). Therefore, $d \in B^I$ and $d \in (\neg B)^I$, CONTRADICTION.

- GCI成立，说明所有元素都在否A并B中
- 反证关键：存在元素满足一个GCI，不满足另一个，把I带进去推Clash

变式：此方法可用于证明最强GCI问题

- 反设有一个更强的，则存在元素满足更强的，但不满足当前的。于是可以用model I+否A并B的方式进行推理