

Schmidt-Schauß, Manfred**Subsumption in KL-ONE is undecidable.** (English) [Zbl 0709.68096](#)

Principles of knowledge representation and reasoning, Proc. 1st. Int. Conf., Toronto/Can. 1989, 421-431 (1989).

Summary: [For the entire collection see [Zbl 0699.00013](#).]

It is shown that in the frame-based language KL-ONE it is undecidable whether one concept is subsumed by another concept. In fact a rather small sublanguage of KL-ONE called \mathcal{ALR} is used which has only the concept forming operators conjunction, value restriction, and role value maps using only '='. In particular, number restrictions are not used. The language \mathcal{ALR} can be viewed as an extension of feature terms without complements and unions, where features have sets as values instead of elements. Our result shows that there is a basic difference between feature terms and KL-ONE, since the complexity of subsumption switches from quasi-linear to undecidable if the restriction that roles are functional.

MSC:[68T30](#) Knowledge representationCited in **12** Documents**Keywords:**[knowledge representation language](#); [frame-based language](#); [undecidable](#)