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	Inconsistency-tolerant fuzzy description logics
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	Description logics are well-known to be a family of logic-based knowledge representation formalisms, and fuzzy description logics are expressive description logics for representing and handling fuzzy (vague or imprecise) knowledge bases. Even though handling fuzzy concepts is known to be a significant issue in knowledge representation (KR) in AI, inconsistency handling is of growing importance in KR because inconsistencies can frequently occur in the real world. Thus, combining these issues is also regarded as a significant issue in KR, especially for realizing smart knowledge-based systems. Knowledge-based systems would be smarter, more robust, and more fine-grained if they were capable of handling inconsistent fuzzy knowledge bases. In this study, to effectively handle inconsistent fuzzy knowledge bases, an inconsistency-tolerant fuzzy description logic is introduced, and a translation from this logic to a standard fuzzy description logic is defined. A theorem for embedding the proposed inconsistency-tolerant fuzzy description logic into the standard fuzzy description logic is proved using this translation. A theorem for relative decidability of the inconsistency-tolerant fuzzy description logic with respect to the standard fuzzy description logic is also proved using this embedding theorem. The proposed logic and translation are intended to effectively handle inconsistent fuzzy knowledge bases. By using the translation, the previously developed methods and algorithms for the standard fuzzy description logic can be reused for appropriately handling inconsistent fuzzy knowledge bases that are described by the proposed logic. Furthermore, in this study, an inconsistency-tolerant fuzzy temporal next-time description logic is obtained from the inconsistency-tolerant fuzzy description logic by adding a temporal next-time operator. Similar results as those for the inconsistency-tolerant fuzzy description logic are also obtained for this temporal extension.