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**Temporal specifications with FuXTUS. A hierarchical fuzzy approach.** (English)

Zbl 1161.68792

Cotta, Carlos C. (ed.) et al., Knowledge-driven computing. Knowledge engineering and intelligent computations. Berlin: Springer (ISBN 978-3-540-77474-7/hbk). Studies in Computational Intelligence 102, 1-16 (2008).

Summary: Specification and efficient handling of imprecise temporal knowledge is an important issue in design and implementation of contemporary information systems. In domains such as natural language processing, modern databases and data warehouses, knowledge-based systems or decision support systems qualitative and imprecise temporal information is often in use at various levels of abstraction. This paper explores an approach based on TUS, the Time Unit System, and its extended version called XTUS, both providing algebraic tools for constructing simple yet powerful crisp temporal specifications of hierarchical nature. The main contribution of this paper consists in extending the TUS/XTUS approach by means of elements of fuzzy set theory. In particular, a fuzzy extended version of TUS, called FuXTUS, is introduced and its basic operations and properties are shown. It is argued that this simple and consistent with natural language and natural calendar way of building temporal specifications is capable of efficient dealing with imprecise temporal specifications. Numerous simple examples illustrate the presented ideas.

For the entire collection see [[Zbl 1139.68002](#)].

**MSC:**

**68T30** Knowledge representation

**68T35** Theory of languages and software systems (knowledge-based systems, expert systems, etc.) for artificial intelligence

**68U35** Computing methodologies for information systems (hypertext navigation, interfaces, decision support, etc.)

**Keywords:**

imprecise temporal knowledge; Time Unit System