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Fuzzy temporal constraint logic: A valid resolution principle. (English) Zbl 0984.03021
Fuzzy Sets Syst. 117, No. 2, 231-250 (2001).

Summary: We propose a fuzzy temporal constraint logic. First of all, we provide the formal language which will allow the expression of well-formed formulas related to the temporal events by means of temporal constraints. Secondly, we introduce a valid resolution principle in order to solve the queries in this logic. Finally, we will show that this resolution principle is a generalization of the resolution principle proposed for a possibilistic logic with fuzzy predicates [*D. Dubois* and *H. Prade*, Int. J. Approximate Reasoning 4, 1-21 (1990; [Zbl 0697.68083](#))]. All this will serve to reason within a context of the theoretical model of the temporal reasoning proposed by Marín and Barro (Fuzzy Temporal Constraint Network, FTCN) [see *R. Marín, S. Barro, A. Bosch* and *J. Mira*, Cybern. Syst. 25, 217-231 (1994; [Zbl 0809.68111](#))]. This model underlies a module for the resolution of temporal queries. This module belongs to a diagnostic and intelligent monitoring system of patients, based on temporal reasoning. The system is applied to the patients admitted in the Intensive Care Units with severe ischemic cardiopathy, submitted to continuous monitoring of the electrical and mechanical signals of the heart. However, what is exposed here in this document is not limited to a field of application in particular, but instead, it is completely general.

MSC:

- [03B52](#) Fuzzy logic; logic of vagueness
- [68T37](#) Reasoning under uncertainty in the context of artificial intelligence
- [68N17](#) Logic programming
- [92C50](#) Medical applications (general)

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Keywords:

[resolution principle](#); [logic programming](#); [possibility theory](#); [fuzzy temporal reasoning](#); [fuzzy temporal constraint logic](#)

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