Marín, R.; **Cárdenas, M. A.**; **Balsa, M.**; **Sánchez, J. L.**
Obtaining solutions in fuzzy constraint networks. (English) Zbl 0939.68116
Int. J. Approx. Reasoning 16, No. 3-4, 261-288 (1997).

Summary: We propose three methods for obtaining solutions in fuzzy constraint networks and study their application to the problem of ordering fuzzy numbers. The techniques proposed may be classified as defuzzification functions which are applicable to any set of mutually dependent fuzzy numbers in which the dependence relationships are represented by means of metric constraints. We suggest the use of these techniques for ordering linked variables in an efficient manner, and discuss their behavior regarding several quality criteria. The first application realm of these techniques is temporal reasoning.

MSC:

68T37 Reasoning under uncertainty in the context of artificial intelligence
68T20 Problem solving in the context of artificial intelligence (heuristics, search strategies, etc.)
03E72 Theory of fuzzy sets, etc.

Keywords:

fuzzy numbers; temporal reasoning

Full Text: DOI

References:

[1] Adamo, J.M., Fuzzy decision trees, Fuzzy sets and systems, 4, 207-219, (1980) · Zbl 0444.90004
[2] Allen, J.F., Maintaining knowledge about temporal intervals, Comm. ACM, 26, 11, 832-843, (1983) · Zbl 0519.68079
[3] Barro, S.; Marín, R.; Mira, J.; Patón, A.R., A model and a language for the fuzzy representation and handling of time, Fuzzy sets and systems, 61, 153-175, (1994)
[4] Barro, S.; Marín, R.; Otero, R.P.; Ruiz, R.; Mira, J., On the handling of time in intelligent monitoring of CCU patients, (), 871-873
[5] Barro, S.; Bugarin, A.; Félix, P.; Ruiz, R.; Marín, R.; Palacios, F., Fuzzy logic applications in cardiology: study of some cases, () · Zbl 0947.92501
[6] Bortolan, G.; Degani, R., A review of some methods for ranking fuzzy subsets, Fuzzy sets and systems, 15, 1-19, (1985) · Zbl 0567.90056
[7] Dechter, R.; Meiri, I.; Pearl, J., Temporal constraint networks, Artificial intelligence, 49, 61-95, (1991) · Zbl 0737.68070
[8] Dubois, D.; Prade, H., Processing fuzzy temporal knowledge, IEEE trans. systems man cybernet., 19, 4, 729-744, (1989)
[9] Dubois, D.; Prade, H., Possibility theory: an approach to computerized processing of uncertainty, (1988), Plenum New York
[10] Godo, L.; Vila, L., A temporal reasoning system based on fuzzy temporal constraints, (), 43-48
[11] Kaufmann, A.; Gupta, M., Introduction to fuzzy arithmetic, (1985), Van Nostrand Reinhold New York · Zbl 0588.94023
[12] Mackworth, A.K., Consistency in networks of relations, Artificial intelligence, 8, 1, 99-118, (1977) · Zbl 0341.68061
[13] Marín, R.; Barro, S.; Bosch, A.; Mira, J., Modeling time representation from a fuzzy perspective, Cybernet. systems, 25, 2, 207-215, (1994) · Zbl 0809.68111
[14] Marín, R.; Ruiz, R.; Martin, F.; Barro, S.; Palacios, F., An approach to fuzzy temporal reasoning in medicine, Mathware and soft comput., 3, 265-276, (1994)
[15] Mendel, J., Fuzzy logic systems for engineering: A tutorial, (), 345-377, (3)
[16] Struss, P., Problems of interval-based qualitative reasoning, () · Zbl 1132.68710
[17] Tsang, E., Foundations of constraint satisfaction, (1993), Academic London
[18] Túnez, S.; Marín, R.; Bosch, A.; Bienvenido, F.; del Aguila, I.; Taboada, M.J., Adquisición de conciimiento basado en redes de restricciones borrosas: aplicación en agricultura, (), 331-336
[19] Van Beek, P., Reasoning about qualitative temporal information, (), 728-734
[20] Vila, L.; Godo, L., On fuzzy temporal constraint networks, Mathware and soft comput, 1, 3, 315-334, (1994) · Zbl 0833.68012
[21] Vilain, M.; Kautz, H., Constraint propagation algorithms for temporal reasoning, (), 377-382

[22] Wang, L., Adaptive fuzzy systems and control, (1994), Prentice-Hall Englewood Cliffs, N.J

[23] Yuan, Y., Criteria for evaluating fuzzy ranking methods, Fuzzy sets and systems, 44, 139-157, (1991) · Zbl 0747.90003

[24] Zhu, Q.; Lee, E., Comparison and ranking of fuzzy numbers, (), 21-44