Evaluation, Appraisal and Pliant Logic

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1997

Abstract

In this paper we are analyzing the original concept of fuzzy sets and propose a new way handling problems arising on fuzzy field with introducing a consistent system called pliant logic. Not only fuzzy sets motivate us to find new structure, but problems of multicriteria decision making, where value, weight, decision level, threshold, many valued logic and aggregation plays an important role. On one hand we redefine the membership function and understood as evaluation relation (elementary preference relation, or soft open interval) and together with the special representation (see later) of the operators will be called it pliant logic, and on the other hand we settle an unique operator system based on the strict monotone t-norm called evaluation system. The particularity of the operators (conjunction, disjunction, negation and aggregation) is, that we use only one generator function. We are introducing two type of unary operators, one for transforming the decision level and one for the sharpness and here we use the same generator function. With this evaluation operators we can be build complex expression executing an evaluation process. We have to mentioned also that using Dombi operators as a particular representation of the system we get a very effective tool together with appraisal procedure and this representation called pliant logic. The backpropagation process, in the field of neural computing, can be interpreted with this approach and extended too. The article is summary of large concepts and the details can be find in special articles.

Keywords: Operator; Aggregation, Weight, Membership function; Evaluation relation, Multicririeria decision; Pliant logic; Dombi Operator; Evaluation concept, Appraisal process