

Computer Science Seminar

Fuzzy operators for practical applications

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Abstract: In the first part we study a certain class of strict monotone fuzzy operators which build the DeMorgan class with infinitely many negations. We give a necessary and sufficient condition for an operator to belong to this class. We give a new representation theorem of negation based on the generator function of the strict operator.

On the other hand our starting point is the study of the relationship for Dombi aggregative operators, uninorms, strict t-norms and t-conorms. We present a new representation theorem of strong negations where two explicitly contain the neutral value. Then relationships for aggregative operators and strong negations are verified as well as those for t-norm and t-conorm using the Pan operator concept. We will study a certain class of aggregative operators which build a self-DeMorgan class with infinitely many negation operators. We introduce the so-called Pliant concept and characterize it by necessary and sufficient conditions.

In the second part we give a certain class of weighted aggregative operators (weighted representable uninorms). After that, we focus on a specific form of the aggregative operator. Using Dombi's generator function, we show that this form is the same as that for the aggregation of expert probability values, and we can get this operator via Bayes' theorem. These two

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theorems shed new light on the class of aggregative operators.

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