

Graded properties of dominance

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In [6], a graded version of the relation of dominance between t-norms or other aggregation operators has been defined for any R-implication \Rightarrow as

$$\|C \ll D\| = \bigwedge_{\alpha, \beta, \gamma, \delta \in [0,1]} C(D\alpha\gamma, D\beta\delta) \Rightarrow D(C\alpha\beta, C\gamma\delta).$$

The notion can conveniently be handled and its properties derived in first- or higher-order fuzzy logic [3, 4]. The notion can be used, i.a., for estimates of the degrees of transitivity (in the sense of [1, 2]) of fuzzy relations under intersection, generalizing the known non-graded result of [5]. Several properties of graded dominance were given in [6]. Here we extend and elaborate these results, and give graded versions of several further theorems on dominance known from the non-graded setting, esp. on the preservation of the dominance degrees under graded equality and functional composition.

References

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