

PATTERN FUZZY CLASSIFICATION USING \clubsuit -FUZZY S-COMPARISON RELATIONS

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Abstract

In the paper titled " A Unifying View of Comparison Indices in a Fuzzy Set-Theoretic Framework " [1], Dubois & Prade provided a structured presentation of scalar indices for comparing fuzzy sets. That paper was notable for important hints suggested for the definition of fuzzy-valued comparison indices and an equally important distinction made between fuzzy set similarity and non-dissimilarity on the one hand and non-similarity and dissimilarity on the other hand. Confining therefore ourselves to only using similarity (resp. non-similarity) indices for pattern clustering and classification purposes whenever the objects to classify are characterized by fuzzy profiles means simply *neglecting intentionally or unintentionally a significant aspect which is to enrich the analysis, namely, the non-dissimilarity (resp. dissimilarity)*. One way to take this important twofold nature of fuzzy set resemblance (resp. dissemblance) into account consists in defining S-comparison relations.

Our papers [2 ; 3] dealt with (weighted) S-comparisons and the present contribution, will present some \clubsuit -fuzzy-set-based rules and procedures for pattern classification purposes. More precisely it will use what the author calls \clubsuit -fuzzy S-comparison relations. These relations enable (1) taking into account the distinction between fuzzy set similarity and non-dissimilarity and (2) introducing some uncertainty about the assessment of the resemblance of the various objects to classify.

The methodology proposed is based *inter alia* on various properties of t-(co)norms and on some notions related to \clubsuit -fuzzy sets in the sense of Sambuc [4] as well.

References

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