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Special Issue: Guest editorial [Summer School on Aggregation Operators, Related Techniques and Their Applications AGOP'2003]

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SPECIAL ISSUE: GUEST EDITORIAL

TOMASA CALVO AND RADKO MESIAR

This special issue of KYBERNETIKA is linked to the summer school on aggregation operators, related techniques and their applications AGOP'2003 held on July 14–18, 2003 in Alcalá de Henares, Spain. Note that four full papers based on contributions presented during AGOP'2003 were already published in KYBERNETIKA 39 (2003), number 5, and that some others will occur in some of the next issues of KYBERNETIKA. All these papers either enlarge our knowledge in the theoretical background of aggregation (fusion) techniques, or bring interesting applications of aggregation techniques in different domains.

Among nine included contributions, the first one is due to Más, Monserrat and Torrens. It is devoted to the study of implications in the case of discrete set of truth values. Note that the results known on continuous truth scale cannot be transformed directly into a discrete truth scale. Authors study in this contribution S -implications based on a given discrete disjunction S and the only involutive negation n , as well as the residual implications coming up from the Galois connection. Especially interesting is the characterization of all cases when both discussed types of implications coincide.

In the second paper, Ruiz and Torrens work on a continuous truth scale with conjunction modelled by an idempotent uninorm. Their investigation of corresponding implicators and coimplicators is based on the known complete description of idempotent uninorms.

The third paper of Narukawa and Torra is focused on the recently introduced twofold integral connecting the Sugeno and the Choquet integral into a single functional. The authors present the representation of this twofold integral by means of a multi-step Choquet integrals with constants, stressing the piece-wise linearity of this interesting functional.

The fourth paper was written by Tsiporkova and Boeva. Their main idea of introducing aggregation operators is based on a recursive iteration process. Note that in special cases this approach was already applied in several domains, however, authors present here a general result ensuring the convergence of their iterative process. Moreover, an interesting application on natural speech identification is included.

Diaz, Montes and De Baets in the fifth contribution analyzes several properties

of fuzzy preference relations. They discuss transitive decomposition of these relations based on distinguished triangular norms and they pay a special attention to the case of nilpotent minimum triangular norm. Bell inequalities are often discussed in probabilistic framework. Copulas, and among them especially 1-Lipschitz triangular norms, are special operations modelling the probabilistic dependencies and thus they naturally becomes an interesting object for examining the validity of Bell inequalities.

In the sixth paper, Janssens, De Baets and De Meyer discuss some of these inequalities for several parametric classes of triangular norms and show the range of their validity.

The seventh contribution is due to Gomez and Montero. They discuss several properties of classes of aggregation operators. A special attention is paid to the reciprocity (self-duality) of aggregation operators, and especially to decomposition of general aggregation operators into a reciprocal and residual component.

In the next paper, Chiclana, Herrera and Herrera-Viedma address the problem of aggregation based on the reliability of the source of information, with a double aim: a) To provide a general framework for induced ordered weighted operators based upon the source of information, and b) to provide a study of their rationality.

In the last contribution of Bognar, Komorník and Komorníková, aggregation operators are applied in the regime switching models of time series. Authors generalize the original idea of STAR and SETAR time series models and on real geodetic data show the potential of their new approach.

All included papers prove the dynamic development of the field of aggregation operators and of its applications and we hope that it will contribute to the creation of a valuable flexible theoretical background for many domains where aggregation and fusion techniques are applied mostly heuristically.

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