Logical Methods in Artificial Intelligence Applications

This special issue is a collection of papers whose preliminary versions were submitted to the 18th International Conference of the Catalan Association for Artificial Intelligence (CCIA 2015). Each year the Catalan Association for Artificial Intelligence (ACIA) serves the purpose of bringing together the researchers of the Catalan speaking areas while at the same time it contributes to disseminate their work internationally by publishing a series of special issues containing a selection of the best communications, grouped by topics. The authors of the relevant communications concerned with Logics were asked to further develop their original contributions into full papers and resubmit those to the Journal of Applied Logics, where underwent full peer revision for their second time. The result is in the hands of the reader.

Artificial Intelligence borrows both inspirational ideas and effective implementation techniques from a growing variety of fields. After so many years, Logics remains central to this enriching exchange. Logically inspired theories and techniques are the common ground for all the papers in this special issue, accordingly entitled Logical Methods in Applied Domains.

The papers range from the more formally oriented, such as the one by Costa and Dellunde, that is a logical model-theoretic study of Horn clauses over Predicate Fuzzy Logics focussed on free models, structures that are relevant for computer science applications, especially for Fuzzy Logic Programming; to the more applied ones, such as the Torra's paper in which a new micro-aggregation method, based on Fuzzy Logic and Fuzzy Clustering, is proposed to preserve the privacy of data and avoid the disclosure of sensitive information.

Between these two, there is the paper by Boixader and Recasens that proposes averaging as a means to adapt Fuzzy Equivalence Relations to practical situations, or the paper by Armengol and Puyol that introduces a hybrid approach for dealing with preferences which involves Conditional Logics.

The remaining two papers, the one by Anstegui et al. and the one by Montserrat-Adell et al., deal with SAT and with hesitant fuzzy sets, respectively. SAT is the problem of determining if there exists an assignment of the Boolean variables of a propositional formula such that the formula is evaluated as true, and therefore it is a paradigmatic example of an applied problem emanated from Logics, while Hesitant Fuzzy Linguistic Term Sets (HFLTSs) aim at capturing the human way of reasoning when different levels of precision are involved.

All in all, a selection of papers comprehensive enough as to be of potential interest for a wide and diverse community of readers and researchers.

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