Fuzzy Multivalued Logics and T-Norms

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Abstract: Fuzzy logic in narrow sense: A summary on t-norm-based logics
In the seventies and eighties operations over [0,1] corresponding to connectives of a multi-valued logic has been studied and used to define Fuzzy Set operations. From then t-norms, t-conorms, negation and implication functions have been widely studied and applied. The nineties were the start point of the study of the kernel of fuzzy logic (fuzzy logics in narrow sense in Zadeh nomenclature), a multivalued residuated logic whose semantic is defined by the structure defined over [0,1] by a t-norm (modelling the "and") its residuum (modelling the implication) and the negation defined as "imply zero". The definition of BL(for basic fuzzy logic) by P.Hàjek (proved to be the logic of continuous t-norm and their residua) and of MTL (for monoidal t-norm-based logic) by Esteva-Godo (proved to be the logic of left-continuous t-norm and their residua) are the basis for any further study of these family of logics. In the conference a summary of the recent result in these logics and their relation with t-norms will be given.

About the speaker: Francesc Esteva received his B.Sc. in Mathematics in 1969 and his Ph.D. also in Mathematics in 1974, both from the University of Barcelona. He was Full Professor at the Thechnical University of Catalunya and he is currently the Director of the Artificial Intelligence Research Institute (IIIA) of the Spanish Research Council (CSIC). He has published about 100 papers in Journals and Conferences mainly in the area of approximate reasoning and its applications to different areas like knowledge-based systems and case-based reasoning. Multi-valued Logics, Modal and Multi-modal Systems and mainly Fuzzy Logic in narrow sense are the topics he has been working in. He has been President of the Spanish Association for Fuzzy Logic and Technology and the first President of EUSFLAT. He is member of the editorial board of the Handbook of Fuzzy Computation published by IOS Press, area editor of IJUFKBS and member of the editorial board of some other journals.