WWTF Project MA07-016

Fuzzy Logic: from Mathematics to Medical Applications

Abstract

The last decades have witnessed a considerable development of rule-based systems in medicine with the purpose of assisting physicians in medical decision-making. Due to the vague character of medical information, e.g., in observing symptoms or in associating them with diseases, such systems must be able to process unsharp (i.e., fuzzy) information and derive approximate conclusions. The safety-critical nature of such systems, however, requires the adoption of reliable engineering principles as a solid foundation for system design. The proposed project aims to provide such principles via a thorough mathematical analysis of the foundations of fuzzy rules. Our investigation will focus on the well-known systems CADIAG 2 and 4, developed in Vienna and integrated in the General Hospital (AKH).

Keywords:
t-norms based logics, automated deduction, monadic fragment,rule-based systems in medicine, knowledge representation, fuzzy logic

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Further links about the involved persons and regarding the project you can find at
https://archiv.wwtf.at/programmes/mathematics/MA07-016