

Modeling interpretable fuzzy rule-based classifiers for medical decision support

Título Modeling interpretable fuzzy rule-based classifiers for medical decision support

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Abstract Decision support systems in Medicine must be easily comprehensible, both for physicians and patients. In this chapter, the authors describe how the fuzzy modeling methodology called HILK (Highly Interpretable Linguistic Knowledge) can be applied for building highly interpretable fuzzy rule-based classifiers (FRBCs) able to provide medical decision support. As a proof of concept, they describe the case study of a real-world scenario concerning the development of an interpretable FRBC that can be used to predict the evolution of the end-stage renal disease (ESRD) in subjects affected by Immunoglobulin A Nephropathy (IgAN). The designed classifier provides users with a number of rules which are easy to read and understand. The rules classify the prognosis of ESRD evolution in IgAN-affected subjects by distinguishing three classes (short, medium, long). Experimental results show that the fuzzy classifier is capable of satisfactory accuracy results - in comparison with Multi-Layer Perceptron (MLP) neural networks - and high interpretability of the knowledge base. © 2012, IGI Global.

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