On the Achievement of Both Accurate and Interpretable Fuzzy Systems Using Data-Driven Design Processes*

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Abstract

In this chapter it is argued that, one of the most interesting features of fuzzy system is the insight provided on the linguistic relationship between their variables, or in other words, is the possibility of interpret their parameters as a set of linguistic rules.

Both the notions of accuracy and interpretability are reviewed. A general design policy where both accuracy and interpretation can be taken into account is reviewed.

It is argued that the lost of accuracy does not necessary occurs when this type of data-driven design policy is applied. For illustration purposes, simulation results are given from the realistic control problem of neuromuscular relaxation of patients under surgery using continuous infusion of atracurium.