

## Documents

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### **Analysis of fuzzy decision trees on expert Fuzzified heart failure data**

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### **Abstract**

The prevalence of heart failure is 2-3% of the adult population and it is expected to grow. Half of all patients diagnosed with it die within four years. To minimize lifethreatening situations and to minimize costs, it is interesting to predict mortality rates for a patient with heart failure. In this paper, a fuzzy decision tree based on classification ambiguity and a fuzzy decision tree based on cumulative information estimations are presented. They are employed on a heart failure data fuzzified on the basis of medical expert knowledge. After a transformation of fuzzy decision trees, the use of medical expert knowledge allows us to create a group of fuzzy rules that is easily interpretable by medical experts. Our study shows that different types of fuzzy decision trees can have significantly different accuracy results and interpretability. © 2013 IEEE.

### **Author Keywords**

Cardiology; Fuzzification; Fuzzy decision tree; Fuzzy rules; Heart failure

### **Index Keywords**

Adult populations, Classification ambiguity, Fuzzifications, Fuzzy decision trees, Heart failure, Information estimation, Interpretability, Medical experts; Cardiology, Cybernetics, Forestry, Fuzzy rules, Patient monitoring; Trees (mathematics); Algorithms, Decision Making, Diseases, Forestry, Fuzzy Logic

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