

## Decision Making System for Clinical Datasets

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**Abstract :** Computer Aided decision making system is used to enhance diagnosis and prognosis of diseases and also to assist clinicians and junior doctors in clinical decision making. Medical Data used for decision making should be definite and consistent. Data Mining and soft computing techniques are used for cleaning the data and for incorporating human reasoning in decision making systems. Fuzzy rule based inference technique can be used for classification in order to incorporate human reasoning in the decision making process. In this work, missing values are imputed using the mean or mode of the attribute. The data are normalized using min-max normalization to improve the design and efficiency of the fuzzy inference system. The fuzzy inference system is used to handle the uncertainties that exist in the medical data. Equal-width-partitioning is used to partition the attribute values into appropriate fuzzy intervals. Fuzzy rules are generated using Class Based Associative rule mining algorithm. The system is trained and tested using heart disease data set from the University of California at Irvine (UCI) Machine Learning Repository. The data was split using a hold out approach into training and testing data. From the experimental results it can be inferred that classification using fuzzy inference system performs better than trivial IF-THEN rule based classification approaches. Furthermore it is observed that the use of fuzzy logic and fuzzy inference mechanism handles uncertainty and also resembles human decision making. The system can be used in the absence of a clinical expert to assist junior doctors and clinicians in clinical decision making.

**Keywords :** decision making, data mining, normalization, fuzzy rule, classification

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