

MEDICAL DECISION SUPPORT SYSTEM USING DATA MINING TECHNIQUES

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ABSTRACT

The healthcare industry collects a huge amount of data which is not properly mined and not put to the optimum use. Discovery of these hidden patterns and relationships often goes unexploited. Advanced data mining modeling techniques can help overcome this situation. The health-care knowledge management especially in heart disease can be improved through the integration of data mining and decision support. This paper presents a prototype heart disease decision support system that uses two data mining classification modeling techniques, namely, Naïve Bayes and Decision Trees. It extracts hidden knowledge from a database containing information about patients with two important heart diseases in Egypt, namely, AMI (Coronary artery), and HTN (High blood pressure) disease. The models are trained and validated against a test dataset. Lift Chart and Classification Matrix methods are used to evaluate the effectiveness of the models. The results showed that the two models are able to extract patterns in response to the predictable state. Five mining goals are defined based on exploration of the two heart diseases dataset and the objectives of this research. The goals are evaluated against the trained models. The two models could answer complex queries, each with its own strength with respect to ease of model interpretation, access to detailed information and accuracy.

KEYWORDS: Decision Support Systems, Data Mining, Decision Tree, Naïve Bayes, Medical Health Care