Applying Optimal Fuzzy Decision Tree to Customer Relationship Management

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ABSTRACT

Data mining technology has been shown that it can discover useful and valuable knowledge from a huge database. With the information, financial enterprises can understand specific characteristics of customers, provide appropriate personal service for them, and increase customer loyalty and value. In order to achieve the goal, this thesis develops an Optimal Fuzzy Decision Tree (Opt_ FDT) algorithm to enhance the Customer Relationship Management (CRM). In this paper, a number of attributes in FDT and membership functions are represented using chromosome codes. A Genetic Algorithm (GA) is applied to optimize the FDT solution from training data. The fuzzy rule is then used to predict the class for a new customer. Both common used IRIS and WINE datasets is tested and shown that Opt_FDT algorithm works well to them. The algorithm is then used to a real Internet bank dataset. First of all, RFM analysis is conducted to evaluate the classes of customers. Then, essential customer characteristic attributes are identified. Finally, the relationship between customers' attributes and classes are constructed using the Opt_ FDT algorithm. With the results, managers can make a better marketing strategy for specific target customers.

Keywords：Internet Bank, Data Mining, Customer Relationship Management, Fuzzy Decision Tree, Genetic Algorithm.