Abstract

Churn prediction is a useful tool to predict customer at churn risk. By accurate prediction of churners and non-churners, a company can use the limited marketing resource efficiently to target the churner customers in a retention marketing campaign. Accuracy is not the only important aspect in evaluating a churn prediction models. Churn prediction models should be
both accurate and comprehensible. Therefore, Adaptive Neuro Fuzzy Inference System (ANFIS) as neuro-fuzzy classifier is applied to churn prediction modeling and benchmarked to traditional rule-based classifier such as C4.5 and RIPPER. In this paper, we have built two ANFIS models including ANFIS-Subtractive (subtractive clustering based fuzzy inference system (FIS)) and ANFIS-FCM (fuzzy C-means (FCM) based FIS) models. The results showed that both ANFIS-Subtractive and ANFIS-FCM models have acceptable performance in terms of accuracy, specificity, and sensitivity. In addition, ANFIS-Subtractive and ANFIS-FCM clearly induce much less rules than C4.5 and RIPPER. Hence ANFIS-Subtractive and ANFIS-FCM are the most comprehensible techniques tested in the experiments. These results indicate that ANFIS shows acceptable performance in terms of accuracy and comprehensibility, and it is an appropriate choice for churn prediction applications.

Reference

- Bezdec, J.C., 1981. Pattern Recognition with Fuzzy Objective Function Algorithms,
A Neuro-Fuzzy Classifier for Customer Churn Prediction

Plenum Press, New York
- Fuzzy logic toolbox user's guide for use with MATLAB 2010.

Index Terms

Computer Science
Expert Systems

Key words

Churn Prediction
Data mining
ANFIS
Fuzzy C-means

Subtractive clustering