Penulis

SUMMARY

Nowadays classification problems often encountered in various fields in daily life such as economics, banking, social, and health. Given the importance in the classification research, the classification continues to be developed.

Classification tree method now commonly used is Classification and Regression Tree (CART). The advantage of this method is not bound by assumptions and effectively used on data that has a large dimension or having many independent variables. However, CART method has drawbacks where such methods are less stable on learning data changes that cause changes in the results of the prediction. To overcome this problem, a method to improve the accuracy of prediction were developed, called ensemble method. This study used ensamble random forest method because in previous research studies the used of random forest method known to increase the accuracy of CART classification.

Periodontitis is a set of inflammatory disease that attacks the teeth supporting tissues. Periodontitis can lead to loss of alveolar bone around the teeth which if not treated immediately it will lead to a tooth loose.

Chronic periodontitis is a slow progressive periodontitis, due to several factors such as systemic disease, smoking, and tooth brushing habits that affect the host response to accumulation of dental plaque.

The incidence of chronic periodontitis since the year 2012 to 2015 at Dental Hospital of Hang Tuah University Surabaya mostly attack the male gender, and most of them suffer from mild type of chronic periodontitis.

Based on the CART analysis, the gingival resesion and the smoking habit are factors that classified the mild type of chronic periodontitis. The gingival resesion, smoking habit, gingival hiperplation, tooth movement, malocclusion, and tooth migration are factors that classified chronic periodontitis into moderate type of chronic periodontitis. The gingival resesion, smoking habit, gingival hiperplation, tooth movement, malocclusion, tooth migration, malpotition, and calculus are factors that classified chronic periodontitis into heavy type of chronic periodontitis.

The criteria used to compare the accuracy of the classification CART and RF-CART is 1-APER of each learning data and testing. RF-CART classification method has 1-APER greater than the CART method. There was an increase of 3,5% accuracy for data learning and by 1% for data testing. It proves that classification by conducting an ensemble random forest can improve the classification accuracy.

ABSTRACT

Classification tree method now commonly used method of Classification and Regression Tree (CART). The advantage of this method is the method CART is not bound by assumptions - assumptions and effectively used on data that has a large dimension or having many independent variables. However, CART method has drawbacks where such methods are less stable on learning data changes that cause changes in the results of the prediction. To overcome this problem, developed a method to improve the accuracy of prediction ensemble. This study used random forest method ensemble because in previous research studies yhe used of random forest method known to increase the accuracy of the classification of CART.

The random forest-CART method use in the study of Chronic Perodontitis in RSGM Hang Tuah University Surabaya . the gingival resesion and the smoking habit are factors that classified the mild type of chronic periodontitis. The gingival resesion, smoking habit, gingival hiperplation, tooth movement, malocclusion, and tooth migration are factors that classified chronic periodontitis into moderate type of chronic periodontitis. The gingival resesion, smoking habit, gingival hiperplation, tooth movement, malocclusion, tooth migration, malpotition, and calculus are factors that classified chronic periodontitis into heavy type of chronic periodontitis.

The criteria used to compare the accuracy of the classification CART and RF-CART is 1-APER of each learning data and testing. RF-CART classification method has a 1-APER greater than the CART method. There was an increase of 3,5% accuracy for data learning and by 1% for data testing.

Keywords : CART, random forest, chronic periodontitis, classification