ABSTRACT

Interpretation of dental radiographs have been used as the common form of dental record for a radiologist to diagnose the dental disease. The diagnosis is important to make a decision of healing phase and medical treatment to patient. However, diagnosis of dental disease is suspectable and difficult to be decided by a radiologist. In addition, the number of radiologist, especially in developed country like Indonesia is limited which is compared with the number of the inhabitant. Besides that, the highly intelligent technology of X-Ray is much expensive and rare to be found especially in isolated area of Indonesia.

This study is made to detect periapical abscess as a kind of dental disease based on digital image processing via periapical radiograph by using DWT (Discrete Wavelet Transform) and PCA (Principal Comopnent Analysis) methods to extract the feature of image and Artificial Neural Network (ANN) Backpropagation as the classifier of its image, where the class is divided into two classes : normal tooth and periapical abscess tooth.

The result of this study is the system has ability to reach the accuracy of training data equals to 100% and the accuracy of testing data equals to 75,5% by using PCA and 73,5% by using DWT. The parameter of methods, the number and the quality of image, the feature similarity between training and testing data determine the system performance.

***Keyword**: periapical radiograph, periapical abscess,* DWT (*Discrete Wavelet Transform*), PCA (*Principal Component Analysis), and Backpropagation*