ABSTRACT

Tooth is an important part of human body to help food digestion process. With a healthy tooth, the process will be good, but if the tooth has problem, like diseases, it will be hard to digest the food. Sometimes tooth diseases can be seen directly by dentist, but there are that only can be detected by photo radiograph or commonly known as x-ray Rontgen, like granuloma and cyst. The problem is the ability to read the photo radiograph is different each other, so the detection is still a suspect.

This research using descriptive methodology to help the doctors taking the decision while detecting the periapical part of tooth. Discrete Wavelet Transform (DWT) and Principal Component Analysis (PCA) and classified by Linear Discriminant Analysis (LDA) method.

System with PCA method produces a maximal accuracy level which is 96% by using histogram equalization and adaptive histogram equalization as an image enhancement, normalizing data feature in PCA, and taking 15 principle components. Computation time for PCA method is 4.1 seconds. System with DWT method also produces a great performance with accuracy level 94% by using histogram equalization and adaptive histogram equalization as an image enhancement, using Haar as wavelet type, and decomposing image until 5^{th} level. DWT method has computation time 4.67 s, a little bit longer than PCA.

Keywords: *periapical cyst, LDA, PCA, DWT*