ABSTRACT

Teeth are the hardest part of the body which is in the mouth. Pulpitis is an inflammation of the dental pulp tissue that cause pain. There are two classification of pulpitis, it is irreversible and reversible pulpitis. Irreversible and reversible pulpitis is still difficult to diagnose objectively, The diagnosis is the basis of decision-making to take further action to solve the problem pulpitis. Watershed method is method that changing the grayscale level into topography surface model, so it's match to be used for segment the pulp. Principal component analysis (PCA) also can reduce the feature dimension without lose the feature information.

In this final assignment perform radiograph periapical image processing on detection of pulpitis using the watershed method, principal component analysis (PCA) and the classification with euclidean distance algorithm. Watershed method is used to get pulp as the region of interest (ROI) of the object. PCA method used for feature extraction. Euclidean distance algorithms used to classify objects based on learning data that were located closest to the object.

This final assignment produce a system that capable to detect and classify pulpitis type by radiograph periapical digital image processing. The system produced the best performance with 85% of accuracy rate, 80% of sensitivity and 100% of specificity. By performing image processing on the detection of irreversible and reversible pulpitis by periapical radiograph images can help the dentist as an additional tool to take further action to solve the problem pulpitis.

Keywords: *pulpitis, watershed, PCA, euclidean distance*