

## ABSTRACT

It's really important to keep healthy teeth and mouth especially the teeth as a food processing that makes possible for human to bite, cut, swallow and make food softer. One of the disease that usually occur in teeth is Pulpitis. Pulpitis also called as teeth inflammation that cause painful feeling because happened in teeth pulp that contain a lot of nerves and blood vessel. Method to detect this disease is with radiograf periapical that using x-ray, but this method is still has a low image quality.

Based on that problem, this final assignment improved the quality of radiograf image to help doctors to detect pulpitis in teeth, because only doctors in radiology who can detect it but still not that many of them exist in Indonesia. This research has been done by synthesise from the previous researches and related with teeth disease diagnostic techniques through digital image processing and radiographic periapical images.

The methods that have been done are Grey Level Co-occurrence Matrix (GLCM) and Watershed and for the classification using K-Nearest Neighbors method. The data used 39 images in the form of reversible pulpitis teeth image, teeth image of irreversible pulpitis and normal teeth image. The highest identification accuracy obtained using Watershed method is 83.3% and computed 0.373 seconds with 256 x 256 pixel image size and  $K = 1$ , while for GLCM method obtained its highest accuracy is 66,66 % and computation time 0,163. seconds with image size is 128 x 128 pixels, distance is 3 pixel, 90 degree angle, quantization level is 8 and  $K=1$ .

**Keywords :** *Pulpitis, , Grey Level Co-occurrence Method (GLCM), Watershed , K Nearest-Neighbour.*