ABSTRACT

In the world of paleontology teeth is one part of the human body that can be fossilized well because it has a strong structure. In the crown of the tooth there is a layer of enamel in the form of hard tissue and contains calcium. The enamel layers of human teeth fossils can be observed the the pattern of wear and that can provide information about the lifespan at the time of human death and even the dietary habit of humans can be identified. Research related to identification of human dental fossil in general still using chemical reaction method so it takes a long time. Therefore, in this final project has designed a system that capable to identify the age range at the time of human death based on the wear pattern of the enamel layer on the fossil molars using digital image processing. So it can help the geologists in researching fossil human teeth more efficiently.

In this study, two tests were tested to classify the age range at the time of death and type of molars. In the test used the method of Discrete Wavelet Transform (DWT) for feature extraction and for the classification process used K-Nearest Neighbor (K-NN) method. The test image used was 270 images with composition 140 training images and 130 test images for age range testing at the time of death and type of molars. Tests focused on identifying two classes in the age range of 17-25 years and 25-35 years, while for the type of molars there are also two classes which are lower molars and upper molars. For the test of age range identification was obtained the best accuracy of 88.4615% while for the identification of tooth type of molars obtained the best accuracy of 87.6923%.

Keywords: Wear Patterns, Enamel on dental fossil, Discrete Wavelet Transform (DWT) and K-Nearest Neighbor (K-NN)