ABSTRACT

Age is one of the important factors that used to determining people's identity in forensic odontology. Teeth are chosen as objects in age identification because of their excess as one of the most powerful and hardest organs that is resistant to high temperatures and impacts. Age identification can be determined by tooth growth by observing changes in the area of the dental pulp through a panoramic image. Therefore, to simplify the identification process of panoramic images of mandibular first molars, in this final project discussed about age group identification techniques on digital image processing based on Matlab.

This research is done by processing dental panoramic image on each individual with image acquisition process scanned with Canon CanoScan 9000F and dental panoramic from Cone Beam Computed Tomography (CBCT). Then the image is extracted feature with Discrete Cosine Transform (DCT) due to its durability in converting JPEG image from spatial domain to frequency domain to obtain image frequency information. Then, the DCT result matrix is calculated Mean, Standard Deviation, Entropy, and Variance as statistical features. Furthermore, for the classification process used K-Nearest Neighbor (K-NN) to get the best value of k and distance. In this study used 174 extracted panoramic image samples, of which 106 photos were used as training data and 68 images were used as testing data.

The result of this final project is application based on Matlab that able to identify individual age group with Discrete Cosine Transform (DCT) method and K-Nearest Neighbor (K-NN) classification with 69.11% accuracy. Age grouping is classified into children, teenager, and adults according to the Ministry of Health of Indonesia where children aged from 6 to 11 years old, teenagers from 12-25 years old, and adults from the age of 26-60 years.

***Keywords**: Age Identification, Teeth Pulp, Mandibula First Molar, Discrete Cosine Transform, K-Nearest Neighbor*