ABSTRACT

In forensic odontology, identification of the victim can be done by dental identifying. Teeth are chosen as identification objects due to their excess as one of the most powerful organs of the human body, resistant to impact, resistant to high temperatures, and not easily decomposed, compared to soft tissues such as fingerprints. Teeth also have a high degree of uniqueness. In the tooth, there is an outer layer called enamel that protects dentine and pulp (nerve). The enamel layer of the tooth has varied pattern with its own uniqueness, therefore the tooth enamel pattern can be used as a biometric feature. In this Final Project, the author identifies individual-based digital image processing of the tooth enamel pattern.

By using Canon EOS 600D camera and macro lens. Image of tooth enamel pattern processed by Discrete Cosine Transform to get the image's frequency information. Furthermore, the DCT matrix results are calculated with mean, Standard Deviation, Skewness, Kurtosis, and Entropy formula as an input feature for the process of neural network improvement Learning Vector Quantiization (LVQ). The parameters measured are computation time and accounting level. This Final Project uses 300 samples of post extraction incisivus photographs, 10 images are used as training data for each individual class, and 20 images are used as test data for each individual class, with a total of 10 teeth representing 10 individuals.

In this Final Project many tests have been done to see the best and the most effective parameters of system performance. It is hoped that with this system's ability to classify the right tooth enamel pattern according to the individual class can help the dentist to apply individual identification through the image of the tooth enamel pattern in the patient, so that the patient has an enamel pattern identity that can be useful as a fingerprint identifier.

Keywords: Enamel, Discrete Cosine Transform (DCT), and Learning Vector Quantization (LVQ)