

ABSTRACT

Forensic identification is needed to find out the identity of the victim. The condition of the corpse that was damaged due to bomb blasts, burning, decaying, and mass accidents resulted in victims not being able to be identified conventionally is an identification checks with observing the faces and fingerprints. Forensic odontology is used to identify victims through teeth that have high accuracy and the same as fingerprints. Teeth are hard, non-perishable parts of the body and can estimate a person's age from prenatal to adulthood. Age is one of the identities needed in identifying victims. Seeing this problem, a Final Task research is conducted using the mandibular pulp teeth of the first molar to estimate a person's age, because as people grow older the size of the pulp is getting smaller.

In this Final Project, a system is designed to detect individual ages based on the radiographic images of the mandibular first molar teeth from 14 to 60 years. The system is designed using the Fractal method and K-Nearest Neighbor (K-NN) classification. The first stage is image acquisition, then the pre-processing process which is separating the pulp part from the whole tooth. After that, the image of the dental pulp was extracted by Fractal features. Then the image characteristics of the dental pulp are being classified using KNN to be grouped into four classes. The designed system is implemented using MATLAB software for identifying age based on the dental pulp area.

The data used in the study were 376 images divided into two, 282 training data and 94 imagery test data. This Final Task research produces a fairly good accuracy rate of age estimation reaching 82% with the parameters used in the system is the threshold value = 0.8, the number of Fractal dimensions = 1 with the value of the matrix s Fractal = [2] and the value of $k = 1$ with the type Euclidean distance.

Keywords: *Mandibular First Molar Teeth, Fractal, K-Nearest Neighbor.*