

## **ABSTRACT**

Biometrics is a technology that is used as a tool of authentication through analysis of the physiological and behavior characteristics. Dental biometrics is a branch of biometrics, which use teeth as a basis for identification. Characteristic in human teeth can be used as a basis for the identification because of its highly variable composition. The identification using dental biometric takes an important role in the great disaster when the other side of the body has been damaged and difficult to be recognized. Current methods of dental biometric are still done manually so it takes a long time to match the teeth with the person's identity.

This final project designs a simulation of dental biometric using Matlab programming language. The process in this system is image acquisition, pre-processing, feature extraction, and classification. The image used are the result of panoramic dental radiograph. In the pre-processing stage performed the normalization process for uniform image size, then change an RGG image into grayscale format, followed by stretching contrast to improve image quality. The method used for feature extraction is a Empirical Mode Decomposition (EMD) and Principal Component Analysis (PCA) methods to reduce the data. The results of the feature extraction are classified using the Euclidean distance method.

By using Empirical Mode Decomposition (EMD) level of accuracy obtained is 99,43% with EMD 1<sup>th</sup> level, image size 640 x 480 pixel, stretch coefficient 0,01, and principal component value is 25%.

**Keyword:** dental identification, biometric, EMD, IMF, PCA, Euclidean distance