

ABSTRACT

The human face consists of several parts that have different characteristics, which extends from the forehead to the chin as the eyes, nose, ears, lips, cheeks, forehead, hair. In the development of digital image processing technology itself, there are several methods to take on the characteristics of the face in the digital image. The use of facial recognition has spread into many fields, especially in terms of security system. On face recognition are also carried out some development with the emergence of various new methods or development of existing methods in order to improve the accuracy of the method used to recognize faces.

One method commonly used in face recognition are Principal Component Analysis (PCA). PCA feature extraction method which is the stage to look for important features that represent an image. In the PCA method development can still be optimized in order to increase its accuracy. This research used Bacterial Foraging Optimization (BFO) method as an algorithm for optimizing the Principal Component Analysis (PCA). BFO method will be used to search for the best features in the PCA that can separate each one face class with the other face class.

Tests carried out on the test face images of 200 images with testing criteria in determining the best of bacteria from BFO, making PCA features, as well as the use of image enhancement effect on recognition accuracy produced. From the test results, obtained the best results with the highest accuracy at 93%.

Keywords: Digital Image Processing, Face Recognition, PCA, BFO.