ABSTRACT

Face is one of the important biometric that everyone have. Every human have their own face pattern. It's something that could make people unique and could be recognized by other people. In the future, technology desired to relieve the gap between user and the tools. Desirable technology that could interact with the user and knowing each other. That's why face recognition is important here.

This research studied about face recognition using Bacterial foraging optimization (BFO) Algorithm. in this research used all the steps in BFOA like chemotaxis, tumbling, reproduction, and elimination and dispersal. Using Discrete Cosine Transform (DCT) as the feature extraction and K-Nearest Neighbor (K-NN) as the classification that consists of Euclidean distance, Cosine Distance and cityblock. this research based on offline sistem using MATLAB as the simulation software and ORL database as the training and testing image. BFOA mostly used as feature selection in this research and only used to select the feature that extracted by DCT.

The results of the research is the face recognition accuracy using BFO is 87.33% with only 636 features selected. And the best accuracy using DCT is 89% by using 10304 features. with this result, BFO function as feature selector has been met with only used less than 2% features from DCT feature extraction but with not as good as accuracy of DCT's result. in this research, also state that Euclidean distance is the best classifier in both condition (BFO and DCT) with the accuracy is 89% and 87.33 percent.

Keyword: Bacterial Foraging Optimization, Discrete Cosine Transform, Euclidean Distance, K-Nearest Neighbor, Euclidean Distance, Cityblock, Cosine Distance.