ABSTRACT

Various methods have been currently developed to gain a great accuracy and also to create a reliable facial recognition system. One of the most popular is Principle Component Analysis (PCA). Thus, while the PCA projections are optimal for dimensionality reduction, they may not be optimal from a discrimination standpoint. Therefore, a development research is appeared called Fisherfaces derived from Fisher's Linear Discriminant (FLD) which is combined with PCA. This method will maximize the ratio of between-class scatter to that of within-class scatter. Another previous experimental for outdoor video processing was done by using Independent Component Analysis (ICA) but this method was not optimal enough which gain 35% accuracy rate.

This final project was designed to implement and to analyze a facial recognition system in outdoor surveillance video recordings with input was built from sample frames. Detection system was created by using Viola-Jones algorithm. Feature extraction algorihtm uses Fisherface and Artificial Neural Network Backpropagation as its classifier. Video was captured under various distances and various camera angles.

Output of this experimental is a facial recognition system that can identify people identities. Based on test conducted, this experimental result in video processing shows that face recognition method proposed in this paper combined with ANN backpropagation classifier by using dimensionality reduction (C-1), video test that have 29 fps, and 350 training test makes impressive performance improvement proved with high accuracy which gain 85.31% accuracy rate, %, FAR 12.03% *and* FRR 2.64%

Keywords : Face Reconition, HOG, Fisherface, Artificial Neural Network