ABSTRACT

Face recognition is one of the biometric techniques developed in several studies. Face recognition can verify someone's ID, both from images and videos. However, face recognition has not reached a high level of accuracy due to illumination, pose variations, under sample data, occlusion variations, and others.

Sparse Representation based Classification (SRC) is a method that robust in face recognition and can overcome several problems in face recognition. However, SRC has the disadvantage of a heavy computational load. Image dimension reduction is used to overcome these shortcomings in this final project. Dimension reduction is done by multiplying the feature matrix with a random projection matrix using several techniques, including Random Gaussian, Random Uniform Binary, and Random Uniform Integer. Then compared with the classical linear method, downscale.

Dimension reduction using a reduction factor of 64 to 512. The simulation results on the AT&T dataset show that the reduction factor with a ratio of 10.304 : 128 has a maximum accuracy rate of 100% with a computation time of 0.15 seconds on a Random Uniform Integer projection, and a maximum value is done by doing iteratively. As for the downscale technique, the maximum level of accuracy with a reduction factor value of 256 produces an accuracy of 94.5% and a computation time of 0.14 seconds. SingleTest occlusion test, SRC can detect images with an occlusion rate of up to 80%.

Keywords: *Sparse Representation. Random Projection, Face Recognition*