

The Effect of Database Type on Face Recognition Performance for Surveillance Applications

ABSTRACT

Face recognition is one of the most important biometric approaches due to its potential applications in surveillance monitoring and access control. This paper presents a PCA and SVM based face recognition system for surveillance application. A proposed training database selection criteria suitable for surveillance application which consist of 1 mean image per distance class from all the available database sessions is also used for the face recognition system. In this study, the ChokePoint database, specifically the grayscale (PPG) and colored (MPCI) versions of the ChokePoint database, were selected for this work. The objectives of this work is to investigate the effect of the using different training data as well as using different similarity matching method on face recognition for surveillance application. It was found that regardless of the type of databases used, the recognition output pattern on different training data selection criteria was found to be similar. It was also found that regardless of the similarity matching method used, the face recognition system also shows the same recognition performance pattern. The experiment suggests that the proposed training database selection criteria will give similar recognition performance regardless of databases type or face recognition technique used. Overall, the ChokePoint colour database (MPCI) gives better recognition performance than the ChokePoint grayscale database (PPG). Finally, it can be concluded that using 1 mean image per class from all the available database sessions (Case-6) is better compared to using 1 image per class that are randomly selected from all the database sessions (Case-4). Even though a straight comparison between this work proposed system and several published system is not meaningful as different face recognition approaches and experiment criteria are used, nevertheless, this work proposed method performs with 100% recall and reject recognition rate.