Abstract

The level of criminality in Nigeria is at alarming rate which leads to daily development of various security skills used in identification and verification of offenders. Face Recognition (FR) which is one of the security skills is a biometric system used to identify or verify a person from a digital image. The dimensionality reduction is a most essential duty in the domain of FR. An algorithm that is used most of the times in FR for dimensionality reduction is Principal Component Analysis (PCA). PCA is a technique that can be used for dimensionality reduction but the major challenge of PCA is that it is a time-consuming data mining algorithm. Reducing the execution time of PCA has been a research significant topic in pattern recognition and computer vision. This paper presents a framework for execution time reduction of Principal Component Analysis based Algorithms focusing on CRT form of Residue Number System. Yale database and another new dataset is created containing 120 face images of 40 persons frontal faces with 3 images of each individual for the experiment. The proposed approach would decrease the execution time of PCA algorithm base algorithms.
References


Index Terms

Computer Science Algorithms

Keywords

Residue Number System, Eigenfaces, Euclidean distance, principal component analysis, dimensionality reduction