Development of a Real-Time Intelligent Biometric Face Detection and Recognition System in LabVIEW

Abstract

Face detection and recognition plays a vital role with broad application in areas like crowd surveillance, security system, human co mputer interface, etc. In principle, biometric system is preferred for people identification due to its reliability and accuracy. The biggest challenge in face recognition arises when a real-time application system is designed for frontal and non-frontal images. The variations in face poses and expressions greatly impact the identification accuracy of a moving person. To circumvent this issue, in this paper, a real-time biometric system using face region is designed to detect and recognize a person in a pre-defined range using LabVIEW . Face region is propos ed to eliminate any physical contact with the system. Neura l Network (NN) is employed by training the face images in different distance and angle which allows this system to work for frontal and non- fron tal face recognition. Algorith ms in LabVIEW are developed to detect and extract the face region in a captured fra me which is then sent to NN for recognition process. Consecutive frames video processing was implemented for a real-time face recognition system. About 128 images were used for tra ining and 160 images were tested and it achieves an accuracy of 96.8% in rea l -time testing.