A robust geometric skin colour face detection method under unconstrained environment of smartphone database

ABSTRACT

Face detection is the primary task in building a vision-based human-computer interaction system and in special applications such as face recognition, face tracking, face identification, expression recognition and also content-based image retrieval. A potent face detection system must be able to detect faces irrespective of illuminations, shadows, cluttered backgrounds, orientation and facial expressions. In previous literature, many approaches for face detection had been proposed. However, face detection in outdoor images with uncontrolled illumination and images with complex background are still a serious problem. Hence, in this paper, we had proposed a Geometric Skin Colour (GSC) method for detecting faces accurately in real world image, under capturing conditions of both indoor and outdoor, and with a variety of illuminations and also in cluttered backgrounds. The selected method was evaluated on two different face video smartphone databases and the obtained results proved the out performance of the proposed method under the unconstrained environment of these databases.

Keyword: Background; Face detection; Face recognition; Illumination variation; Skin color segmentation; Smartphone database