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FACE DETECTION SYSTEM

Deepak Chandra

Brandon Barbello

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ABSTRACT

A face detection system and method are disclosed to identify the existence and position of human faces in input images. The system uses a full face detector and a part face detector in a convolutional neural network. The method involves processing of each image input using a classifier and an algorithm to detect full and part face regions, while differentiating nonface areas using the convolutional network. The above results are combined to identify face regions. This combination of techniques makes the neural network user-friendly and leads to quick processing of images for facial detection.

BACKGROUND

The human face plays an important role in social interactions and detecting people's identity. Face detection technology has received significant attention in the past several years due to its potential for a wide variety of applications in both law enforcement and non-law enforcement contexts such as social networking. Current detection systems have difficulty in detecting face regions in images having insufficient lighting conditions or images displaying faces at different scales. Therefore, there is a need for a better method to identify the existence of human faces in an image accurately.

DESCRIPTION

This disclosure presents a face detection system and method to identify the existence and position of human faces in images. The system depicted in FIG.1 comprises software with a unique combination of a full face detector, a part face detector, and a face/nonface convolutional neural network.

Convolutional neutral network
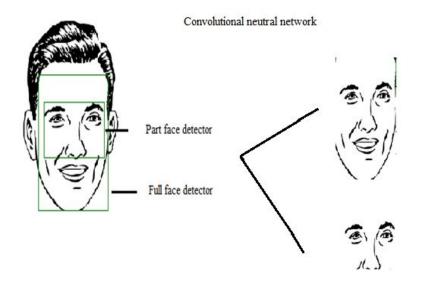
Part face detector

Full face detector

FIG. 1: Face detection system

The method for facial detection illustrated in FIG. 2 involves the steps of (a) processing each input image using a classifier, (b) running algorithms in parallel to detect full and part face regions, (c) eliminating nonface areas and then (d) combining the results using a convolutional network to identify face regions.
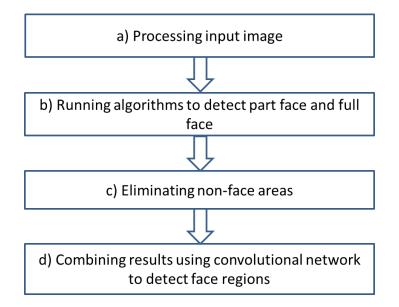

FIG. 2: Method for facial detection

The person's face in input images containing either frontal or non-frontal views can be detected accurately, regardless of the scale associated with the human face. Use of a combination of techniques leads to faster learning of the neural network, leading to quick processing of images for facial detection.