Importance of Facial Recognition System in Iphone App Development by Pradeep Hunka

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Facial recognition software is based on the ability to recognize a face and then measure the various features of the face.

Every face has numerous, distinguishable landmarks, the different peaks and valleys that make up facial features. These marks are called as nodal points. Each human face has approximately 80 nodal points.

The facial recognition software for iphone and other mobile devices determines the face of a person by taking into account â€“ the distance between the eyes, width of the nose, depth of the eye sockets, shape of the cheekbones and length of the jaw line. The points are measured by creating a numerical code, called a faceprint. It is the face print that represents the face in a database.

The early facial recognition methods were based on 2D image that would compare or identify another 2D image from the database. The image of the face that was looking into the camera was captured .The problem here was that a little variation in light or facial expressions would render the software to be ineffective in doing its task.

For iphone application development and other mobile application development based on facial recognition concept, there were two types of approaches used by the Recognition algorithms. One is geometric, which looks at distinguishing features and the other is photometric, which is a statistical approach that distills an image into values and compares the values with templates to eliminate variances.

3D Facial Recognition

3D facial recognition system is a revolutionary trend for making facial recognition softwares that claim to provide more accuracy than the 2D ones. The 3D facial recognition softwares use 3D models to capture the image of the person. In 3D recognition technique, the distinctive features of a person such as rigid tissue and bones like the curves of eye socket, nose and chin are captured. These features provide a unique identity and do not change with time.

There are six steps while recognition through 3D technique is concerned. They are detection, alignment, measurement, representation, matching and verification or identification. Detection includes acquiring an image which is digitally scanned from an existing photograph or by live capturing the image of the person. Once the image is detected, the head position, size and image are detected. In 3D model, the image can be recognized when the image is at 90 degrees to the camera while in 2D the head must be turned 35 degrees to the camera. The curves of the face are measured upto a sub millimeter scale and template is created on this basis. The system converts this template into a unique code. The coding gives a set of numbers to represent the features on a subject's face. If the image is 3D and the database contains 3D images, then matching will take place without any changes being made. However, if the image in database is 2D then, an algorithm would be applied to convert the captured image in 2D to match the database image. The last step is verification process where a 1:1 or 1: N matching is performed, depending on the situation where it is being used.

Biometric Facial Recognition

Biometric facial recognition uses skin biometrics i.e. the uniqueness of skin surface to yield results which are more accurate than the 3D systems. This process is called Surface Texture Analysis. In this method, a picture of a patch of the skin is taken which is called as skinprint. The skinprint is divided into smaller blocks and using the algorithm, the patch is converted into a mathematical space that can identify any lines, pores and the actual texture of the skin.

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