

# Face Detection Technology

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## I. INTRODUCTION

This Technical Presentation explains about biometrics system which is used to recognize the face of the person by making the use of sensor technology. Biometrics is a complete automatic process and it is a measurable, robust and then distinguishes the physical characters of the person. It also identifies the personal details of the person and then clarifies the clear and the detailed identity of the desired person. This process is carried out automatically when once the machine is set on the active state[1].

## II. WORKING

The Iris scanning counts and measures the colored portion of the eyes, the Retinal scanning counts and measures the vessel patterns at the backside of the eyes, the voice reorganization traps and detects the voice and the finger scanning takes the prints of the fingers for the better security purposes. The first step of the operation is the system traps the picture of the face of the person, then the verification of the person's face is done in the system. The comparison is made and the similarity is verified, and at the last the system decides whether it is a match or it is a no match of the person's face [4].



Fig 1 : Biometric Points

## III. SECURITY

It is used in security systems. The face recognition will directly capture the information about the shapes of face. The advantage of facial identification is it identifies each

individual's skin tone of a human face's surface, like the curves of the eye hole, chin, nose, mouth etc.

Automatic face detection is widely used in applications ranging from the duplication of identity to the mobile payment. The popularity of face detection has raised concerns about face spoof attacks. It is also known as biometric sensor presentation.

The Shape matching and object identification is one of the challenging tasks in the system vision. Now a days, there are many techniques available for detecting object efficiently. Still a lot of research going on for enhancing the recognition techniques for 3D face and 3D images

Face detection software falls into a group of technologies known as biometrics. It also uses biological information to verify identity of the subject. The idea behind biometrics is that our bodies contain the unique properties that can be used to distinguish us from others. The face detection methods may varies, but they involve a series of steps that help to analyze, capture and compare your face to a database of stored pictures. Besides the face detecting, biometric authentication methods also include Retina scan, Voice identification and Fingerprint scan.[3]

## IV. DEVELOPEMENT

The private software company developed Face detection software called Faceit. The heart of this face detection system is the Local Feature Analysis algorithm. This is the mathematical techniques the system uses to encode faces. The system creates a face print and maps the face, a unique numerical code for that face. Once the system has stored a faceprint, it can compare it to the millions or billions of faceprints saved in a database. The Potential applications even include ATM and Security Law Enforcement, Security Surveillance & check cashing security. The biometrics technology could be used to secure your system files, by mounting a webcam to your system and to get the data into your computer. The normal password security is not safety then, you are getting double security to your valuable data.[3]

## USES

The primary users of face detection software like FaceIt have been law enforcement agencies, which uses the software system to capture random faces in the crowds. The face recognition software are generates a face print of the photograph to protect customers against fraudulent transactions and identity theft. By using face identification software, there's no need for a image ID, personal identification number (PIN) or bank card to verify customer's identity.

Facial-recognition advancement depends on the quality biometry series of image acquisition, picture acquisition, and image process distinctive characteristic location, templates creations, and matching. A best image is captured through a high resolution camera, with moderate lighting and users directly facing a camera. The enrollment pictures outline the facial characteristics to be employed in all future verifications, thus a high quality enrollment is essential. Challenges that acquisition and lighting. Distance from the camera reduces facial size and so image resolution.

## V. DETECTION

Once the system is hooked up to a video closed-circuit television, the recognition software searches the field of view of a video camera for faces. If there's a face within the read, it is detected within a fraction of a second. A multi-scale rule is employed to look for faces in low resolution. (An algorithm is a program that provides a set of instructions to accomplish a specific task). The system switches to a high-resolution search solely when a head-like form is detected.[1]

**Alignment** - Once a face is matched, the system identifies the head's position, size and pose. A face must be turned a minimum of thirty five degrees toward the camera for the sensor to register it.

## VI. NORMALISATION

The image of the top is scaled Associate in Nursing turned so it will be registered and mapped into an acceptable size and cause. Normalization is performed in spite of the head's location and distance from the camera. Light does not impact the normalization process.[2]

**Representation** - The system interprets the facial knowledge into a novel code. This committal to writing method permits for easier comparison of the fresh nonheritable facial knowledge to hold on facial knowledge.

**Matching** - The fresh nonheritable facial knowledge is compared to the hold on knowledge and (ideally) coupled to a minimum of one hold on facial illustration.

The heart of the FaceIt identity verification system is that the native Feature Analysis (LFA) rule. The system maps the face and creates a faceprint, a novel numerical code for that face. Once the system has stored a faceprint, it can compare it to the thousands or millions of faceprints stored in a database. Each faceprint is stored as an 84-byte file.[4]

## VII. CAPABILITIES

The system can match multiple faceprints at a rate of 60 million per minute from memory or 15 million per minute from hard disk. As comparisons area unit created, the system assigns a worth to the comparison employing a scale of 1 to ten. If a score is higher than a preset threshold, a match is said. Facial recognition, like other forms of biometrics, is considered a improvement that will have many uses in the coming future.

## REFERENCE

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