Discovering Unknown People through the Audio designed for people with visual impairments

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Abstract:

Persons who have visually damaged expression no deficiency of difficulties, where active with debilities can be particularly interesting. One such challenge is identifying the known person(s). Traditionally blind people use their hands to touch the person's face to recognize or by listening to their voice they can identify the person. But not everyone can identify by using these methods. "Here the system which is developed for visually impaired people and attempts to convert the visual sphere into the audial sphere with the probable to notify unsighted persons their known ones. Faces discovered from the image is denoted with names and converted to speech.

Keyword: Blind people, Faces detection, Voice output, face recognition, Capture Image.

1 Introduction

Biometrics is the arising space of bioengineering; it is the computerized strategy for perceiving individual dependent on a biological or conduct trademark. The functioning model assistive device's structure has been verified [1]. There exist a few biometric frameworks like mark, Fingerprints, voice, iris, retina, hand math, ear calculation, and face. Among these frameworks, facial acknowledgment gives off an impression of being quite possibly the most general, collectable and open frameworks, and numerous important procedures are involved [2] Acknowledgment is particularly attractive Biometric face recognition, or simply Face, Examining Impaired-User Input States for Keystroke Biometric Authentication[3].

Biometric method, because it makes a specialty of the Acknowledgment is a specifically attractive, because it makes a specialty of the identical identifier that human beings use frequently to differentiate one individual from another: their "faces". Personal Identification and confirmation Using Multimodal biometrics [4].One of its important desires is the expertise of the complicated human visible machine and the information of the way human beings constitute faces to be able to

differentiate exceptional uniqueness with excessive accuracy. Face Recognition technology has been in industry for several years and has wide range of applications like in security, authentication and identification. One such technology can be used to help visually impaired people. This uses face recognition technology and tries to transform the visual world into the audio world. It recognizes faces from the scene and gives voice output (name of the person) to the user?

2 Literature Survey

Face recognition technology has vast applications in real world but lack one functionality that help blind people to use it, that is Voice output. This system is centric to help blind people to recognize their known ones from the scene. Whenever blind people go out for any work, it is hard for them to know who are passing by. Location and movement are difficult problems for Blind people [5] traditionally blind people use their hands to touch the person's face or their body to recognize or some people with utmost concentration listen to the opposite speaking person to guess that person name or personality. Discovering of ones way to an unidentified endpoint is important [6] However, these techniques are costly and not easily adaptive. Challenging for the visually impaired [7], acquire these kinds of skills one has to go years of training and needs years of experience to correctly guess or recognize the person. Need to plan to help them on a daily basis [8].

3 Proposed Methodology

This system attempts to make over the visual world to audio world to blind people. This manuscript uses facial recognition technology to recognize known person from the scene and gives a voice or audio output to the user. This voice output is possible by using text to audio technology to give voice output to user. User must first register the required person face to the system. It is done by taking 50-100 photographs of that person. More the photos more will be the recognition rate. These images are linked to the person name. After this step, system is trained using these images and it is ready to go. When it is used, it will detect and recognize the faces from the scene and gives voice output.
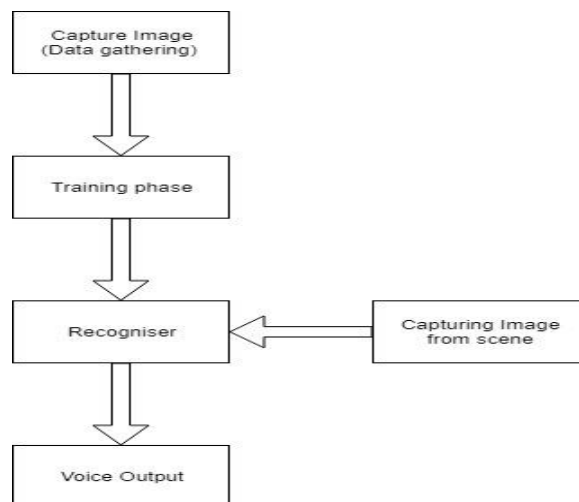
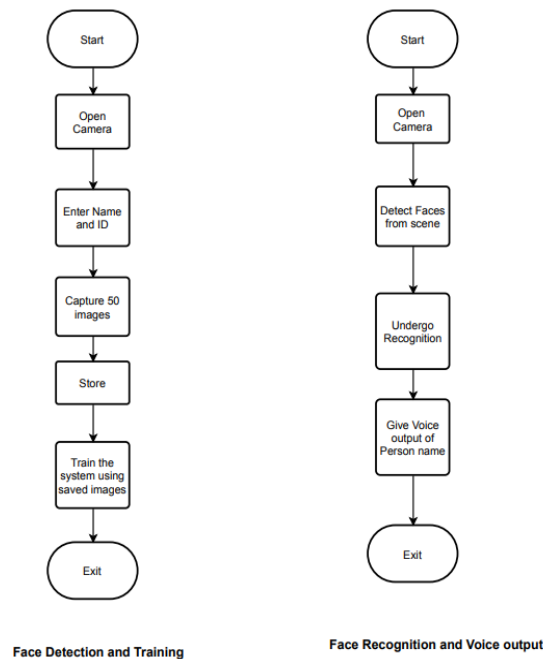Fig,1 Block Diagram of Proposed System

Fig 2. State Chart diagram

3.1 Data Description

Here the data is the person's photo. A sample of 50-100 images of that person is collected and stored in a folder. These images must be captured in good lighting condition where all facial features of the person is properly visible. It is advised to store a copy of these images in a remote location so that images need not be captured again if lost. Further, these images are required for training purpose.

3.2 Module Description

Capture Image:

This is responsible for detecting and capturing the images of person from scene. This module first takes the id and name to store the images. Then it will detect the faces from scene using pre-executed xml file called h**aarcascade_frontalface_default.**

It takes photos in range 50-100 and saves all photos in grey scale for better feature extraction.

Training:

This module is core of this system. It first load the **create LBPH Face Recognizer ()** which is an algorithm called LBPH (Local Binary Patterns Histograms) used for finding patterns and remembering them. After loading, it then separates the name and associated image and gives it to **train ()** for training the system to remember the image for the given name. The trained data is saved in yml format.
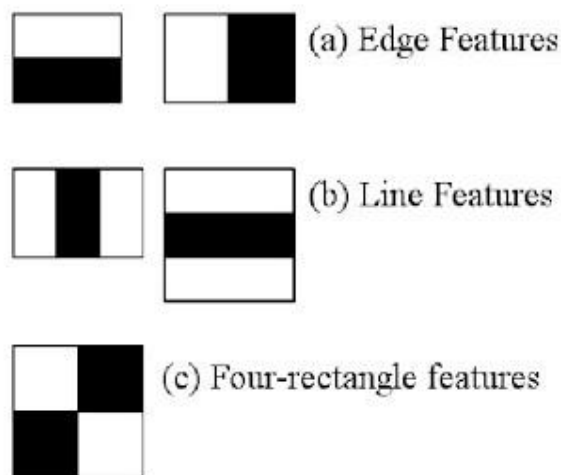
Recognizer

The recognizer module first starts by loading three things: **haarcascade_frontalface_default** which is used for detecting the faces, **createLBPHFaceRecognizer ()** which is for recognizing the faces from scene and trained data which is stored in **yml** format. After loading we detect the faces

from scene and call the **predict ()** for predicting the scanned image. This function returns id and confidence with which it thinks the scanned image is that belong to id. The received id is examined to find to whom it belongs and takes the name and gives it **say ()** which is the backbone for giving voice output to the user. It will continue until user quits the system.

## 3.3 Algorithms

Face Detection using HAAR Cascades −

Haar-like capabilities are virtual photo handling utilized in item acknowledgment. They owe their call to their spontaneous likeness with Haar wavelengths and have been used with inside the first real-time face finder. A Haar-like function reflects adjoining square areas at a selected place in a recognition window, sums up the pixel intensities in every area and calculates the distinction among those sums. This distinction is formerly used to classify subcategories of a photo. For example, allow us to say we've a photo record with human faces. It is a not unusual place statement that amongst all faces the area of the eyes is darker than the area of the cheeks. Therefore, a not unusual place haar function for face recognition is a fixed of adjoining rectangles that lie beyond the attention and the cheek area. The function of those rectangles is described relative to a detection window that acts like a bounding field to the goal item (the face on this case). In the detection phase, a window of the goal length is moved over the enter photo, and for every subsection of the photo, the Haar-like function is calculated. This distinction is then as compared to a found out threshold that separates non-gadgets from gadgets. Because this type of Haarlike function is most effective a susceptible learner or classifier, (its detection best is barely higher than random guessing) many Haar-like capabilities are essential to explain an item with enough accuracy. In the Viola Jones item detection framework, the Haar-like capabilities are consequently prepared in something referred to as a classifier cascade to shape a sturdy learner or classifier. The key benefit of a Haar-like function over maximum different capabilities is its calculation speed.


Face Recognition using Local Binary Patterns Histograms (LBPH) − Eigen faces and Fisher faces are each laid low with mild and in actual existence we can't 12 assure ideal mild situations. LBPH face recognizer is an development to triumph over this problem. Idea is to now no longer examine the picture and it organizes that through evaluating every pixel with its adjacent pixels.

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Take a 3x3 window and circulate it one picture, at every circulate, examine the pixel on the middle with its neighbor pixels. The buddies with depth fee much less than or same to middle pixel are dented through 1 and others through 0. Then you study those 0/1 values below 3x3 window in a clockwise route and you may have a binary sample like 10011010 and this sample is neighborhood to a few location of the picture. You do that on whilst picture and you may have a listing of neighborhood binary patterns.
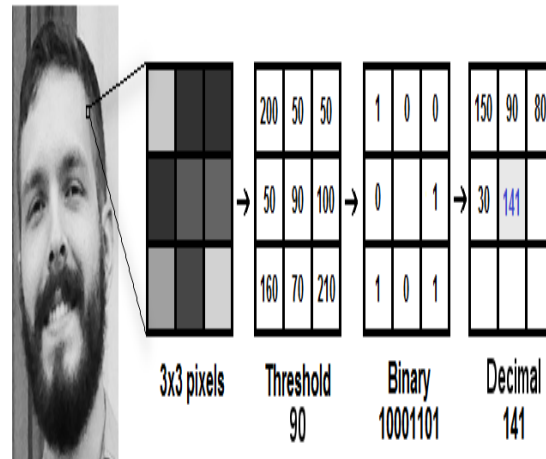

At the moment you get why this set of rules has native twofold arrangements in its name since you get a listing of neighborhood binary patterns. Now you'll be speculating, what approximately the histogram a part of the LBPH? Well once you get a listing of neighborhood binary patterns, you exchange every binary sample right into a decimal number (as proven in above image) and you then definitely make a histogram of all of these values. A pattern histogram looks as if this.
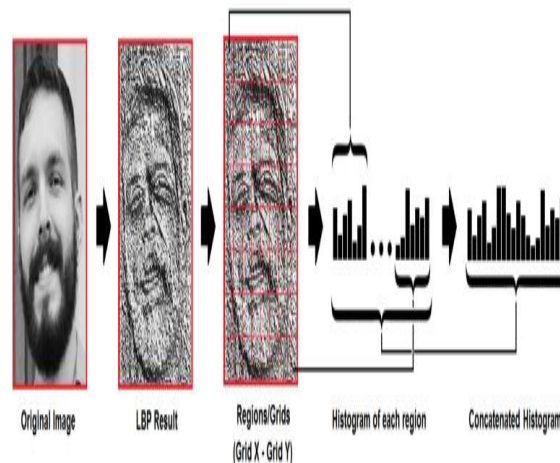
So in the long run you'll have one histogram for every face photo with inside the schooling statistics set. Those methods if there have been one hundred photos in schooling statistics set then LBPH will extract one hundred histograms after schooling and save them for later reputation. Remember, set of rules additionally maintains tune of which histogram fits to which individual. Later in the course of reputation, whilst you feed a brand new photo to the recognizer thirteen for reputation it'll create a histogram for that new photo, examine that histogram with the histograms it already has, reveals the

quality healthy histogram and returns the individual label related to the quality healthy histogram. Below is a listing of faces and their respective LBP photos. You can see that the LBP photos aren't stricken by adjustments in mild condition.
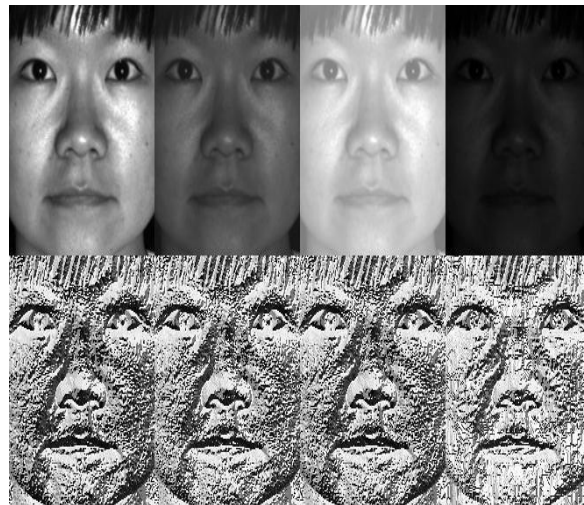
Result:

Conclusion

The face recognition technology with text to speech technology. It tries to transform the visual world to the audio world. This is majorly helpful to visually impaired people who can use this technology which help them to guide to find their known ones. This system basically stores all the required images (sample of 50-100) in a folder and is trained using the stored image for name-associated image. This manuscript uses the LBPH algorithm for training the system. On running the recognizer module, it detects the faces from scene and gives the voice output to the user.

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