Accident Prevention System Using Face Recognition

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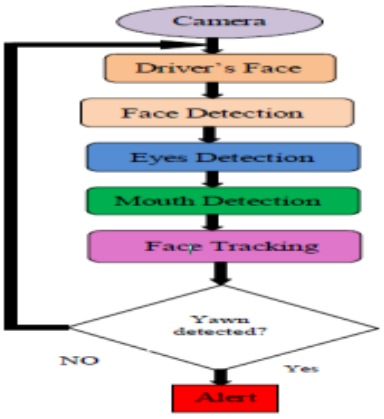
Abstract - ***With the growth in population, the occurrence of automobile accidents has also seen an increase. A detailed analysis shows that, around half million accidents occur in a year, in India alone. Further, around 60% of these accidents are caused due to driver fatigue. This project aims to create one more step towards solving this serious problem. Driver fatigue affects the driving ability in the following three areas, it impairs coordination, it causes longer reaction times and it impairs judgment. This project provides a real time monitoring system for Accident Prevention using face/eye detection techniques in image processing. Further, to ensure real-time computation, face detection technique is used for drowsy/fatigue detection. This software project uses some Android API's to interact and get the output of local camera. It maybe a webcam or any other attached camera. The API's is to get the camera video input to our smart phones. We then use the video data to manipulate and recognize faces in real time. It will detect the face/eye of the driver if it go beyond the certain limit the alarm will be generated. This helps to wake up or alert the driver thathe is sleeping ordrowsy.***

Key Word s – Face/Eye Detection, Webcam, Alert Message.

I. INTRODUCTION

All the research till date in this approach need electrode contacts on the automobile drivers' head, face, or chest making it non-implementable in real world scenarios. Driver Alert by Ford, Driver Alert Control by Volvo. All the mentioned techniques monitor the road and driver behavior characteristics to detect the drowsiness of the automobile driver. This approach is inherently flawed as monitoring the road to detect drowsiness is more of an indirect approach and also lacks accuracy. In this project we propose a direct approach that makes use of Face detection techniques to detect drowsiness. In future the application can be used to track drivers with their photo. To alert the driver on detection of drowsiness by using beep or buzzer and to ensure a simple and efficient design, that can be implemented using simulation.



II. VIDEOACQUISITION.

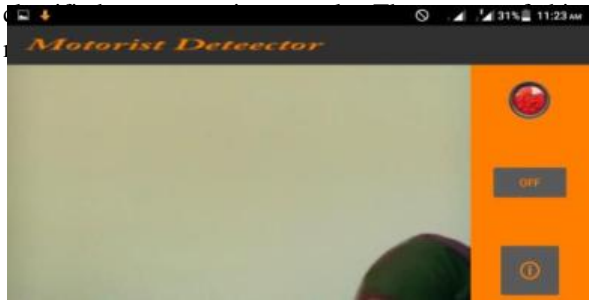
Video capture is the processof converting an analogvideosignal such as that produced by a video cameraor DVD player to digital video. The resulting digital data are computer filesreferred to as a digital video stream, or more often, simply video stream. This is in contrast with screen casting in which previously digitized video is captured while displayed on a digital monitor. TV tuner cards have a television tunerwith the capabilities to capturebroadcast television. Image acquisition is the creation of photographic images, such as of aphysical scene or of the interior structure of an object. The term is often assumed to imply or include the processing, compression, storage, printing, and display of such images. OpenCV does not specify any minimum requirement on the camera, however OpenCV by default expects a particular resolution of the video that is being recorded, if the resolutions do not OpenCV provides extensive support for acquiring and processing live videos. It is also possible to choose whether the video has to be captured from the in-built webcam or an external camera by setting the right match, then an error is thrown. This error can be countered, by over riding the default value, which can be achieved, by manually specifying the resolution of the video being recorded.

III. DIVIDING INTOFRAMES

Once the video has been acquired, the next step is to divide it into a series of frames/images. This was initially done as a 2 step process. The first step is to grab a frame from the camera or a video file, in our case since the video is not stored, the frame is grabbed from the camera and once this is achieved, the next step is to retrieve the grabbed frame. While retrieving , the image/frame is first decompressed and then retrieved . However, the two step process took a lot of processing time as the grabbed frame had to be stored temporarily. To overcome this problem, we came up with a single step process, where a single function grabs a frame and returns it bydecompressing.

IV. FACEDETECTION.

Once the frames are successfully extracted the next step is to detect the face in each of these frames. It contains a number of features of the face, such as height, width and thresholds of face colors. it is constructed by using a number of positive and negative samples. Cascade file detects all the possible objects of different sizes in the frame. To reduce the amount of processing, instead of detecting objects of all possible sizes, since the face of the automobile driver occupies a large part of the image, now, the output the detector is stored in an array. Now, the output of the edge detector is then compared with the cascade file to identify the face in the frame. Since the cascade consists of both positive and negative samples, it is required to specify the number of failures on which an object detected should be

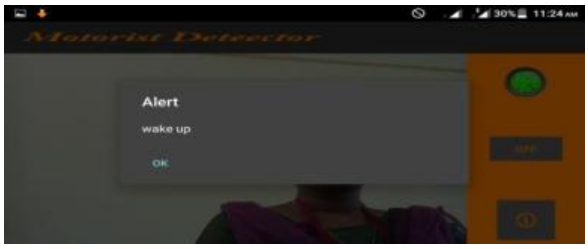


V. DETECTDROWSINESS.

Once the faces are successfully detected from the frame, we will get the coordinates of the face by using Rectocalss If the coordinates are crossed the boundaries or the face is suddenly disappear from the camera. It will identify that the driver is in Drowsiness.

VI. ALERT.

If the application detects the driver is in Drowsiness it will alert the driver via play a sound in a loop. It will stops by pressing the ok button in the dialog box.



VI. ADVANTAGES

1. Convenient, socialacceptability
2. More users friendly,Inexpensive
3. Accurate focusing, ensuring that the important parts of a picture, typically faces, are infocus
4. Improved Exposure optimizes automatic exposure control
5. Avoiding running the picture reduces over and under exposure for imagecapture
6. No need to use “Focus Lock ” featureand
   recomposing the frame

CONCLUSION

The idea behind this paper will prevent the drivers who travel for long distance especially during night hours. This will save the life of driver’s .the successful implementation of this project will restrict the number of accidents

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