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Research Article

Eye Lethargy Sleepiness Detection Based on Driver's Experience Using Image Mining

Stephen raj. S[a], Sripriya. P[b]

[a] Research Scholar, [b] Associate Professor
[a,b] Department of Computer Applications, Vels University, Chennai, Tamilnadu, India

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Abstract: The retina part of the eye is been taken as the detection part in our work. Thus, it could involve three set of parameter to avoid the accident. There are only the persons who having the age limit of 20 ages, if the person who is below this age means there are prohibited to drive. And the second one is that if the person who is owning the car is also want to make a decision whether there are in the alter stage/drowsy. If there are in the drowsy state/fatigue there are not permitted to drive.The third case, is that if the owners and drivers are having the relationship in the form of the call taxi services means they must be a reliable behavior must be approved in connecting among themselves. In order to make a satisfactory of the owner the driver who is allotted for the driving, they have to detect the person state of mind by seeing this eye and monitor them for the further detection of the safe driving. Thus the image is been captured from web camera and it will be having the database of the saved images of the person who are been detected already. Now the new person who are been detected to check the drowsiness they are been checked with the database and export the result in the acquired time.

Keywords:

1. Introduction

There are having the modeled two part of the driver drowsiness detection. Where, they are been done by means of the digital image processing. Thus the input image will be done on the detection of the driver, thus there are been processing the grayscale conversion which are been done on such way that both the left and right eye are been detected. It is been processed in the computer vision detection where the image are been derived in the computer vision/machine learning. the foremost two component of the image processing in this employment. And the screenshots are been obtained by implementing the two phases of this detection process to evaluate the drowsiness detection in the driver to safeguard the life from the accident. Image restoration is the prior knowledge about the degradation. The concept is to enhance the quality of the image using various degradation processes. It removes the noise and the blurriness in the image, it perform the reverse process of Image blurring, and this is performed by the imaging the point source of the image which are used for the renovation is done on the image evidence to misplaced the distorting process. There establishment of the image will falls on the different from the image enhancement. The image enhancement aims to improve the bad image to good better. Whereas, the image restoration is the process of invert the known degradation operation which must be applied to the image.[10][12][13][17][18][19][20][1]

2. Literature Review

Enhancement is Subjective in nature where the restoration is Objective in nature. No quantitative measures are taken in the enhancement. Restoration depends on the mathematical model of the quantitative measures [51]. The independent way of image renovation is to decrease the noise that are seen in the image and get well the loss of determination. It is used in the various application fields such as Forensic image, medical image, etc., and also there are dealing to remove the various types of poverty there are been enrich with the pictorial awareness that are used to observed the address of the image for the restoration on classical sense for underlying to obtain the degradation free image. By deriving from the prior knowledge of an images, by estimating in the statistical properties.[11][14]

3. Image Acquisition

The image acquisition is taken as the input image that are in the format of .Jpeg and the input image are in the size of 3120x4160, which are having the properties that are in the RGB image. It is having both in the lightning and diminish format. The person who wanted to drive is placing their eye on the web camera. Which are been used to detect the better resolution in the given input image of the person. The retina will be detected in such a way that are used to validate the person mind though through the detection.[2][3][4][5][6][7]

The image acquisition is one of the trendy way the vision based detection, by tracking the eye feature that is retina. Thus, the region of interest are been analyzed on both the right and the left eye. The real image of the input are been obtained from the camera and it is been verified from the database template. Where there are some of the

indifferent data such as eye of the person are been stored. In such a way if the image which is been derived from the camera are been detected and matched with the image that are been on the database.

Basically the image acquisition is that the input person image will be in the 3D format, by converting the dimension into the 2D format to get the acquired result for the projection of the plane. It will be uploaded into the system through the web camera using the digitalization. Thus the pixel elements are in the range of the 0-255. The zero is the black color and the 255 denotes the RGB texture of the image.

The image that are been captured are in the binary value that are said to be {0,1}, and then the conversion are been carried out in such a way that there are having the certain ranges. And then the final eye part of the person will be extracted and then the processing are been modeled. Thus the eye part are been extracted using the unit area that are depending on the device/camera we are using. The image are been encapsulated in the subjective appearance. Where, the content is dependent to the brightness of the image.

Mostly, when it is low resolution means the fault are seen only on the digital camera, which are reflects on the image. If there is having the higher resolution means there are having good qualities of the camera. In our case the web camera are in the better quality that are having the good resolution of the image. So the image acquisition is been in the robust form.

In the image acquisition the input image that are been extracted from the web camera for the detection of the iris in such a way that there are seen that the person eye is open in this case the detection process are been extracted for the drowsy driver detection using the iris is open or closed here the iris is open and there are been detected on the web camera and the processing is been carried out for the focuses on the eye of the person. It could involves the wide open of the eye on the image acquisition model.

When there are been testing the image in work under the resolution of the RGB, in this the font of the image is of 3120x4160. Thus, the size of the image is 2.83 MB in the digital web camera. In order to process this they are taking the sample image of the person in these properties. When there are been taken the image there are having the efficient form of the input image. There is no block size are involved in this initial step of image acquisition of the image processing.

The size of the person iris image are been differing form each other, and there are it is having some of the difficult to find the iris of the person. In the initial step itself the drowsy driver are been detected and the result of the input samples are been varying. Sometimes, the image acquisitions are having the varying in the person's detection of the iris in the lighting and diminish condition. The acquisition is done on the illumination source of energy.[8]

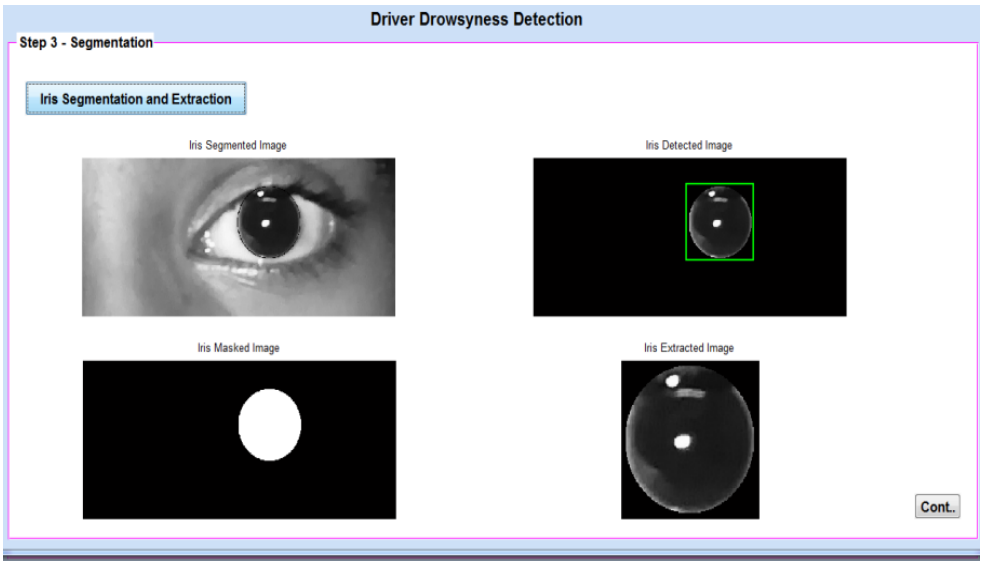
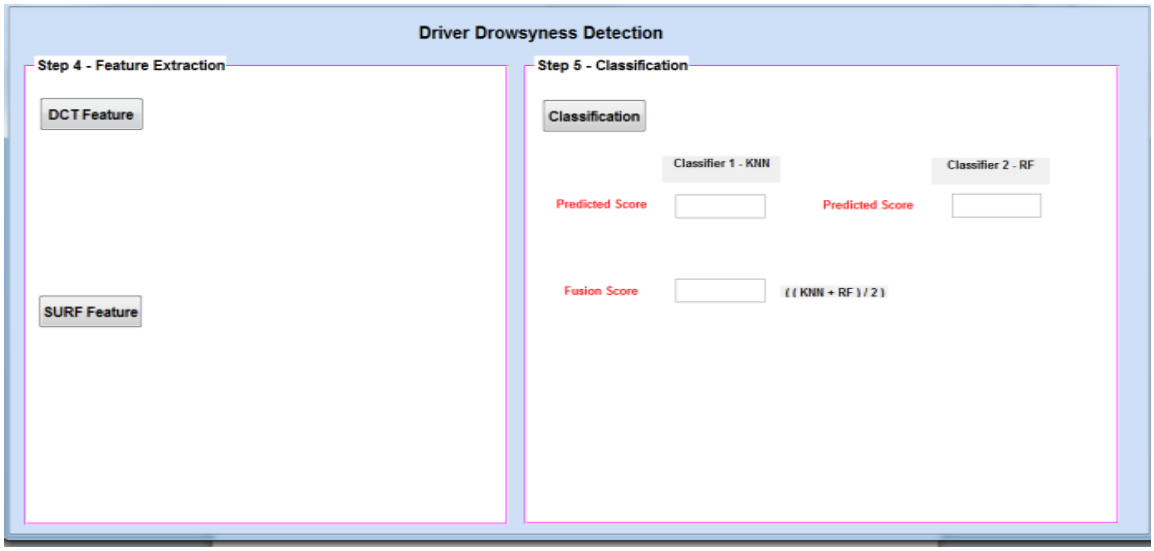
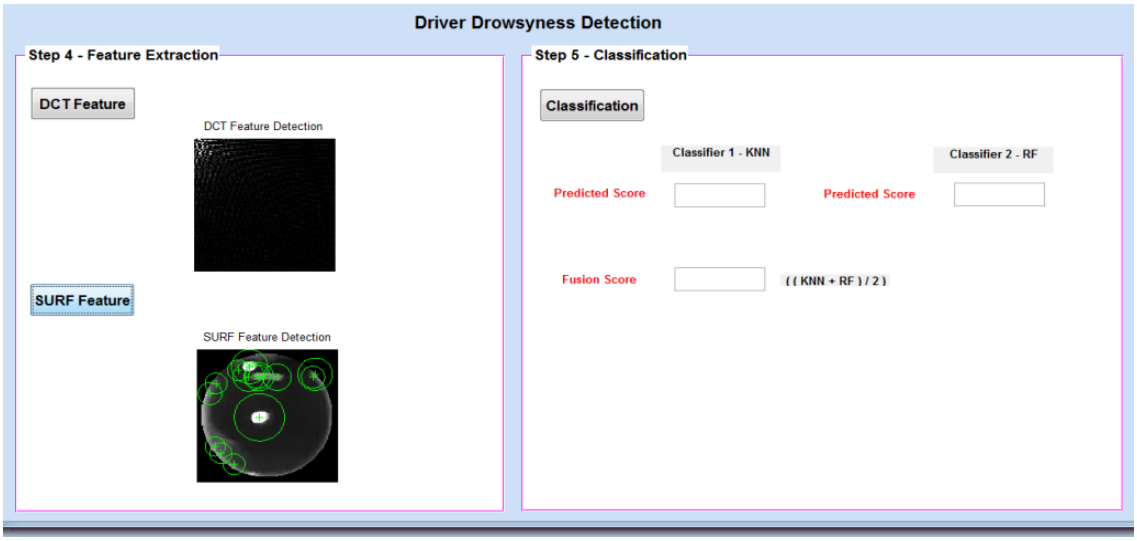


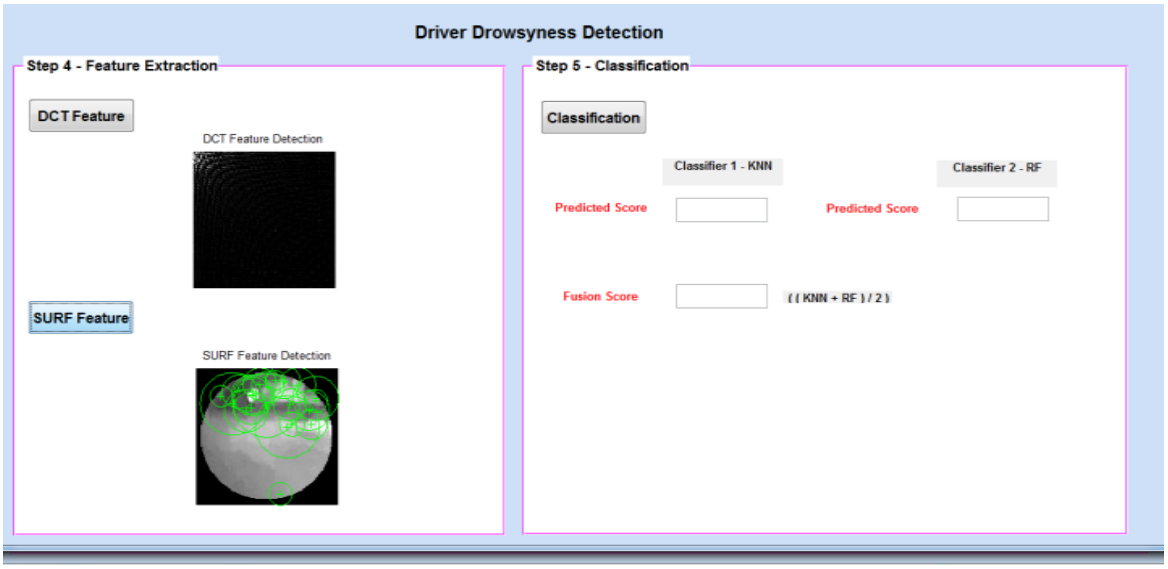
Figure 3.1: result of segmentation

Many digital cameras are having the inbuilt smart system that ensures the light in low/high condition. According to the illumination source the digital camera, are been extracted the reliable image. The processing speed of this camera is too reduced the extracting of image in the jpeg format in order to make the certain operation to get the output.[15]

The input images which are in the format of jpeg are used in the image acquisition. Thus the input image are been extracted in the digital camera. In this case, the person image is having the eye partially closed. Thus the image are been read for the detection purpose. The images that are given below is the drowsiness detection for the person having the partial open of the eye.[13]







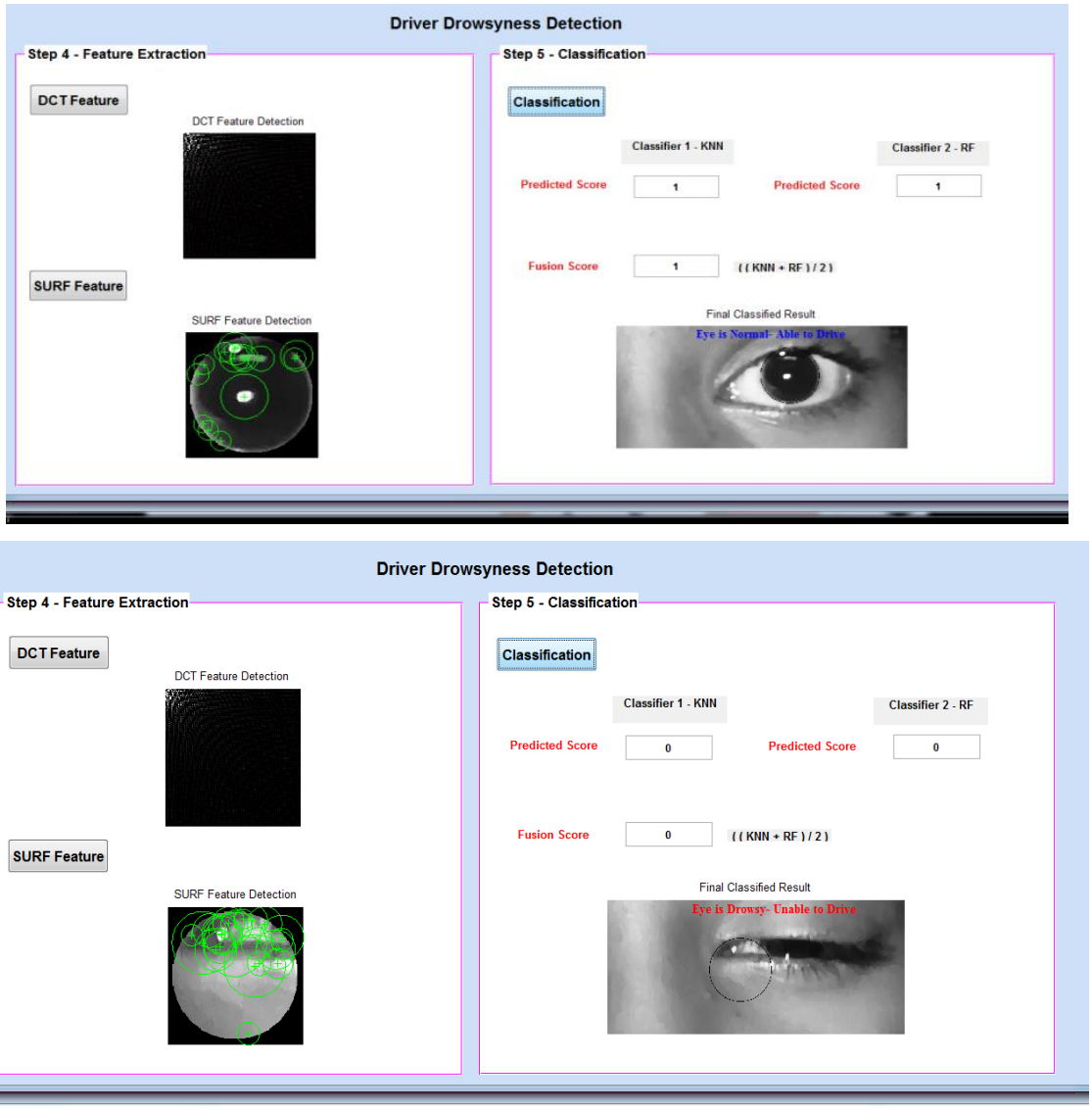


Figure 3.1: result of classification

4. Results And Discussions

From the 100 % the accuracy is 97.8% so, there are lacking in the 2.2% of the accuracy level in the image. Thus according to the 100% the accuracy level for the proposed work are been calculated in an efficient manner. Thus it is very important in the classification of the image. Depends on the image processing the are having the variation of the accuracy level. In our system it works in the efficient manner of the accuracy calculation that is obtained in the 97.8%. The resultant is the measure of the precision that are used for the image quality improvement, by calculating this precision the quality is been achieved in the better way. Then the precision is been done and calculated in our work in the percentage of the 97.8140.

In order to determine which device is most useful for warning a driver, and to facilitate work in alerting drowsy drivers, we prioritize the criteria in order of importance as follows:

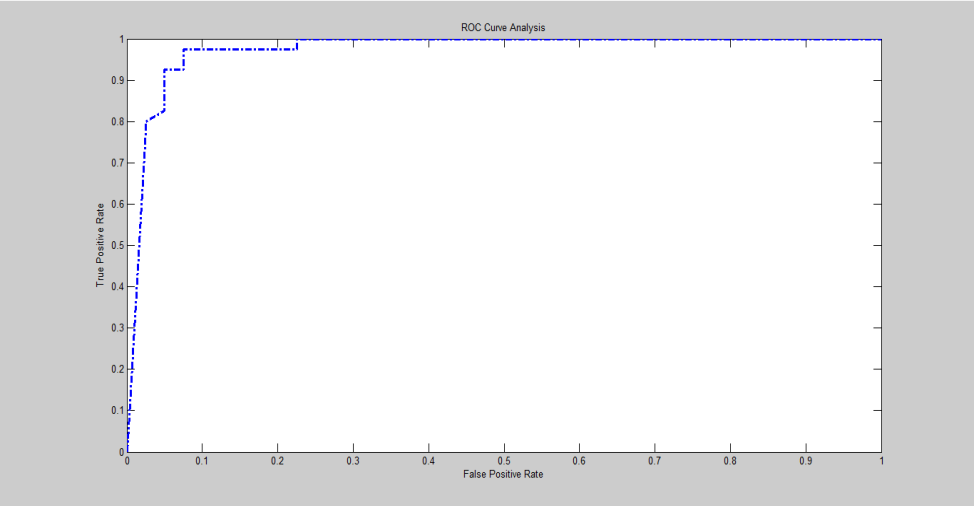


Figure 4.1: result of roc

Devices:

1. Ability to detectdrowsiness
2. Portability
3. High level of accuracy
4. Minimal amounts of falsenegatives
5. Minimal amount of time to detectdrowsiness

Summary of Results

	Finding Time taking	**Exactness(accuracy)**	**False Positives vs False Negatives**
Retina eye detection	5-10 sec (training)	97.8%	03%/07%
Emotiv	1 minute	77%	15%/25%
Gyroscope	1.5 minutes	60%	40%/20%

Table4.1: Summary of Results

Throughout the course of our research, we have discovered numerous drowsiness detection devices, all with their own advantages and disadvantages. Most of these devices have already been described in detail throughout the course of this paper, but will be recounted here along with our reasons for using them or discarding them in favor of another method.

One device we acknowledged, but did not seriously consider using, was a simple smart phone with an app which would prompt the user with questions and gauge their alertness based on the speed and accuracy with which they answered. This device would be impractical to use while testing the drivers, as it would require too much of the drivers attention and would distract from their real job of driving. However, we did consider using a simpler version of this system as a way of keeping the finding that driver became drowsy or not, and used something similar in order to gain a measure of our own warning while testing the reliability of our other devices. The simplest device we have considered using is the retina eye detection.

5. Conclusion

Genuine sleepiness retina scanning systems (GSRSS) facilitate wide and screening of the huge numbers of participates suggest for testing. Early detection and proper testing of eye retina testing, such as sleepiness can prevent. However, the reliability of these systems was found greatly dependent on the quality of the processed retina images. In this thesis, a no-reference comprehensive retina image enhanced gruns algorithm is introduced that is intended for early sleepiness detection using GSRSS.

Initially, person was performed based on the eye retina that good quality retina images have sharp retina structures. Retina classifier composition has the advantage of separating an image's information equivalent to high components within its detail structure. Moreover, multi-resolution analysis brings out the finer image details related to the different retina structures within the various circle levels. Consequently, retina image detection features were calculated from the detail structure of level retina classifier compositions. The retina image features were tested dataset of different resolutions and degree of resulting in an area under the receiver operating characteristic curve of 1.000and 0.975 for the low resolution and the high resolution retina datasets, respectively. For the high resolution dataset, the introduced features achieved that is between ~10-20% higher than other algorithms from literature while requiring 5-10 times less computation time.

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