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DRIVER BEHAVIOR AND ALERT GENERATION USING HEAD MOVEMENT, EYE BLINKING AND YAWNING DETECTION

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ABSTRACT:- *In this given paper, we have developed a device that helps us detect drowsiness, fatigue level of driver and helps us in preventing road accidents with the help of Camera we are checking yawn detection, head tracking, eye blink rate.*

Keyword: - Drowsiness Detection Eye Detection Face Detection Open CV Yawn Detection Blink Rate Vibration IR

INTRODUCTION

Nowadays there have been an increase in the number of accidents. Drowsiness causes a major impact on the driver as it makes him difficult to have a control over the vehicle. The increase in the number of accidents taking place is due to the high level of speed in an inappropriate way and fatigue level of the driver. A new developed system (Sensors) there is a possibility that the vehicle can generate an alarm with the help of buzzer when the driver is drunk or in a fatigued state.

LITERATURE SURVEY

- **A Yawning Measurement Method to Detect Driver Drowsiness**

The driver's level of drowsiness is based on the yawning measurement. Due to the changes in the mouth measurement yawning is detected.

- **Driver Drowsiness Detection using Eye-Closeness Detection**

The experiment was conducted to calculate the level of drowsiness in the drivers. The frequency of head tilting and blinking of the eyes was used to determine whether or not a driver felt drowsy. With an evaluation on ten volunteers, the accuracy of face and eye detection was up to 99.59 percent.

- **An Automatic Driver Drowsiness Alert System By Using GSM**

If the driver is on the virtue of sleeping the vehicle will be stopped, and it monitors the heartbeat, respiration rate and temperature of the driver and displays it in the LCD. These three parameters are very important because it shows the body status of the driver. These parameters are monitored manually.

- **Facial Features Monitoring for Real Time Drowsiness Detection**

Once the face is detected, the system is made illumination invariant by segmenting the skin part alone and considering only the chromatic components to reject most of the non-face image backgrounds based on skin color. The tracking of eyes and yawning detection are done by correlation coefficient template matching.

- **Real-time drowsiness detection using wearable, lightweight brain sensing headbands**

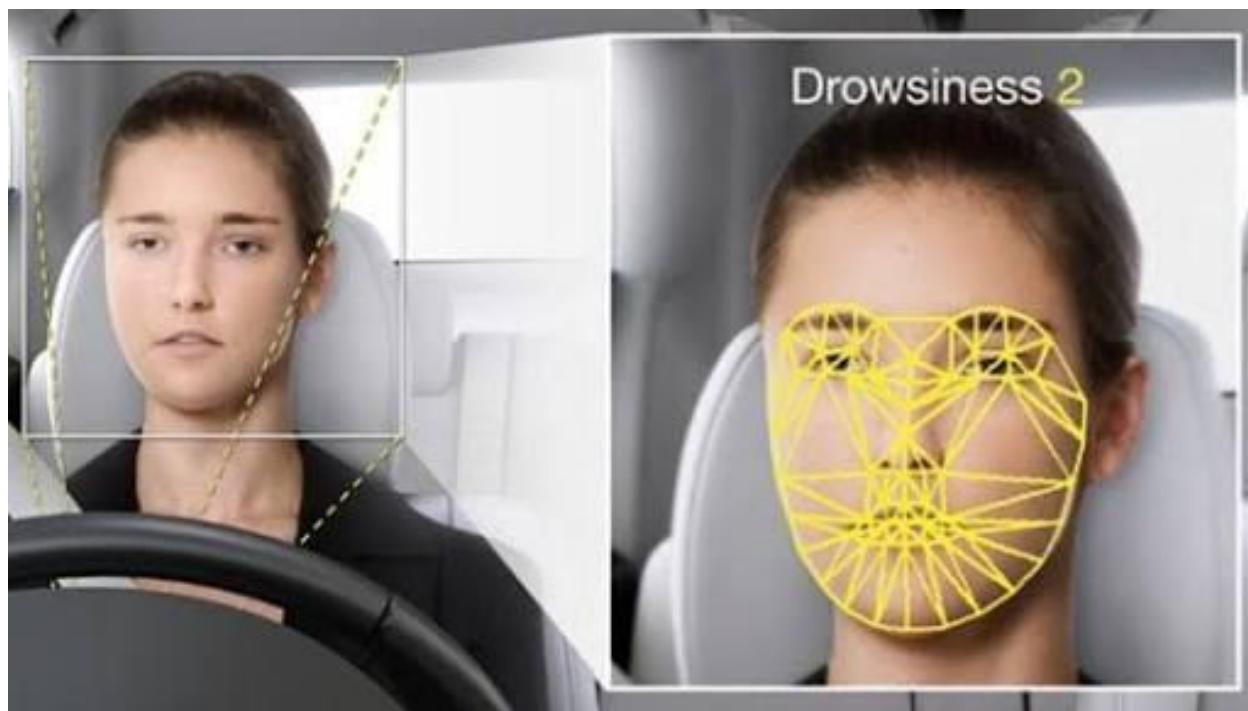
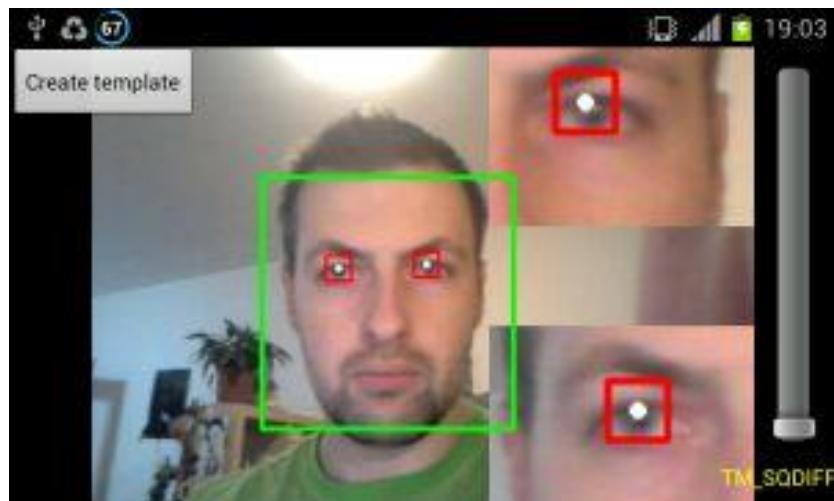
The feasibility of real-time drowsiness detection using commercially available, off-the-shelf, lightweight, wearable electroencephalogram (EEG) sensors is explored. While EEG signals are known to be reliable indicators of fatigue and drowsiness, they have not been used widely due to their size and form factor. However, the use of lightweight wearable EEGs alleviates this concern.

- **Drowsiness Detection by Bayesian-Copula Discriminant Classifier Based on EEG Signals during Daytime Short Nap**

The periodical rhythms of physiological states and then promote a good interpretability of alertness, the aim of this study is to detect drowsiness during daytime short nap. A method of Bayesian-Copula Discriminant Classifier (BCDC) was introduced to detect individual drowsiness based on the physiological features extracted from electroencephalogram (EEG) signals.

- **Head movement-based driver drowsiness detection**

The head detection method is used in this paper, helping to prevent accident. It has been given a head tilt algorithm. Once crossed the specific area, a buzzer will be alerted to alert the driver.



PROBLEM STATEMENT

Drowsiness detection of driver using camera and generate alert.

Goals and objectives

- Our proposed system aims to design and develop a low cost system which is based embedded platform for drowsiness detection.
- This method combines the both eye state and head position to detect the drowsiness of the driver.

HARDWARE RESOURCES REQUIRED

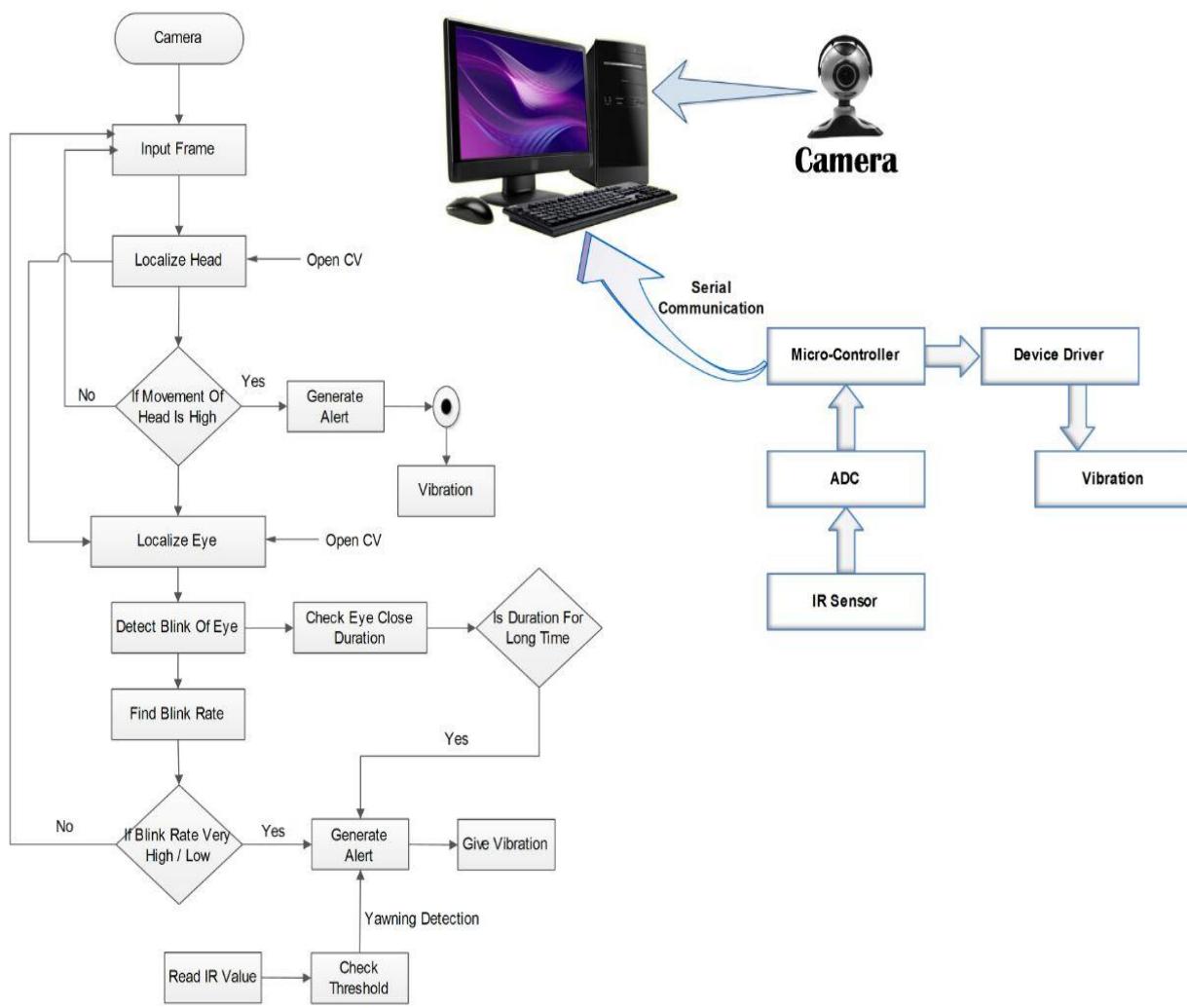
- IR Sensor
- Vibration Sensor
- Buzzer

SOFTWARE RESOURCES REQUIRED

Platform :

- Operating System: Windows
- Editor: Netbeans 7.1
- Programming Language : Java(Core + Advance)
- GUI : AWT/Swing JDK

ARCHITECTURAL DESIGN



Objectives and planned Outcomes:

- Our proposed method is to design and develop a low cost system which is based embedded platform for drowsiness detection.
- This method combines the both eye state and head position to detect the drowsiness of the driver.

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Conclusion

Eye based control will be the future of all types of device control. Several risk operations can be easily performed with this type of application and will create a new trend of interacting with machines. A system to monitor fatigue by detecting eye blink and head movement was developed using self-developed algorithms.