DRIVER DROWSINESS ALERT DETECTION

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ABSTRACT

By implementing this approach, we aim to lower the number of accidents brought on by driver drowsiness and so raise traffic safety. Based on optical data and artificial intelligence, this technology handles the automatic detection of driving fatigue. In order to quantify PERCLOS (% of eye closure) with Softmax for neural transfer function, we identify, track, and evaluate both the driver face and eyes.it will be also uses alcohole pulse detection to check out the person is normal or abnormal. Due to extended driving times and boredom in crowded environments, driver weariness is one of the main factors in traffic accidents, especially for drivers of large vehicles (such as buses and heavy trucks).

Keyword : - *Machine Learning, Drowsiness, Face aspect ratio.*

1. Introduction:-

The number of vehicles is rapidly increasing, and this trend has led to an increased number of vehicle accidents. The National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System Encyclopedia found that approximately 55,926 vehicles were involved in vehicular accidents in the United States in 2007. Moreover, 9,979 vehicle collision accidents were due to driver fatigue and inattention in 2007. The NHTSA's National Center for Statistics and Analysis also provided a brief statistical summary report indicating that 416,000 accidents were caused by drowsy driving between 2005 and 2009. Traffic vehicle accidents cause many injuries and deaths every day around the world. For instance, the NHTSA stated that approximately 1,500 people were killed in traffic accidents in 2002. Furthermore, there were 71,000 injuries resulting from the 100,000 collisions between 1989 and 1992.

1.1 overview:-

When a driver becomes physically, psychologically, or emotionally exhausted or sleepy, it affects their ability to operate a motor vehicle safely. A key safety risk for the road transportation sector is driver weariness. The main reasons of "drowsy driving" are not getting enough sleep, operating a vehicle when you should be sleeping, and working or remaining awake for excessively extended periods of time. There are three types of ways to identify driver inattention:

1. methods based on vehicles

2. techniques based on behaviour

3. approaches based on physiological signals.

In physiological techniques, the body's physiological signals—such as the electroencephalogram (EEG) for measuring brain activity, the electrooculogram (EOG) for measuring eye movement, and the electrocardiogram (ECG) for measuring heart rate—are assessed to determine whether a driver is drowsy.Recent studies show that the methods using physiological signals (specially the EEG signal) can achieve better reliability and accuracy of driver drowsiness detection compared to other methods.

1.2 Objectives:-

- When it comes to knowledge of the risk of falling asleep, the drivers were confronted with several statements concerning characteristics of drivers who fall asleep (age, sex, physical condition, sleeping problems) in addition to a statement that falling asleep can happen to anyone. Based on the drivers evaluation of these statements, it seems to be a general agreement among them, both private and professionals, that falling asleep can happen to anyone. In addition, they seem to have good knowledge of the actual risk of falling asleep while driving. The private drivers and the professional drivers respectively assumes that an average of 40 and 36 drivers out of a hundred drivers have experienced falling asleep while driving. Calculated in percent these numbers makes up shares that are close to the actual proportions found in this study. it will be also uses alcohole pulse detection to check out the person is normal or abnormal.

- Hence, the knowledge of the actual risk of falling asleep among drivers seems to be quite good.

2. Statement Of Scope:-

The proposed system is a driver face monitoring system that can detect driver hypo vigilance (both fatigue and distraction) by processing of eye and face regions. it will be also uses alcohole pulse detection to check out the person is normal or abnormal.After image acquisition, face detection is the first stage of processing.

2.1 Motivation and Need:-

- The skill of looking up ahead and scanning for hazards depends on the driver's motivation to choose to do so and this will be linked to their awareness of the possible risks or hazards that looking ahead may detect. The motivation behind a driver's decisions will be based on their awareness (knowledge) and their skills to respond to various traffic situations. This involves internalising the driving process and owning the decisions to drive appropriately.

- This contrasts with the simpler example of motivation where a driver slows down if a police officer is in the vicinity. There is little internalizing occur-
  ring.

- it will be also uses alcohole pulse detection to check out the person is normal or abnormal.

- In the case of a person driving for their employment, he or she may be motivated to override the need for safe driving behavior in order to meet performance requirements in their work especially if there is an incentive for doing so. The issue for those attending driver training is around their motivation to change their driving behavior. This needs to be driven internally rather than through factors such as enforcement.

2.2 Project Idea:-

Metropolitan bus drivers daily face work in a stressful and draining work environment, exposing them to the serious risk of driver fatigue. However, there has been a dearth of information exploring the unique antecedents and effects of such fatigue. To date, much of the research into metropolitan bus drivers has been under the umbrella of large heavy vehicle driving studies, which include a disproportionally large population of long-haul drivers, who are likely to face a significantly different set of fatigue

3. System Architecture:-

The architecture ,mainly consists of the following components:-

1.Camera

2.Alcohol sensor

3.Bus Driver

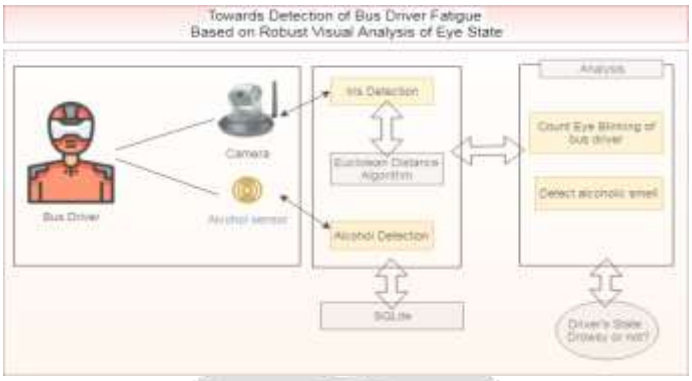

Chart -1: System Architecture (Font-10)

3.1 Existing System:-

A driver falls asleep, then the driver loses control over the vehicle, an action which often results in a crash with either another vehicle or any object. In order to prevent these devastating accidents, there was the previous approach developed, in this system the state of drowsiness of the driver was monitored. The following measures were used widely for monitoring drowsiness:

1. Vehicle-based detection: A number of actions/metrics, including deviations from lane position, movement of the steering wheel, pressure on the acceleration pedal, etc., are constantly monitored and any change in these that crosses a specified threshold indicates a significantly increased probability that the driver is drowsy .

2. Behavioral measures: The behavior of the driver, including yawning, eye closure, eye blinking, head pose, etc., was monitored through a camera and the driver was alerted if any of these drowsiness symptoms are detected.

3. Physiological measures: The correlation between physiological signals (electrocardiogram (ECG), electromyogram (EMG), electrooculogram (EOG) and electroencephalogram (EEG)) and driver drowsiness was studied.

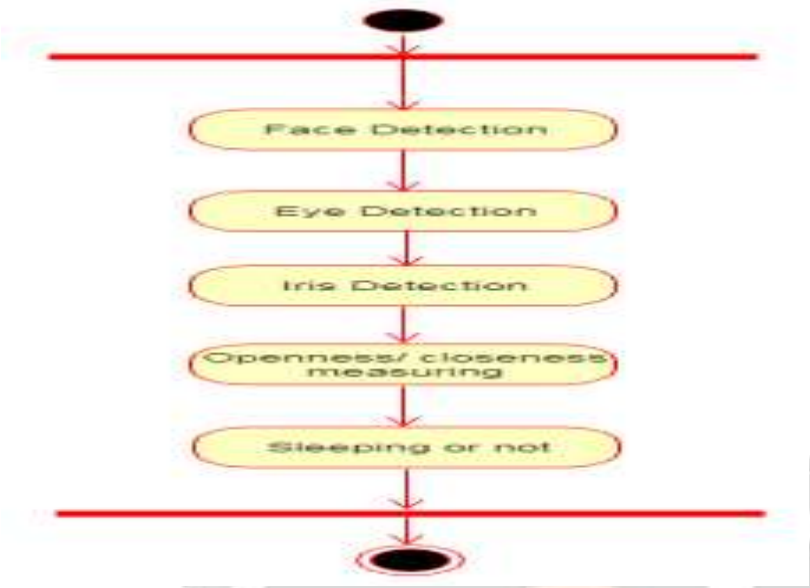

Fig -1: Activity Diagram

4. CONCLUSIONS:-

In this system, we proposed driver assistance System is presented in order to reduce the number of accidents caused by driver fatigue and thus improve road safety. Based on optical data and artificial intelligence, this technology handles the automatic detection of driving fatigue. In order to quantify PERCLOS (% of eye closure) with Soft Max for neural transfer function, we present an approach to find, track, and analyse both the driver face and eyes. We presented a vision-based method and system towards bus driver fatigue detection using existing dome Cameras in buses.

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