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IOT based alcohol and driver drowsiness detection and prevention

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Abstract — In this system, we proposed to diminish the amount of disasters realized by driver weariness and along these lines improve road prosperity. This structure treats the modified disclosure of driver sluggishness subject to visual information what's more, man-made awareness. We discover, track and explore both the driver face and eyes to measure PERCLOS (level of eye end) with Softmax for neural trade work. it will be in like manner uses liquor and beat acknowledgment to take a gander at the individual is average or odd. Driver's exhaustion is one of the huge purposes behind car crashs, particularly for drivers of gigantic vehicles, (for instance, transports and overpowering trucks) due to deferred driving periods and weakness in included conditions.

Keywords- Open CV, Traffic Safety, HAAR –Cascade Classifier .

INTRODUCTION:

Driver exhaustion is the time when a driver's ability to drive safely is lessened in view of being physically or soundly depleted or sleepy. Driver shortcoming or is an imperative prosperity hazard for the road transport industry. The essential driver of 'sluggish driving' are too little rest, driving from time to time when you would consistently be napping and working or being alert for very extended periods. To recognize driver drowsiness can be requested into three groupings: 1) vehicle-based philosophies, 2) direct based procedures, and 3) physiological-signal based techniques. In physiological philosophies, the physiological sign from a body, for instance, electroencephalogram (EEG) for mind activity, electrooculogram (EOG) for eye advancement, and electrocardiogram (ECG) for beat, are evaluated to recognize driver drowsiness. Late assessments show that the strategies using physiological sign (particularly the EEG signal) can achieve better steady quality and accuracy of driver languor area diverged from various systems. Fatigue, tiredness and drowsiness are consistently used synonymously in driving state portrayal . Counting various human factors, it is multidimensional in nature that examiners have found hard to portray over past decades Despite the dubiousness including exhaustion, it is an essential factor for driving security. Studies have exhibited that weariness is one of the primary contributing components in car accidents around the globe .it will be in like manner uses alcohol and heartbeat acknowledgment to take a gander at the individual is customary or atypical. It is particularly essential for word related drivers, for instance, drivers of transports and overpowering trucks, in light of the manner in which that they may need to work over a drawn out length of the driving task, during the apex drowsiness periods.

LITERATURE SURVEY:

1.Project Name: Towards Detection of Bus Driver Fatigue Based on Robust Visual Analysis of Eye State.

Abstract :Driver’s fatigue is one of the major causes of traffic accidents, particularly for drivers of large vehicles (such as buses and heavy trucks) due to prolonged driving periods and boredom in working conditions. In this paper, we propose a vision-based fatigue detection system for bus driver monitoring, which is easy and flexible for deployment in buses and large vehicles. The system consists of modules of head-shoulder detection, face detection, eye detection, eye openness estimation, fusion, drowsiness measure percentage of eyelid closure (PERCLOS) estimation, and fatigue level

classification. The core innovative techniques are as follows: 1) an approach to estimate the continuous level of eye openness based on spectral regression; and 2) a fusion algorithm to estimate the eye state based on adaptive integration on the multi model detections of both eyes. A robust measure of PERCLOS on the continuous level of eye openness is defined, and the driver states are classified on it. In experiments, systematic evaluations and analysis of proposed algorithms, as well as comparison with ground truth on PERCLOS measurements, are performed. The experimental results show the advantages of the system on accuracy and robustness for the challenging situations when a camera of an oblique viewing angle to the driver's face is used for driving state monitoring.
Author: Bappaditya Mandal, Liyuan Li, Gang Sam Wang, and Jie Lin.

2.Project Name: Automatic Detection of Driver Fatigue Using Driving Operation Information for Transportation Safety.
Abstract: Fatigued driving is a major cause of road accidents. For this reason, the method in this paper is based on the steering wheel angles (SWA) and yaw angles (YA) information under real driving conditions to detect drivers' fatigue levels. It analyzes the operation features of SWA and YA under different fatigue statuses, then calculates the approximate entropy (ApEn) features of a short sliding window on time series. Using the nonlinear feature construction theory of dynamic time series, with the fatigue features as input, designs a "2-6-6-3" multi-level back propagation (BP) Neural Networks classifier to realize the fatigue detection. An approximately 15-h experiment is carried out on a real road, and the data retrieved are segmented and labeled with three fatigue levels after expert evaluation, namely "awake", "drowsy" and "very drowsy". The average accuracy of 88.02% in fatigue identification was achieved in the experiment, endorsing the value of the proposed method for engineering applications.
Author: Zuojin Li *, Liukui Chen, Jun Peng and Ying Wu *.

3.Project Name: Bus Driver Fatigue and Stress Issues Study.
Abstract: This study was conducted with a "regulation neutral" approach. While the information derived from the study may be useful for decision making by FHWA/OMC, the study does not provide recommendations concerning changes to existing regulations or the creation of new regulations for the motor coach industry. Human error is a causative factor in 85% or more of all crashes. The National Transportation Safety Board (NTSB) has documented numerous motor coach accidents that have resulted in fatalities where driver fatigue has been determined to be a principal cause.
Author: Mr. Phil Hanley.

4.Project Name: Potential causes of driver fatigue: a study on transit bus 2 operators in Florida.
Abstract: This research study examines the safety impacts of the existing operator hours of duty policies in 51 the state of Florida. Thus, this study uses questionnaire surveys, incident data archived by transit 52 agencies and bus driver schedules to determine the relationship between crash involvement and 53 operator schedules. Factors of interest in this study are the influence of shift pattern (start and 54 end time), schedule pattern (split or non – split schedule) and time spent on driving. The study 55 revealed that, operators working split schedules are more susceptible to fatigue than those 56 working straight schedules. The group of operators working split schedules indicated less time of 57 sleep, long driving hours and early starting – late ending schedule patterns. These the 58 characteristics of fatiguing work schedule. There is also a strong statistical significance (p59 value .
Author: Thobias Sando.

5.Project Name: Factors of Fatigue and Bus Accident .

Abstract: The main purpose of this study is to identify the relationship between the factors of fatigue (working schedule, working condition) and bus accident. 60 bus drivers from a bus agency in Kuching, Sarawak, Malaysia were selected as a sample. Survey questionnaire was used for data collection. They were questioned individually because most of them possessed low level of education and facing difficulties in understanding the questions in English. From the Pearson Correlation Analysis, the findings revealed that there was a significant relationship between working schedule (r=0.486, p=0.000), working condition (r=0.601, p=0.000) and bus accident. The dominant factor that showed strongest unique contribution based on Multiple Regression Analysis was working condition (r2=0.404, β=0.478). Serious attention should be given to improve the buses and working condition to reduce the accident rates in Malaysia. It is also recommended that the working schedule to be revised accordingly by taking into consideration the bus driver's constraint.

Author: DayangNailulMunnaAbang Abdullah 1 and Ho Li Von2.

6.Project Name: BUS DRIVER : FACTORS THAT INFLUENCES BEHAVIOUR.

Abstract: The behavior of drivers is influenced by many factors, which include the personal characteristics, environmental and vehicle characteristics. Professional drivers, such as bus drivers, generally have higher levels of training and experience, and by virtue of their profession have attitudes, which are more likely to promote safe driving. However, bus drivers experience the same environmental traffic condition as other drivers, as well as additional constraints imposed by the vehicle characteristics, concern for passengers' comfort/safety and the need to adhere to timetables. This paper reviewed these factors from previous researches.

Author: M.M. Rohani1 , R. Buhari2.

7.Project Name: Fatigue Factors Affecting Metropolitan Bus Drivers: A Qualitative Investigation.

Abstract: 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 factors [1]. The present study aimed to investigate which work and environmental factors may cause fatigue in metropolitan bus drivers by seeking drivers' own perspectives on the issues. To this end, focus groups were held at five bus depots in Sydney and Newcastle, with an effort made to include a stratified sample of drivers at each. Each of the groups were invited to nominate what factors they felt were most salient, with a number of common factors emerging across the depots. Key themes identified were: support from management; ticketing and related issues; interaction with passengers; cabin ergonomics; tight route schedules; turn-around and shift irregularity; extended shift cycles; interactions with other road users; and extended commute times.

Author: Herbert Biggsa* Donald Dingsdagb Nick Stenson.

8.Project Name: Alcohol Detection For Car Locking System.

Abstract: —In this prototyped project, an attempt will be made to develop a locking system for cars so it would not start without alcohol checking mechanism. The system will take the advantage of a pre-existing Alcohol sensor. In fact, the

project is intended for granting a base start for further explorations in the future. This project aimed at the exiting efforts of accidents prevention system developments, in hope of implementing it in the real life to increase roads safety.
Author: Shahad Al-Youif., Musab A. M. Ali, M. N. Mohammed.

Future Scope:

1. The driver weariness is the serious issue in this day and age, in light of the fact that because of the downiness issue step bystep mishaps are expanded. Later on work it further actualized with the assistance of Neural Network and other continuous sensor gadgets. With the goal that more precision is accomplished.
2. For school transport driver the framework was helpful.
3. It will be additionally uses alcohol & beat identification to look at the individual is ordinary or irregular.

Alcohol Detection:

As we are concentrating on various issues identified with traffic security and mishap aversion, After our review we found that loads of mishap happens in light of driver's misstep for example Smashed and Drive. As a result of this driver loses control on driving and it transforms into genuine mishap and individuals may meet with dangerous mishap. To forestall this we intend to Stop truck from being begun if Driver is Drunk. We will set Alcoholic Detection Sensor in Seat Belt which will be covered up. At the point when driver is smashed and comes to drive the vehicle he will situate on Driver Seat, Alcohol will be recognized and as per our counteractive action of framework Vehicle won't begin.

Pulse Rate Detection:

These days we can not foresee that one will have Cardiac Attack or not. In view of undesirable nourishments and decrement in invulnerable framework anybody can have Cardiac Attack. On the off chance that driver got heart assault at the time driving it will transform into genuine mishap. So again to anticipate this we can set Pulse Rate Sensor at the wrist of the driver. We will set a specific estimation of unusual heart pulsates. In the event that irregular beat check is recognized we will send notice to proprietor.

Mq 9 Sensor:

The Grove - Gas Sensor(MQ9) module is useful for gas leakage detection (in home and industry). It is suitable for detecting LPG, CO, CH4. Due to its high sensitivity and fast response time, measurements can be taken as soon as possible. The sensitivity of the sensor can be adjusted by using the potentiometer.

This is MQ_9 Carbon Monoxide ,Methane , and LPG Gas Sensor Module can be used to sense Carbon Monoxide and Methane Gas . Sensitive Material of MQ _9 gassensor is SnO2, which with lower conductivity in clean air.

It makes detection by the method of cycle high and low temperature, and detect CO when the low temperature (heated by 1.5V). The sensor’s conductivity is higher along with the gas concentration rising.

When high temperature (heated by 5.0V), it detects Methane, Propane etc. combustible gas and cleans the other gases adsorbed under low temperature.

Features:

- Wide detecting scope
- Stable and long life
- Fast response and High sensitivity

Application Ideas:

- Gas leakage detection.
- Toys.

Hardware Overview:

Is an Analog output sensor. This desires to be related to any person Analog socket in Grove Base guard. The exthat ampules used on this academic makes makes use of of A0 analog pin. connect this module to the A0 port of Base shield.

5V	VCC
GND	GND
NC	NC
Analog A0	SIG

The output voltage from the gas sensor increases when the awareness of gasoline will increase. Sensitivity may be adjusted by using various the potentiometer. Please notice that the satisfactory preheat time for the sensor is above 24 hours. For particular records about the MQ-nine sensor, please check with the data-sheet provided in resources phase.

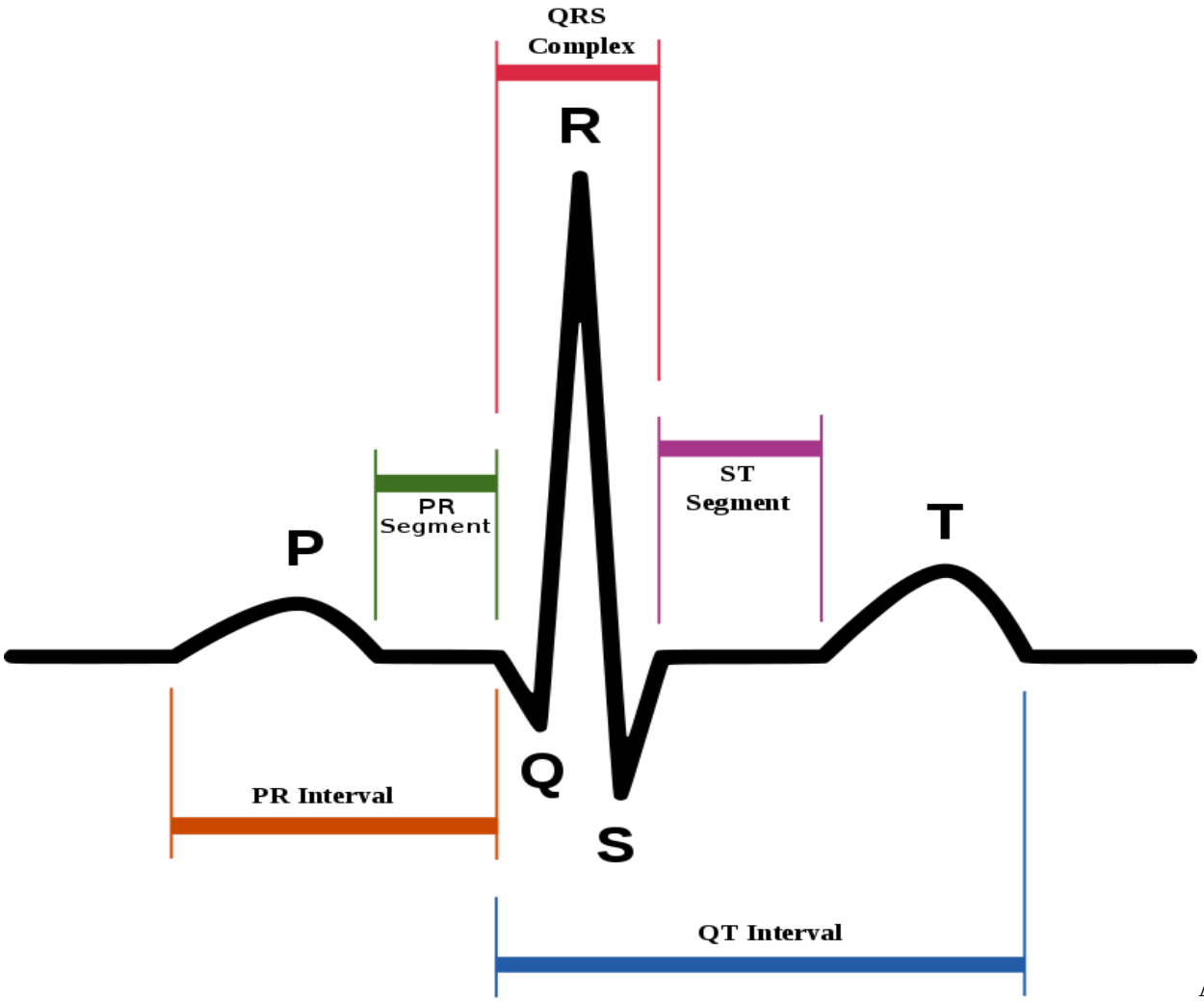
ECG SENSOR:

The electrocardiogram (ECG or EKG) is a diagnostic tool that is automatically used to assess the electrical and muscular functions of the heart. whilst it is a particularly easy check to perform, the translation of the ECG tracing calls for giant amounts of schooling. numerous textbooks are dedicated to the subject.

The heart is a degree electric pump and the coronary heart's electric pastime can be measured by electrodes positioned at the pores and skin. The electrocardiogram can measure the price and rhythm of the heart beat, in addition to provide indirect proof of blood float to the coronary heart muscle.

Ten electrodes are had to produce 12 electric views of the coronary heart. An electrode lead, or patch, is positioned on every arm and leg and 6 are located across the chest wall. The alerts obtained from each electrode are recorded. the broadcast view of those recordings is the electrocardiogram.

by way of comparison, a heart screen requires most effective 3 electrode leads – one every at the right arm, left arm, and left chest. It simplest measures the charge and rhythm of the heartbeat . This sort of monitoring does no longer constitute a complete ECG.



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Conclusion:

The growing number of vehicle crashes as a result of a diminished driver's caution level has transformed into a huge issue for society. Experiences show that 20% of all the vehicle accidents are a direct result of drivers with a decreased carefulness level. In addition, setbacks related to driver hypo-wariness are more authentic than various types of incidents, since dormant drivers much of the time don't make right move before an accident. In this way, making systems for watching driver's level of Watchfulness and advised the driver, when he is worn out and not giving adequate thought to the road is principal to maintain a strategic distance from accidents. it will be furthermore utilizes liquor and beat revelation to take a gander at the individual is run of the mill or sporadic. The expectation of such incidents is a critical point of convergence of effort in the field of dynamic security ask about.. Faces as the basic bit of human correspondence have been an assessment center in PC vision for a long time. Customized affirmation (or examination) of outward appearance contains three degrees of assignments: face area, outward appearance information extraction, and attitude portrayal. In these assignments, the information extraction is the central issue for the component based outward appearance affirmation from an image progression. It incorporates area, ID and following facial component centers under different edifications, face headings and outward appearances. In this assessment work SVM Classifier is applied to perceive the exhaustion issue and getting the different results. Here the precision of the work is 70%.

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