Anti-sleep Alarm for Drivers using Dip Monitoring System

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ABSTRACT-Facial features including eye and head movements reveal driver weariness and drunkenness. Characteristics such as facial angle, head movement, and eye blinking have been monitored during the design, construction, and testing phases of a driver impairment monitoring system. This system made use of an IOT module, microcontroller, tilt sensor, drowsiness detection, and an alcohol sensor (MQ3). The alcohol sensor (MQ3), tilt switch or sensor, and open eye sensor or sleepiness detection are the three sensors that are used. There was a microcontroller and an IOT module. There was a buzzer, a display, and a reset switch. The microcontroller will receive signals from three sensors as well as a reset switch. The cover is fastened to the alcohol sensor. The driver would activate if it did not react to the sensor's alarm a light that could cause the engine to shut off. Second, the microcontroller would sound an alarm if the driver closed his eyelids for a predetermined amount of time, detecting it via an infrared open eye sensor. Thirdly, the microcontroller would sound the alarm if the driver felt sleepy and tilted his head for a predetermined amount of time. We propose a smart system based on the Internet of Things. The buzzer alerted the driver and an SMS was sent to the car owners when it identified the driver's closed eyes, head tilt indicated tiredness, or alcohol use for a predetermined amount of time. Ten individuals were used to measure the deviations in face angle, and it was discovered that the average accuracy was quite high.
Keywords: ***Node MCU, Arduino Microcontroller, Gas Sensor, Vibration Sensor, DC Motor***

1.INTRODUCTION

The primary factor in the majority of car crashes and near-crash incidents is DRIVER distraction. A study conducted by the Virginia Tech Transportation Institute (VTTI) and the National Highway Traffic Safety Administration (NHTSA) [6] found that driver attention is a factor in 80% of crashes and 65% of near-crash incidents. Furthermore, distractions usually happened three seconds prior to the car crash. According to recent studies, there was a 9% increase in the number of people wounded in distracted driving-related automobile incidents between 2011 and 2012 [1]. Distracted driving crashes claimed the lives of 3328 persons in 2012 alone, a small decrease from 3360 in 2011. Any activity that could take a person's focus away from the primary task of driving is considered distracted driving. Distractions consist of conversing with passengers, utilizing a GPS system, changing a CD player, texting, eating, and drinking. These days, with the introduction of a wide range of technologies into the automotive environment, this is especially difficult. As a result, distracted driving has increased throughout time due to the cognitive load that drivers must manage from secondary tasks. A survey [4] found that driving when engaged in a high cognitive load task had an impact on the visual behavior and driving ability of the driver. According to references [2] and [6], drivers with high cognitive loads reduced the amount of time they spent looking at their mirrors, instruments, traffic signals, and the surroundings of crossings. The use of cell phones and other such gadgets while operating a vehicle is particularly troubling. The NSTHA [6] has disclosed found the three activities that cause drivers to take their eyes off the road for the longest—texting, browsing, and phone calls—triple their chance of getting into an accident. According to a recent survey [1], 54% of motor vehicle drivers in the United States typically carry or have a cell phone in their car when driving, demonstrating the widespread prevalence of these risky habits. The foundation of a safety system that can potentially lower crash rates by identifying unusual circumstances is driver activity monitoring. Reliable EOR estimation is the foundation of any successful vision-based distracted driving detection system, as demonstrated by the authors in [9] . However, there are a number of reasons why developing a real-time EOR detection system for actual driving circumstances is extremely difficult: First of all The system needs to function in both day and nighttime scenarios with actual lighting; (2) variations in the head and eye positions of drivers

2.LITERATURE SURVEY

[1] M. Chau and M. Betke, Correspondence is a fundamental common liberty, and is fundamental for learning and connecting with companions, family and friends. Individuals with complete loss of motion ought to be upheld inside and out to convey. Additionally examines have demonstrated that the disaster of the incapacitated rests in the absence of intends to recognize their requirements. We subsequently propose a framework where the correspondence with the deadened can be brought into the real world, with the guide of eye designs. A gadget to follow the movement of the eye will be preset to numerous levels with the assent of the patient for the comparing

prerequisites. For example the requirement for water will be shown by the squinting of the eye. Consequently, from this undertaking we desire to present a fruitful framework that can help the deadened. It does as such by following the individual's eye and recognizing the flicker designs, and utilizes this example to control different apparatuses and play sound messages

[2] I-Kuei Chen ; Chung-Yu Chi This paper gives a supportive application a continuous discovery framework that can naturally catch the last scene where the client characterized significant articles show up. The presented strategy utilizes RGB-D data as info and has high location rate in muddled indoor conditions. Moreover, we construct an easy to understand utilizing stream on object internet learning and identification which might be appropriate for future advancements of wearable gadgets. Lately, there has been expanding interests in utilizing RGB-D data from video groupings for object discovery. Constant item web based learning and recognition are significant and testing errands in PC vision research zone. Individuals, particularly the older folks, will in general fail to remember where the significant things are and invest a lot of energy looking through them. In this paper, we propose a RGB-D data framework for hearty recognition of item area and assisting individuals with finding the objective article quickly with a straightforward internet preparing stage ahead of time.

[3] T. Danisman, I. Bilasco, C. Djeraba A driver sluggishness discovery framework is suggested that includes identification of driver laziness by utilization of a calculation. For location of sluggishness, the most important visual markers that mirror driver's condition is the eye conduct. The facial calculation utilized utilizes an eye perspective proportion and actual milestone estimations. Milestone identifiers utilized in the calculation exhibit heartiness against differed head directions, outward appearances and lighting conditions. The proposed ongoing calculation will assess eye perspective proportion that actions eye open level in every video outline. It sees eye flicker design as EAR esteems. Thusly, potential tiredness is distinguished. Countless street disasters happen because of drivers nodding off because of fatigue or long stretch driving and carelessness. The proposed framework a work in progress can help forestall something similar by giving non-obtrusive and simple to utilize specific gadgets.

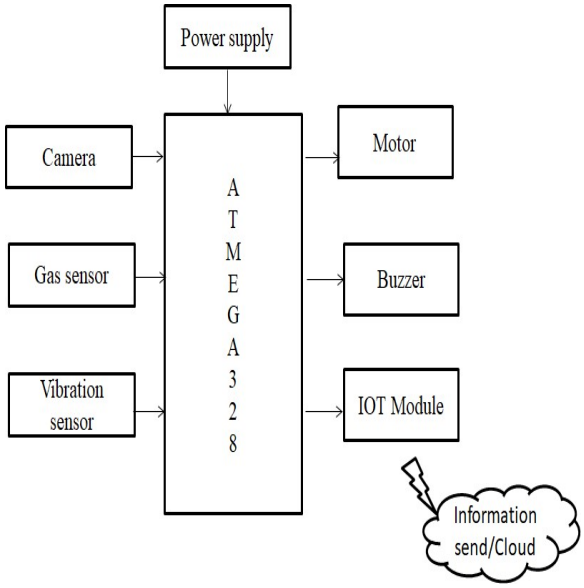
3. EXISTING SYSTEM

The current framework assess whether changes in the eye-controlling relationship that can show interruption. The auto-connection and cross-relationship of level eye position and directing wheel point show that eye developments related with street checking strategy a low eye controlling connection. The eye directing connection will control the relationship on a straight street. The straight street prompted a low connection between's the directing development and eye looks. In this framework it is expect to identify the driver interruption dependent on visual conduct or the presentation of the driver so for this reason it is utilized to characterize the connection between the visual conduct and the vehicle control. This framework assesses the eye-guiding connection related with the straight street with the suspicion that it may show a subjectively and quantitatively extraordinary relationship contrasted and awe-inspiring street and that it very well may be touchy to interruption. Here in the visual conduct and vehicle control relationship mirrors a key discernment control system which assumes a significant part in driving and a solid eye directing connection related with this interaction has been seen on awe-inspiring streets.

4. PROPOSED SYSTEM

The implementation of a preventive program for this matter has become a big challenge. This method calculates the examination of safety criteria and ocular condition. The USB device and the microcontroller are designed by the driver's head. Many times, inattentive drivers don't try to brake or avoid a collision. Therefore, in order to prevent accidents, a system that monitors the driver's health and stops the car right away if the driver exhibits aberrant behavior is built in. The most vulnerable to dozing off while driving are shift workers, business car drivers, and truck drivers. The majority of accidents are caused by intoxicated drivers. In this research, a tilt sensor gas sensor was suggested as well as an eye blink sensor to identify driver tension and dilated pupils. The suggested system senses the driver's tiredness and, if it is found, sounds an alert through a buzzer. If the driver doesn't wake up, the car will slow down, shift to the left, and come to a halt. which the business owner bears since they are held accountable. Financial loss may result from it. In this talk, we will introduce an application that gives the business owner driving behavior advice as well as an alarm system for adaptive drivers and owners. An Arduino and a gas sensor are interfaced in this setup. The car will automatically slow down and stop if any of these sensors detects an abnormal state in the driver. There is a buzzer installed in the vehicle that warns other cars or the occupants within the vehicle. Simultaneously, the registered cellphone number receives an SMS alert with the driver's location and condition. can be used to track the driver's whereabouts and will assist him by hitting hospitals and his colleague there. Additionally, this information might be forwarded to the server (Cloud) to notify his colleague and warn the driver.

BLOCK DIAGRAM



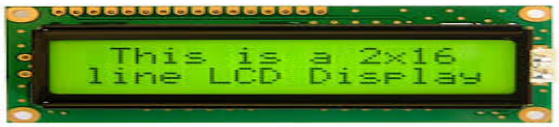
5. SYSTEM REQUIREMENTS

5.HARDWARE DESCRIPTION

5.1Power Supply

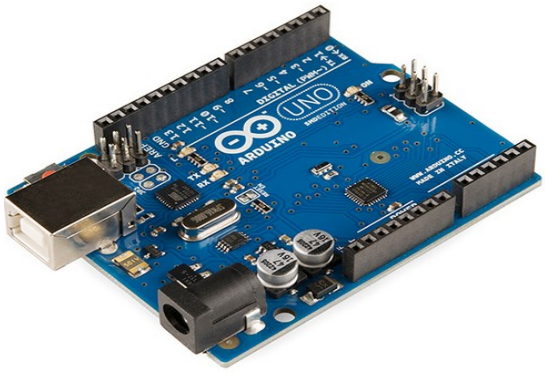
The 12V advanced step-down transformer is powered by an AC source. The 12V AC transformer is rectified by means of a diode connection. A capacitor separates the 12V DC diode bridge yield.

5.2 LCD Display



LCD displays characters, numbers, and designs. The microcontroller's (P0.0–P0.7) I/O port is interfaced with the showcase. Multiplexed mode is used for the presentation. The next showcase flashes on in 1/tenth of a second. Because of Vision's diligence, the show will result in a continuous display of tally.

5.3 ARDUINO UNO R3 MICROCONTROLLER



A microcontroller board based on the ATmega328 IC is called the Arduino Uno R3. There were 6 analog inputs, a 16 MHz crystal oscillator, a USB port, 14 digital input/output pins (six of which may be utilized as PWM outputs), a power button for resetting, an ICSP header, and a jack. Everything required to support the microcontroller is included; all that's left to do is power it with a battery or an AC-to-DC adapter or connect it to a computer via a USB cable.

5.4 NODE MCU

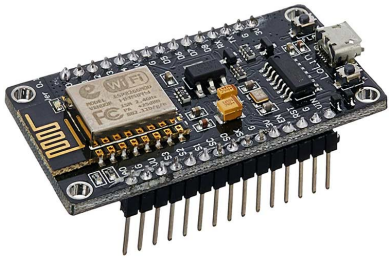


Fig 5.4 Node MCU

NodeMCU is an open-source Lua based firmware and improvement board uniquely focused on for IoT based Applications. It remembers firmware that runs for the ESP8266 Wi-Fi SoC from Espressif Systems, and equipment which depends on the ESP-12 module.

5.5 Buzzer

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A buzzer or beeper is a sound flagging gadget, which might be mechanical,elecro mechanical or piezoelectric .Typical employments of ringers and beepers incorporate caution gadgets, clocks, and affirmation of client information

5.6 Gas Sensor

Fig 5.6 Gas

A gas locator is a gadget that distinguishes the presence of gases in a space, regularly as a component of a security framework. This kind of gear is utilized to distinguish a gas spill or different discharges and can communicate with a control framework so an interaction can be naturally closed down. A gas locator can sound a caution to administrators in the space where the hole is happening, offering them the chance to leave. This sort of gadget is significant on the grounds that there are many gases that can be unsafe to natural life, like people or creatures.

5.7 Vibration sensor

Fig 5.7 Vibration

The measurement of vibrations should be possible utilizing different sorts of sensors. In spite of the fact that there are no immediate vibration sensors, vibrations can be estimated in a roundabout way, deriving esteems from exemplary mechanical or optical amounts. These sensors contrast in certain highlights. In addition to other things they can be isolated in view of dynamic and latent conduct, there are sensors that action relative and others outright. Other particular highlights are recurrence range, signal elements and the nature of the estimation information. The accompanying sensors displayed here were first organized in a reaching and a non-reaching bunch and inside these in the sub things way, speed and speed increase measurement.

5.8 DC MOTOR

Fig 5.8 DC Motor

Any rotary electrical motor that transforms electrical energy from direct current into mechanical energy is referred to as a DC motor. The most often used kinds depend on the forces generated by magnetic fields. Almost all varieties of DC motors contain an internal mechanism—electromechanical or electronic—that allows the motor's portion of the current to be periodically reversed.

6.CONCLUSION

This paper shows that spatial configuration of facial landmarks provides sufficient discriminating information to accurately classify driver gaze into six gaze regions. The proposed framework has the capacity to distinguish the constant condition of the driver in day and night conditions with the assistance of a camera. The discovery of the Face and Eyes applied dependent on the balance. We have built up a non-meddling model of a PC vision-based framework for ongoing checking of the driver's sleepiness.Third, the problem of two region gaze classification ("driving-related" versus center stack) that is especially relevant to driver safety results in higher accuracy than the more general six-region classification problem. Fourth, the classification accuracy varies significantly between subjects and within subjects. Our future work will explore and exploit this inter-person and intra-person variation as it relates to the relationship between eye and head movement.

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