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Preparation of Papers for Drowsiness and obstacle Detecting system

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Abstract

Here we are fabricating the portable safety device. Nowadays automobile department where introduce the new technology of the vehicle. In this system, we are using multiple sensors for avoiding various obstacles while being in the vehicle. PIR Sensor is used to detect any obstacle under and also blank spot on the vehicle. Mikroe Alcohol Click Sensor - MQ-3 is used to detect the driver's alcohol-consuming percentage and it does not allow to drives the vehicle while uncontrollable situation. Blink sensor used to detect driver drowsiness and it helps to avoid accidents.

INTRODUCTION

Driver drowsiness driving is one of the main reasons for road accidents. In current survey it shows that out of 5 accidents one accident is due to drowsiness of the driver which is approximately 20% of road accidents and it increasing gradually in every year. The survey highlights the facts that total number of traffic deaths are excessive because of drowsiness of the *driver*. Driving a vehicle in a crowded road has become a nightmare because of the road conditions, poor weather conditions, haste to reach the destination and excess of traffic. Drowsiness of driver, drunk and drive are coming further major reasons for road accidents. Due to less conscious we can't take care of us while driving. To provide security to driver, the vehicles are assisted with automated safety system that alerts driver by using alarm. All vehicles should be equipped with eye blink sensor and alcohol sensor sequentially to evade these types of accidents. The objective of the project is to by using Blink sensor the eye blink is measured and controlled. The infrared rays are transmitted by IR transmitter into driver's eye. The eye reflects the transmitted infrared rays and these reflected rays are received by the IR receiver. If the eye is in closed status, the output of IR receiver is high. The IR receiver output is low, if the eye is in opening position. This informs that the eye is in opening or closing position. The alarm is indicated, if the output is given to logic circuit. This project is to decrease the accidents due to comatose through eye blink.

Many vehicle manufacturers focus keenly on improvising their technologies and systems in order to provide the consumer with a safe ride to travel. In many countries various methods have been employed such as

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constructing kerbs edgings, small humps on the sideways of the road to warn the driver if he crosses the hazardous zone which leads to accident. This system will be more advantageous for heavy vehicles which are much prone to accidents due to drowsy state of the driver since it is very much cheap in cost and the accuracy of the system varies with the amount of investment on the system.

these measurements are determined in a simulated environment by placing sensors on various vehicle components, including the steering wheel and the acceleration pedal; the signals sent by the sensors are then analyzed to determine the level of drowsiness. published a review on current vehicle-based measures. Some researchers found that sleep deprivation can result in a larger variability in the driving speed.

DROWSINESS

The term "drowsy" is synonymous with sleepy, which simply means an inclination to fall asleep. The stages of sleep can be categorized as awake, non-rapid eye movement sleep (NREM), and rapid eye movement sleep (REM). The second stage, NREM, can be subdivided into the following three stages:

- Stage I: transition from awake to asleep (drowsy)
- Stage II: light sleep
- Stages III: deep sleep

In order to analyze driver drowsiness, researchers have mostly studied Stage I, which is the drowsiness phase. The crashes that occur due to driver drowsiness have a number of characteristics:

- Occur late at night (10:00 pm–7:00 am) or during mid-afternoon (2:00 pm–4:00 pm)
- Involve a single vehicle running off the road
- Occur on high-speed roadways
- Driver is often alone
- Driver is often a young male, 16 to 25 years old

KAROLINSKA SLEEPINESS SCALE (KSS)

The Karolinska Sleepiness Scale is a 9-point Likert scale often used when conducting studies involving self-reported, subjective assessment of an individual's level of drowsiness at the time.

9-POINTS

1.Extremely alert

2.Very alert

3.Alert

4.Fairly alert

5.Neither alert nor sleepy

6.Some signs of sleepiness

7.Sleepy, but no effort to keep alert

8.Sleepy, some effort to keep alert

9.Very sleepy, great effort to keep alert, fighting sleep

CRUSHING OF RESTING ANIMALS UNDER VEHICLES

Millions of popular vehicles have a blind spot that puts children at an increased risk of being killed. That large blind spot , located directly ahead of the vehicles, has contributed to many deaths and injuries.

"Can you even imagine killing your own child because you couldn't see them?" ."I think only a couple of people understand that this blind spot exists, and there is a huge danger when these vehicles start moving forward. "Kids And Cars has been tracking the emergence and rapid increase of what it calls "front over" accidents. accidents involving children who are struck while they are before a slow-moving vehicle. A trend toward larger vehicles, which tend to possess larger front blind spots, and faraway from family sedans has played the foremost dramatic role within the rising statistics. "As a rural , we actually are moving to only producing SUVs, trucks and minivans," . "Everyone has the larger vehicles, therefore the likelihood of this happening just gets higher and better , and this problem is simply going to worsen ."

Tragedies strike Indiana (Ref)

Indiana has seen its share of tragic front over accidents. A 7-year-old Mishawaka boy was killed last summer when a neighbor stuck him as she attempted to pull her SUV into the driveway. On the west side of Indianapolis, a 2-year-old girl was hint and killed by the driver of a SUV who did not see her in the parking lot of a carwash. And 15-month-old Noah Drablow died when his grandfather attempted to move a van a few feet forward so his grandkids could have more room to play basketball in his driveway.

"It was seconds – seconds -- and it happened," said Noah's mother, Erica Boyer. "Noah loved basketballs. He saw one in the driveway, and he ran after a basketball and my dad had no idea what had happened, didn't see him. He didn't even feel the bump of hitting him.

A. Cameras see what you can't

More than a years ago, government regulators took major action to address a similar problem: children being run over, injured and killed due to blind spot of the vehicles. Since the, automakers have been installing rear-facing cameras on most of their cars and trucks, and last year those cameras became mandatory on all new vehicles sold in all over the world. As a result, the number of injuries and deaths in the world has decreased.

To reduce front blind spot, some automakers are now offering front-facing cameras to help drivers detect hidden objects in front and bottom of them. While the number of vehicles with front-camera technology has increased steadily in the past three years, those cameras remain optional equipment on most new vehicles. The majority of vehicles currently on the road do not have them.

1) ALCOHOL SENSOR

The concentration of alcohol in our breathe is detected by using alcohol sensor. Sensor provides an analog output based on alcohol concentration. MQ-3 sensor is used as alcohol sensor is shown in fig 3. The alcohol sensor has an exceptional sensitivity and faster response time. The isobutane, propane, alcohol, cigarette, smoke, LNG are sensed by the sensor.

Alcohol sensor

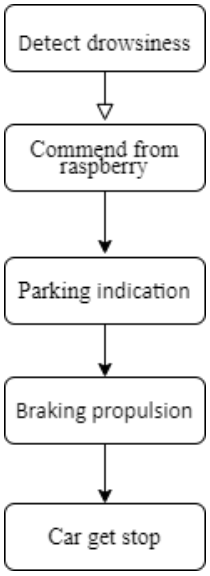
The MQ-3 sensor has 6 pins. Here 4 pins are used to obtain signals and other two pins are used to providing heating current [9]. The MQ-3 sensor has a susceptible material of SnO2, which has a low conductivity in uncontaminated air [10]. If alcohol exists, the conductivity of sensor is higher along with the rising concentration of alcohol.

METHODOLOGY

ACCIDENTS DUE TO THE DRIVER'S DROWSINESS

Detection of drowsiness of driver is a vehicle safety technology, which helps to put off accidents caused by the driver being dozy. A variety of studies have recommended that around 20% of all road accidents are due to the drowsiness of the driver. The paper is based on an example for the detection of a drowsiness system. The intend of this paper to design an automated system for the safety of drivers from improper driving. The system is designed such that it will precisely scrutinize the eye blink. In this paper, the eye blink of the driver is detected by using an eye blink sensor which is IR -based. The disparity across the eye will vary as per eye blink. The output is high if the eye is closed or else output is low. It indicates the closing or opening position of an eye. The IR output is given to the circuit to signify the alarm. The controller will send a warning signal to the control unit

MCU. Then MCU controls the car braking system to stop the car in some following procedure. The buzzer, which is placed near the driver, will be activated and alters the driver when he falls asleep during driving. The alcohol sensor is also used to detect whether the driver is drunken which avoids accidents caused by the drunken drivers.



CRUSHING OF RESTING ANIMALS or CHILDREN UNDER VEHICLES

Usually the poor stray animals resting under vehicles are more prone to crashes it happens widely during summer hotness. The people don't know the what under in the vehicle. This hazards not only for animals . And also children's in schools ,house Etc.. got affected. Initially the vehicle ignition switch is switched on . Then PIR sensor (Thermal sensor) are used to start to detect any obstacles like children or any animals are resting under the vehicle and also blank spot on the vehicle.

A blind spot is the area of the road that can't be seen by looking forward through your windscreen, or by using your rear-view and side-view mirrors. Finally it get analyzed and give intimation to the driver to the driver.

DRUNKEN DRIVE ACCIDENTS

Here we use MQ-3 sensor, detects the alcohol consumption of the driver. The sensor will sense the alcohol consumption more than 50% of alcohol level. The sensor will send the command to the raspberry board, it will process the data and send command to the MCU. And it controls the driving unit.

3D MODEL

CONCLUSION

This project is made with pre planning, that it provides flexibility in operation. This innovation has made the more desirable and economical. This project "*DROWSINESS AND OBSTACLES DETECTING SYSTEM*" is designed with the hope that it is very much economical and help full to automobile field. In this paper we gave a simple and efficient device for safety of the driver and 3rd parties. It is based on a sensor and camera which detect those drowsiness and obstacles. It is a safety measured device for lower and middle class peoples. It is a portable device, which is like an additional accessories for cars. The project has been successfully tested.

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