

Accident Prevention using Drowsiness Detection and Vehicle Distance Calculation in IoT

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Abstract - Nowadays we see that major accidents or many of the accidents are caused due to drowsiness of the driver. This can be because of alcohol intake, tiredness due to traffic or busy schedule. My idea of paper is all about to keep track of these types of vehicles, which is not a easy task. Hence a frame work is required, and should be mounted within the vehicle so that if any abnormal behavior is noticed with the driver Alter message or alarm has to be conveyed to the driver or the car should stop immediately. Along with this the heartbeat, Respiration rate and temperature of the driver also could be monitored and all these parameters will be displayed to him on LCD with all these parameters body status of the driver can be analyzed and in case of any emergency ward can call for help. And also to avoid accidents between vehicles calculate the distance form vehicle to vehicle and get alert to the driver to avoid accidents.

Keywords - Drowsiness;

I. INTRODUCTION

Driver drowsy-ness recognition is a vehicle well-being innovation which avoids many accidents due to the driv-er getting tired. Different reports have proposed that around 20% of all street mishaps are weariness related, up to half on specific streets .Some of the momentum frameworks learn driver designs and can identify when a driver is getting to be tired. As indicated by the world mishap report, India has the most noteworthy number of street mishaps inside the world. Road accidents have earned India a questionable refinement. With more than 130,000 passing every year, the nation has surpassed China and now has the most noticeably awful street auto collision rate around the world. Upwards of 1, 39, 091 individuals lost their lives in 4, 40,042 street mishaps in the nation a year ago. The states in India like Tamil Nadu, Uttar Pradesh and Andhra Pradesh accounted every year for 15.4%, 10.3% and 10.1% of the street mishaps in the nation.

The improvement of innovations for identifying or counteracting sluggishness in the driver's seat is a note-worthy test in the field of mishap shirking frameworks. On account of the risk that tiredness introduces there should be some strategies created for neutralizing its influences [4]. The main risk is to build up a model for drossiness identification and a system to maintain a strategic distance between vehicles to avoid accidents. Hence to design this, we need to have a framework that will precisely detect the eye squint, heartbeat, temperature of the person in the driver

seat. For this we use sensors to record every one of the variables. These parameters will be sent to microcontroller where analysis will be done on this and if any small variation in this an alter message will be sent displayed on LCD in this way we can avoid most of the road mishaps.

The mishap shirking framework keeps away from the standard mishaps that will typically happening on road-ways and in city traffic. These mishaps are mainly occurred by diversion, obviousness, when it is hard to see between our vehicles. So given us a chance to consider the Indian streets and we will have 2 ultrasonic sensors where one is set in the front and another behind the vehicle. Because of this sensor, we can ascertain the separation of different cars nearing us. Along these lines we can find different vehicles and we can shield ourselves from mishaps. The diagrammatic representation of the scenario is explained in Figure 1.

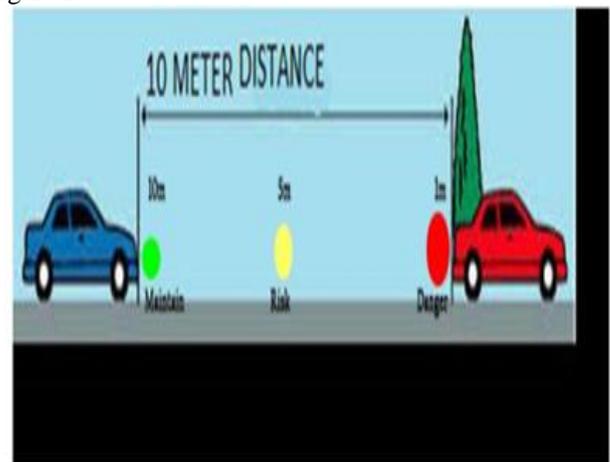


Figure 1: Proposed Model

II. WORKING METHODOLOGY

This is a little framework, which can be installed on any vehicle. The Eye squint sensor is settled to the driver. The eye flicker sensor detects the development of the eyeball. The sensor yield is associated with a microcontroller. The vehicle motor beginning framework is specifically constrained by the microcontroller. In the event that the sensor identifies the no yield from the sensor in light of the fact that there no development in the eyeball, it sends the flag to the microcontroller. The microcontroller promptly stops the motor or bolts it from beginning, additionally give cautioning sign and show the reason in a LCD in figure 2.

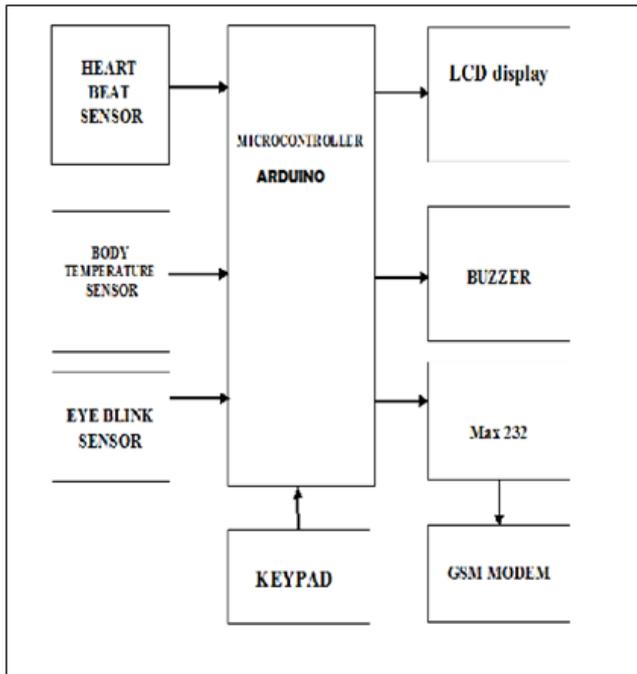


Figure 2: Working Model for Drowsiness Detection

The fundamental thought behind this undertaking is to dodge mishaps. It is a careful step that cautions the driver .the underlying stage starts from the ultrasonic sensor that distinguishes the vehicle in the front and rear. In the event that the vehicle achieves 10 meter, green shading light will sparkle that will demonstrate the notice. At 8 meter separation yellow shading light will alarms us. When it achieves 5 meter separation red shading light will alarms us we are in threat zone. In the meantime the separation between one vehicle and another vehicle was shown in LCD. Wire associations are produced using the bread board to the LCD. arduino unit to the ultrasonic sensors lastly bread board to the arduino pack in figure 3. This task will make simple computation of a separation between one vehicle and another vehicle for the driver.

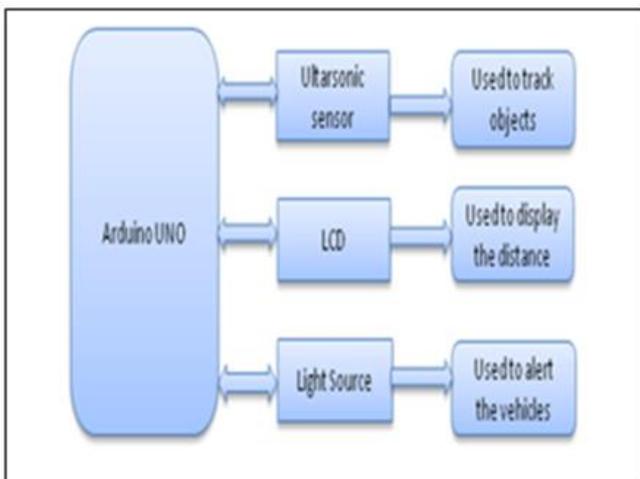


Figure 3. Working Model for Vehicle to Vehicle Distance calculation for Accident Avoidance

III. BLOCK DEcription

GSM Module - GSM/GPRS RS232 Modem from rhydo LABZ is worked with SIMCOM Make SIM900 Quad-band. GSM/GPRS motor, chips away at frequencies 850 MHz, 900 MHz, 1800 MHz and 1900 MHz it is exceptionally conservative in size and simple to use as module GSM Modem. The Modem is structured with RS232 Level Converter hardware, which enables you to specifically interface PC Serial port .The baud rate can be configurable from 9600-115200 through AT direction. At first Modem is in Auto baud mode. This GSM/GPRS RS232 Modem is having inner TCP/IP stack to empower you to interface with web by means of GPRS. It is appropriate for SMS just as DATA move application in M2M inter-face [3] . The modem required just 3 wires (Tx, Rx, GND) aside from Power supply to interface with micro-controller/Host Pc. The inherent Low Dropout Linear voltage controller enables you to interface wide scope of unregulated power supply (4.2V - 13V). Utilizing this modem, you will most likely send and Read SMS, inter-face with web by means of GPRS through basic AT directions.

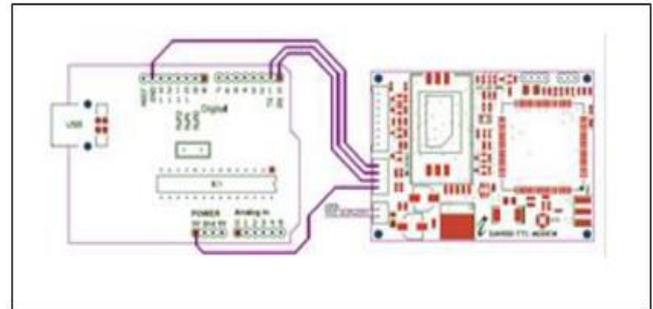


Figure 4: GSM Module

Temperature Sensor - The LM35 is an incorporated circuit sensor that can be utilized to gauge temperature with an electrical yield relative to the temperature (in DC) [4]. In the event that the temperature is high, at that point the fan will on and the other way around, The Temperature Sensor is appeared in Figure 5.

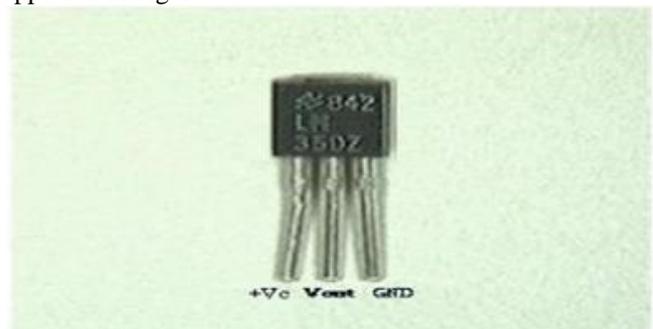


Figure 5: Temperature Module

Eye-Blink Sensor - The eye flicker sensor in figure 6 works by enlightening the eye and additionally eyelid region with infrared light, at that point checking the adjustments in the reflected light utilizing a phototransistor and differentiator circuit. The definite usefulness depends enormously on the

si-tuating and pointing of the producer and finder concerning the eye [6].



Figure 6: Eye Blink Sensor Module

Heart Beat Sensor - The sensor which estimates heart beat is called heart beat sensor .Heart Beat in figure 7 can be estimated dependent on optical power variety as light is dispersed or retained amid its way through the blood as the heart beat changes.

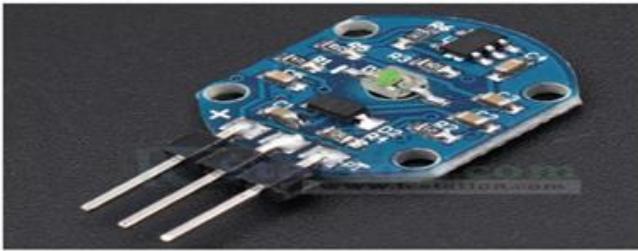


Figure 7: Heart Beat Sensor Module

Ultra-Sonic Sensor - Ultrasonic sensor is to detect the vehicles that nears going to 10 meters Bread sheets which permits to actualize every one of the associations.

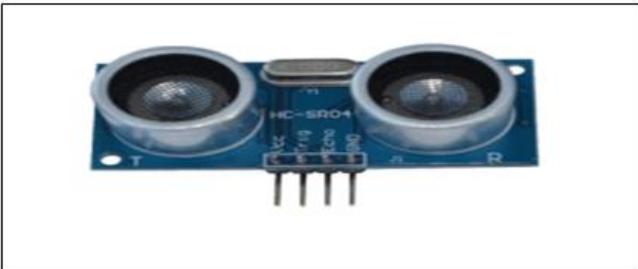


Figure 8: Ultrasonic sensor Module

IV. CONCLUSION

In this paper, focus is made on some parameters which can be used to decide the drowsy state of a driver. This paper additionally analyses many situations by which the drossiness or tiredness can be controlled in reenacted circumstances. The proposed system can be used to maintain a strategic distance from any road accidents which can happen due to tiredness, Eye flicking were the sensor detects this suspicious behaviour and caution the driver with an alert alarm, Along with which alcohol and temperature sensor is used for security purpose if any variations in the regular value the driver will not be allowed to start up engine or car will stop automatically. This system also passes an alert message for the driver if any leakages or fire. Client knows the separation about after vehicle. In future, we will diminish the speed of one vehicle as indicated by the accompanying separation of other. This concept if

indulged by the vehicles companies will end up in maximizing the business and also many hazards can be avoided. The paper uses physiological parameters to identify drowsiness in extremely high.

V. REFERENCES

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