International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 09 Issue: 05 | May 2022 www.irjet.net p-ISSN: 2395-0072

Automotive Collision Avoidance System Using In Solar Powered Smart E-Vehicle

Asst. prof. Shaik Fareed Ahmed, Shabaz ali, omar Ali Khan, Mohammed Saad Hussain

Department of Electrical and Electronics Engineering. ISl Engineering college, Bandlaguda, Hyderabad, India

---

Abstract— *Elevated degree of stress, sleepiness and absence of fixation are some of the most factors that influence the drivers, which might cause gridlock and even mishaps. One of the difficulties that has grabbed the attention inside the area of examination of counteraction of car crashes, the age of instruments add to checking and assessing the driver conduct. This paper is about the vehicle mishap anticipation framework utilizing eye flicker sensor and notice framework. Here with the assistance of eye squint sensor we can distinguish the driver sleepiness. At the point when the driver is in sleepy state, consequently we have some control over the vehicle. So the mishap which are caused because of tiredness are forestalled. In the outstanding cases other than tiredness, when the mishaps are happen, all things considered with assistance of vibration sensor we can distinguish the mishaps and create the notice framework utilizing GPS and GSM module. The vibration sensor are set up with high edge recurrence, so when the mishap happen it create the notice framework. The GSM and GPS send the message and longitude and scope of the mishap area to the separate individual. So the recuperation cycle made quicker and salvage patient.*

I. INTRODUCTION

The vehicle mishap counteraction framework utilizing eye flicker sensor is the future degree idea. Since what's in store is loaded with electric vehicles, so the execution of the idea is extremely simple and more precise. In the current framework we are utilizing the brilliant protective cap idea. However, this idea is just pertinent for bikes. However, our proposed idea was pertinent in an electric vehicles. In savvy cap idea liquor sensor and vibration sensor are utilized, liquor sensor is associated with the bicycle start framework. Whenever the rider is polished off liquor the liquor sensor recognize it by the breathing air. The sensor distinguish the liquor content in the air by individual breathing, when the rider drank liquor shrewd protective cap framework doesn't turn on the start framework. So the rider can't begin the bicycle and assault. So the vehicle mishap happen because of liquor utilization is forestalled. In any case, in commonsense over utilization of liquor individual didn't in cognizant state so the individual can't wear head protector. The framework is disappointment if there should arise an occurrence of not wear cap. Then, at that point, the vibration sensor which is associated in the cap work, when the mishap happen it create the GSM interaction to contact the individual to know him the mishap is happen. Here is additionally one downside which is the sensor is situated in the head protector just when the cap hit on the ground forcely, then just the GSM module work. Be that as it may, the proposed idea we are not utilized liquor sensor. We are utilized eye flicker sensor to distinguish the sleepiness of drivers. The liquor utilization makes the individual oblivious, so a similar idea is utilized in the sluggishness idea. Sleepiness implies oblivious perspective. So we can nearly cover all region connected with wellbeing of drivers and mishap can be forestalled without any problem. Whenever contrast with shrewd head protector idea this is all the more quicker and secure framework. This paper is comprise of five segment

A. BLOCK DIAGRAM

B. EYE BLINK SENSOR

C. VIBRATION SENSOR

D. ULTRSONIC SENSOR

E. ARDUINO NANO,

.

II. PROCEDURE FOR PAPER SUBMISSION

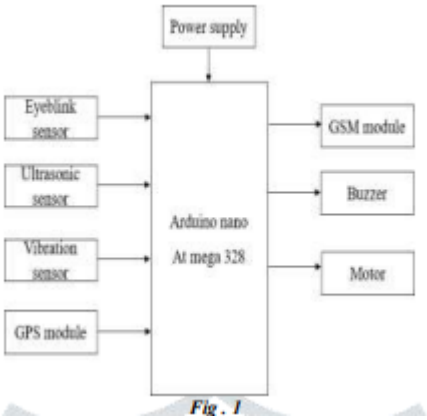


Fig . 1

III. BLOCK DIAGRAM EXPLANATION

The eye squint sensor is utilized to distinguish the driver sleepiness. At the point when the driver is in sluggish express, the eye squint recognize it by when the eyelids are shut for more than 5sec. Then, at that point, state is called tired state. Presently the sign is passed to microcontroller, ultrasonic sensor which is associated with microcontroller gets the sign and actually look at the condition. Rely on the condition it convey a message to engine drive. In ultrasonic sensor we give a two condition, one is they are two ultrasonic sensor are associated with the vehicle. We give the ultrasonic distance is 20m, presently the ultrasonic sensor measure the separation from both end. Assuming there is any vehicle is available in any of the end then the sign is ship off engine drive and the vehicle stops unexpectedly and the ringer is produced and alert the driver to awaken. Then the driver reset the module and proceed with the excursion. Generally one more condition when there is no vehicle at both side end, then the sign is ship off engine drive. Presently the engine which is associated with directing is turn in left side and the fundamental engine pivot just for 5sec to leave the vehicle in left half of the street and the signal is created to make the driver aware of wake up. Then the driver reset the module and proceed with the excursion. In the extraordinary situations when the mishap is occurthe vibration sensor which is associated toward the front of the vehicle is set at high edge recurrence is identify the mishap and convey a message to microcontroller. The microcontroller convey a message to GPS and GSM module. The GSM and GPS module create and send the GPS area alongside the message to the individual or police headquarters or rescue vehicle administration. So the salvage cycle is more quicker than the ordinary one.

IV. EYEBLINK SENSOR

The eye-flicker sensor work when the eyelid are close. It is recognized by the infrared beams. The span of a squint is on the normal 100-150 milliseconds as indicated by UCL scientist and between 100-400 ms as per the Harvard Database of Useful Biological Numbers. Terminations in excess of 1000 ms were characterized as miniature rests. This sensor module comprises of the consideration squint sensor outline, the IR sensor and a hand-off. The vibrator gadget is associated with the consideration squint sensor outline which is to be worn by the main thrust . This vibrator vibrates at whatever point a mishap happens or the main thrust nods off. The module comprises of the IR transmitter which sends the IR beams towards the eyes and an IR beneficiary which gets the reflected beams when the eyes are shut. The transfer gives the additional current expected by this module and henceforth is likewise associated with the Arduino Nano microcontroller board.

V. VIBRATION SENSOR

The vibration sensor is furthermore called a piezoelectric sensor. These sensors are adaptable gadgets which are utilized for estimating different movement. This sensor utilizes the piezoelectric impacts which estimates the progressions inside speed increase, pressure, temperature, force in any case strain by changing to an electrical charge. When appended to a touch of pack , any vibration will mirror an adjustment of speed, which can make the accelerometer supply an electrical sign. The greatest plentifulness or scope of the vibration being estimated will decide the scope of the sensor which can be utilized. The working of this sensor is to detect any jerk given to the vehicle which is that the imitating of the mishap event continuously. The result delivers and convey a message to dc miniature engine and stops the pivot of the wheel.

VI. ULTRASONIC SENSOR

The A ultrasonic sensor is a gadget that actions the space of an objective item by emanating ultrasonic sound waves, and converts the reflected sound into an electrical sign. Ultrasonic waves travel quicker than the speed of hearing sound (for example the sound that people can hear). For ultrasonic detecting, the preeminent generally utilized range is 40 to 70 kHz. The recurrence decides reach and goal; the lower frequencies produce the best detecting range. An ordinarily utilized recurrence is 58 KHz, the estimation goal is one centimeter (cm), and reach ultimately depends on 11 meters. Ultrasonic sensors work by discharging sound waves at a recurrence excessively high for people to focus to . Then, at that point, they stand by the sound to be reflected back, ascertaining distance upheld the time required. This is practically like the way in which radar estimates the time it takes a radio emanation to return in the wake of hitting an object]

VII. ARDUINO NANO

The Arduino Nano could likewise be somewhat, finished, and breadboard-accommodating board upheld the ATmega328 (Arduino Nano 3.x). It has pretty much a similar usefulness of the Arduino Duemilanove, however during a unique bundle. It doesn't have a DC power jack, and works with a Mini-B USB link instead of a common one. It is wont to create a clock of exact recurrence utilizing consistent voltage. There is one impediment utilizing Arduino Nano i.e.it doesn't go with DC power jack, implies you'll not supply outside power source through a battery.

VIII . PIN DISCRIPTION

ICSP Pins

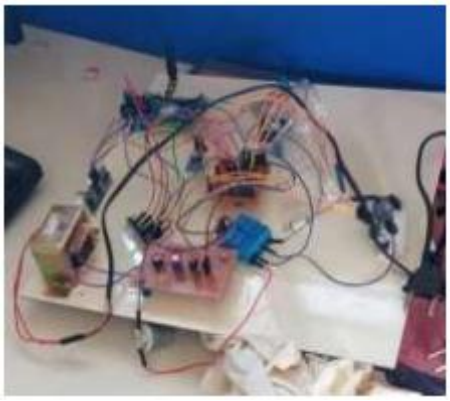
Arduino Nano ICSP Pin Name	Type	Function
MISO	Input or Output	Master In Slave Out
Vcc	Output	Supply Voltage
SCK	Output	Clock from Master to Slave
MOSI	Output or Input	Master Out Slave In
RST	Input	Reset (Active Low)
GND	Power	Supply Ground

Arduino Nano Digital Pins

Pins - 1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16.

IX . WORKING

The vehicle mishap counteraction framework utilizing eye flicker sensor and notice framework, we utilize three sensor and two engines. Contingent on the condition the sensors and engine are work. Presently see the eye squint sensor work just when the eyelids are shut for 5sec. then, at that point, the ultrasonic sensor used to gauge the distance of the article, here we set it as 20m. we utilize two ultrasonic sensor to gauge the separation from front and rear of the vehicle. In a 20m separation from both end turn just for 5 sec to leave the vehicle and both engine get stops and the signal is caution for 5 sec. accordingly the mishap is kept from the sluggishness. any vehicle is available the motor1 stop out of nowhere that is stopping mechanism is applied and the ringer start caution for 5 sec. like that in a 20m separation from both end no vehicle is available the motor1 turn for 10sec and the motor2 that is guiding engine



X . CONCLUSION

There are numerous ways of forestalling the mishap later on. Yet, the most ideal way to forestall the mishap which are caused because of tiredness is eye squint sensor and programmed vehicle control technique. At this point the following 10 to 20 years is brimming with electric vehicles to limit the fuel use. Numerous nations are band the fuel use vehicle and give a markdown to purchase the electric vehicle. So the mishap forestalled framework utilizing eye squint sensor and programmed vehicle control technique is extremely simple to execute in electric vehicles. Since the E-vehicle utilizes

engines rather than motors. While in now a days vehicle the programmed vehicle control is extremely basic one and the execution is intricate cycle. However, the execution is simple in electric vehicle and the mishap, which are caused because of sleepiness is effectively forestalled.

REFERENCES

[1]. H. S. Kim, Y. Hwang, D. Yoon, W. Choi, and C. H. Park, "Driver responsibility qualities examination utilizing EEG information from a metropolitan street," IEEE Trans. Intell. Transp. Syst., vol. 15, no. 4, pp. 1844-1849, 2014.

[2]. P. Zarjam, J. Epps, and N. H. Lovell, "Past Subjective Self-Rating: EEG Signal Classification of Cognitive Workload," IEEE Trans. Auton. Ment. Dev., vol. 7, no. 4, pp. 301-310, 2015.

[3]. NASA TLX: Task Load Index, "NASA TLX." [Online].Available: https://humansystems.arc.nasa.gov/gatherings/TL X/tlxapp.php. [Accessed: 03-Jul-2019].

[4]. N. A. T. S. Air Traffic Management DevelopmentCentre, "Quick Self Assessment of responsibility (ISA)." [Online]. Accessible: https://ext.eurocontrol.int/ehp/?q=node/1585. [Accessed: 03Jul-2019].

[5]. S. Wang, J. Gwizdka, and W. A. Chaovalitwongse, "Utilizing remote EEG signs to evaluate memory responsibility in the $ n $-back task," IEEE Trans. Human-Machine Syst., vol. 46, no. 3, pp. 424-435, 2015.

[6]. Smith, Paul, Mubarak Shah, and Niels Da Vitoria Lobo, —Determining driver visual consideration with one camera‖, Intelligent Transportation Systems, IEEE Transactions on 4.4: pg205-218, 2003.