iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 5 **Issue:** V **Month of publication:** May 2017

DOI:

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Volume 5 Issue V, May 2017
ISSN: 2321-9653
International Journal for Research in Applied Science & Engineering Technology (IJRASET)

Smart Car With GSM, GPS and Sensors

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Abstract*: *Now a day's safety is main aim while developing any system for smart car. In this paper demonstrates different systems for safe driving. The Alcohol Sensor is used to sense weather the person driving the car taken alcohol or not and this data is also given to ADC. The ADC is used in this system because the signal comes from the sensor are analog in nature, so we want to convert the analog signals into digital signal. If driving person is tired and sleeping, the eye blink sensor is sense this activity and starts buzzer. Also used tilt sensor to send the information weather the vehicle is running in normal condition or not. GSM and GPS module provide vehicle location.
Keywords*: *Microcontroller, Alcohol Sensor, Eye Blink Sensor, Tilt Sensor, GPS & GSM Module.

I. INTRODUCTION

There is rapidly increasing vehicles in India. They occur in road accidents. Most definitions of the term specify that cars are designed to run primarily on roads, to have seating for one to eight people, to typically have four wheels with tires, and to be constructed principally for the transport of people rather than goods. Now, many advance features are deployed in vehicle and most of them are dependent on different sensors. Sensors are used to improve the performance of vehicle's. The demand for more automotive advances is increasing; therefore more number of sensors is used in vehicle. Currently, some luxury cars have an average of 100 sensors are used for enhancing performance [1].

Vikrant Kate et al. proposed smart car system with new feature. It is useful in high intensity car accident and helpful for injured peoples on road side. GPS system is used to detect location of car accident. When the accident is happened then through web API message will be send to emergency service center and victim guardians. The message will give the information of longitude and latitude values. Using these values the position of the vehicle can be estimated [2].

Rajani kumari Pasupuleti et al. developed new system to reduce accidents and in case if accident happened system will inform the owner and ambulance about this accident by using GPS and GSM services. The designed system involves in two sequences of actions monitoring and control. In monitoring phase it sense and read all the parameter values .In controlling phase system responds automatically if any abnormalities in the above readings and controls the vehicle [3].

Qiang Ji proposed nonintrusive prototype computer vision system for real-time monitoring of a driver's vigilance. The visual cues characterize eyelid movement, gaze, head movement, and facial expression. The main components of the system consist of a hardware system for the real-time acquisition of video images of the driver and various computer vision algorithms and their software implementations for real-time eye tracking, eyelid-movement-parameters computation, eye-gaze estimation, facial-pose determination, and facial expression analysis. To effectively monitor fatigue, a Bayesian networks model for fatigue is constructed to integrate these visual cues and relevant contextual information into one representative format [4].

The main objective of this paper is to develop system, which will use for controlling vehicle in driver fatigue condition and send message to monitoring place.

This project involves alcohol sensor, it sense ethanol in air and automatically switch off the ignition system of car. Secondly, the eye blink IR sensor is used. The IR sensor transmits the infrared rays in driver eye. If the eye is close and open continuously the count of logic circuit is increased. Therefore the alarm will start to buzzer. The tilt sensor calculates the position of vehicle within range. The complete information sends through GPS and GSM system to server centre.

II. HARDWARE REQUIRED

Fig. 1 shows the block diagram of Smart Car unit. The Smart Car monitors the drowsiness, alcohol detection and tracks the car if there is any problem and gives the location of car on the number provided. Smart Car consists of eye blink sensor to monitor drowsiness and alert driver through alarm if it is detected. An alcohol sensor measures the alcohol level. Information is given to the respective person through SMS about vehicle location about abnormal condition through GPS and GSM technology.

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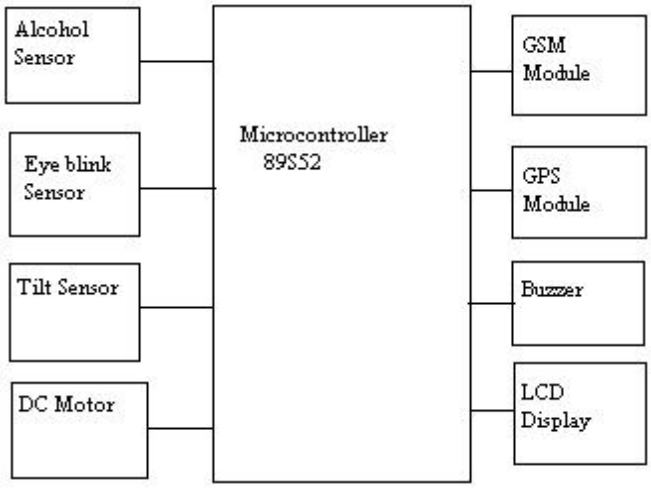


Fig. 1 Block Diagram of Controlling Unit

A. Alcohol Sensor

This Sensor detect the presence of alcohol within the area .The control system is interface with sensor device. Signal is received by control system and further process is automatically turned off. Alcohol sensor used is MQ-3 gas sensor which detects ethanol in air.

B. Eye Blink Sensor

With the help of eye blink we can measure and control the eye blink. There are two IR module are present in eye blink sensor. IR receiver is used to receive the reflected infrared rays of eye. If eye is closed the output of IR receiver is high otherwise the output of IR receiver is low. Due to this we can check the opening and closing of eye.IR transmitter is used to transmit the infrared rays.

C. Tilt Sensor

Tilt sensor is the device that produce electrical signal that varies with angular movement. Tilt sensor is used to calculate right and left direction movement of vehicle. Tilt sensor consist of a rolling ball with a conductive plate beneath.

D. GPS and GSM:

The system can correctly send the position of vehicle to the server center by GPS positioning. GPS module can receive the data by connected to microcontroller development board through RS232 port. GSM modem is a wireless modem that works with GSM wireless network.

E. Microcontroller

Microcontroller used is PIC18F125k22.it is a 28 pin microcontroller with 1536 bytes RAM and two comparators. Advantage of this microcontoler is the ADC pins available. The program memory of this microcontroller is 32 KB.

III. WORKING OF CONTROLLING UNIT

We have implemented system with GPS and GSM module (see Fig. 2). Our first sensor is alcohol sensor, its mechanism is if the person is entering in the car and alcohol consumption is detected then car will not start, so it will avoid number of accidents. Then our second sensor is IR sensor. It will emit IR rays continuously. If there is distortion in continuous emission of IR rays then it will detect distortion and high output i.e. logic 1 will be given as output. If the person is sleeping then the IR sensor output is high, this output is given to logic circuit to indicate the alarm. This alarm buzzes 2-3 times. Our third sensor is tilt sensor its use is to make sure the car is in steady position, if car starts going off road then high logic will be given to the microcontroller and it will start buzzer. The driver has option to switch off the buzzer and stop the vehicle. Whenever driver doesn't respond to buzzer then message will be sent to relatives and hospital through GSM system. The person who is driving the car will have to provide his number as input and destination number to which where about of driver will be provided.

If the driver is found to have alcohol in the breath, it warns and then turns the ignition off (if microcontroller is set with threshold values is set. It is applicable to other sensors) and possibility of accident is avoided. Also we have designed an eye blink sensor which continuously monitors the number of times the eye blinks, if the eye blinks count decreases that means the driver is sleepy, in

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Volume 5 Issue V, May 2017
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that case a buzzer is ON. GPS system provides all information about location of car to microcontroller unit. Then this information sends to base unit through SMS using GSM modem. On the base side we receive the data such as eye blink status, alcohol level, tilt sensor and also the GPS co-ordinates on the online Google maps (see results in Fig.3).

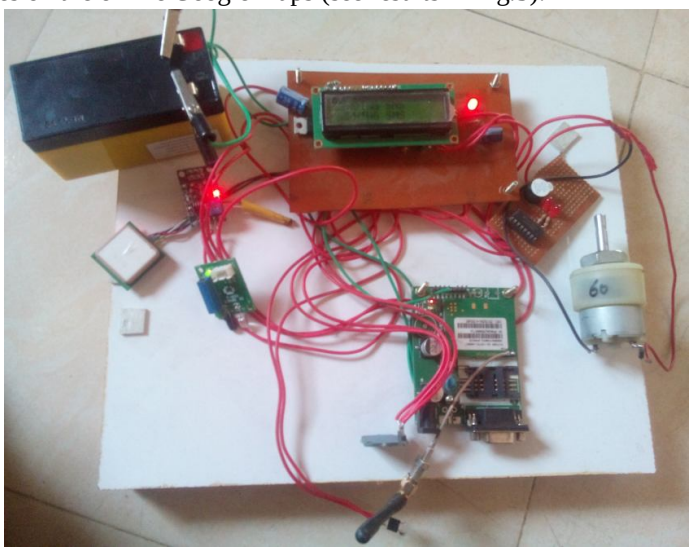


Fig. 2 The Developed Controlling Unit.

IV. RESULTS AND DISCUSSION



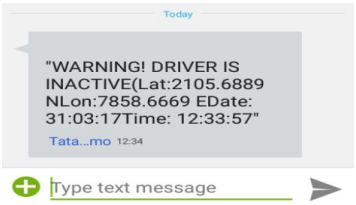
(a) Warning Screen



(b) IR count



(c) Position of lat-long



(d) SMS on Mobile

Fig. 3 Results of Different Sensors

V. CONCLUSIONS

It is due to the driver's fatigue, traffic accidents keep with a yearly increasing of a high rate. This paper proposed the new fatigue detection system using eye blink, alcohol and tilt sensors. In this technique the fatigue will be detected immediately and regular traps the events driver and third party. This research paper contributes intelligent car system to avoid accidents in case of driver fatigue condition.

REFERENCES

[1] Abdelhamid, S., Hassanein, H.S. and Takahara, G., 2014. Vehicle as a mobile sensor. Procedia Computer Science, 34, pp.286-295.
[2] Vikrant Kate, Amol Karnavat, Tushar Ahirrao, Sadhana Holkar, " Smart Car System", International Journal of Innovative Research & Development, ISSN

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2278 – 0211 (Online), Vol 4 Issue 2, Feb 2014.

[3] Rajani kumari Pasupuleti, Ratna babu Yellamati, "Design and Implementation of an Embedded In-Vehicle System With Multitask Management Using RTOS", International Journal of Electrical and Electronics Research ISSN 2348-6988 (online) Vol. 3, Issue 4, pp: (168-174), Month: October - December 2015.

[4] Qiang Ji, Zhiwei Zhu, and Peilin Lan, Real-Time Nonintrusive Monitoring and Prediction of Driver Fatigue. IEEE Transactions on Vehicular Technology, VOL.53, NO.4, July 2004, pp.1052-1068.

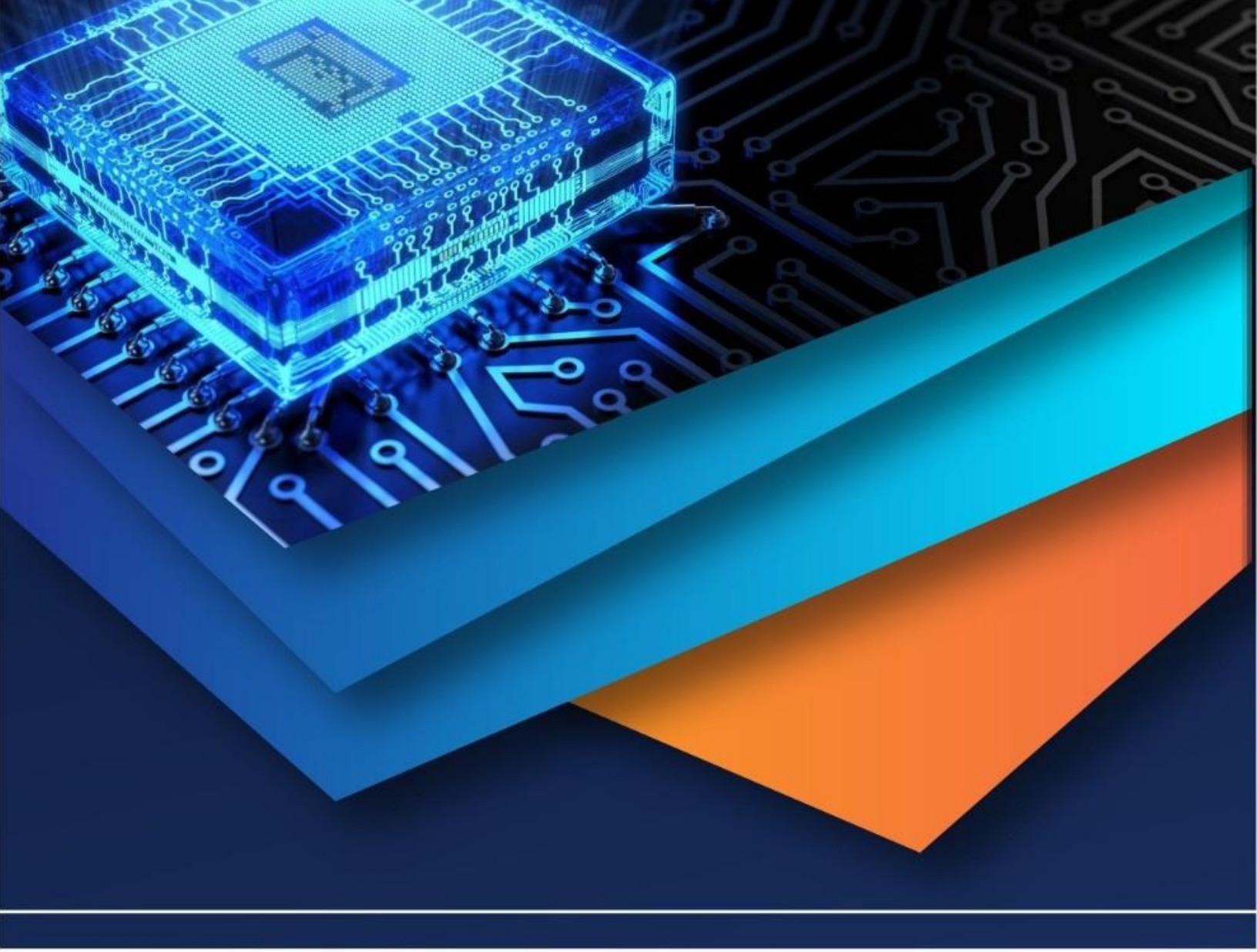
[5] S.P. Bhumkar, V.V. Deotare, R.V.Babar, " Accident Avoidance and Detection on Highways", International Journal of Engineering Trends and Technology-Volume3Issue2- 2012.

[6] Zutao Zhang, Jiashu Zhang, "A Novel Vehicle Safety Model: Vehicle speed Controller under Driver Fatigue", "IJCSNS International Journal of Computer Science and Network Security", VOL.9 No.1, January 2009

[7] M. Bertozzi, A. Broggi, M. Cellario, A. Fascioli, P. Lombardi, and M.Porta, "Artifical vision in road vehicles," Proceedings of the IEEE, vol.90,no. 7, pp. 1258–1271, 2002.

[8] S. Tsugawa and Sadayuki, "Vision-based vehicle on japan: Machine vision systems and driving control systems," IEEE Trans. on Ind. El. vol.41, no.4, pp. 398–405, 1994.

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