ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 4, April 2017

Alcohol, Smoke and Speed Monitoring and Vehicle Controlling using Microprocessor

Rabiya Gupta, Karan Singh, Archana Jamdade, Salahuddin Shaikh, Prashant Ahire

U.G. Student, Dept. of Computer Engineering, Sandip Institute of Engineering & Management, Nashik, India

U.G. Student, Dept. of Computer Engineering, Sandip Institute of Engineering & Management, Nashik, India

U.G. Student, Dept. of Computer Engineering, Sandip Institute of Engineering & Management, Nashik, India

U.G. Student, Dept. of Computer Engineering, Sandip Institute of Engineering & Management, Nashik, India

Professor, Dept. of Computer Engineering, Sandip Institute of Engineering & Management, Nashik, India

ABSTRACT: Road accident is one of the most common cause for the death of humans. It is a manmade cause and the effect is also mainly on the humans. People tend to ignore the basic safety and precautions when it comes to driving. It is the responsibility of every driver in the world to follow the basic safety like fastening the seat belts. But it is also the people's responsibility to not to drive their vehicle in the influence of alcohol, they should keep a fire extinguisher in their vehicle if the vehicle they are driving is big vehicle. They should follow the speed limits provided on almost every road of the world. They should also stick to only one lane and should not change the lanes frequently in order to save themselves from traffic and to save time. Because changing lane to save the time might cause someone to lose their life. Nowadays vehicles should also be made smarter which should be context swared. It should know what is happening in its environment. For that it needs several sensors. But in this we are looking for only those sensors which are related to the safety of the driver and other people who are on the road. in this system there are going to be four devices, namely alcohol sensor[1], smoke sensor[2], rpm counter[3] and a gps[4]. These devices and sensors are going to provide context awareness to the vehicle and the driver.

KEYWORDS: Network Operating System; Distributed Database; Distributed Application; real time; smart vehicle

I. INTRODUCTION

It is the era of technology and still there are no extra sensors in the vehicles to prevent the human made accidents like accidents due to drunk driving, rash driving. This is because the vehicle manufacturers do not want to spend extra money on the things like this which no one cares and they are right as no one really care about their own safety. In today's world the smartphones have as much as 7 sensors and some might even have higher than that. And people look for smartphones which have a lot of sensors which is rarely used or is not at all important. But when it comes to vehicles, vehicle manufacturers do not take essential steps to make the vehicles more safe because adding these sensors will raise the cost of the vehicle and people do not want spend extra money for these extra sensors in their vehicles even though that can save their and someone else's life one day. In this world there are two types of vehicles on the road. One is the luxury vehicles, made by high end companies. The other is the mid-range or the low budget vehicles for middle class people. The high end vehicles have built in sensors like alcohol sensor, which is good for them. But the mid-range vehicles, there is no vehicle with any kind of extra sensors expect the speedometer, which is also not followed by many people and is ignored by people. Nissan, a vehicle manufacturing company has started testing alcohol sensors in their vehicles, which is still a future thing and it is sure that the sensors will be part of high end vehicles only. This is the era of technology. Everything is being smart. The mobiles, vehicles everything. Except people who are becoming dumb. With the alcohol sensor, the vehicle will come to know if the driver is drunk. The smoke sensor will detect smoke in the vehicle, this is a safety feature. There will be an external rpm counter to keep the track of the speed of the vehicle and process if that vehicle is going faster than it needs on a specific road. The GPS is to get the coordinates and to locate vehicle on map so that vehicle which has these sensors. It will give the coordinates of the

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 4, April 2017

vehicle in which if the driver is driving with influence of alcohol, or if the driver is driving rash. Then all the data will be sent to the server side from where appropriate actions will be taken. With these sensors in a vehicle, drivers will think twice before making mistakes like this.

II. LITERATURE REVIEW

Before finalizing the proposed idea of a Distributed Application/ client server architecture with network operating system smart dashboard, a literature survey was done. This proposed project was inspired from the knowledge and fact that the vehicles don't have these kind of sensors built inside to prevent drunk driving, rash driving. However no big step is being taken from these vehicle manufacturer or the government and the people keep driving irresponsibly which leads to the high range of road accidents.

III. WORKING

This smart dashboard is going to be fitted in the dashboard of the vehicle near the driver. So when the engine is started at that time the smart dashboard will also get turned on. All the sensors and devices will get turned on and the data from the dashboard will also start sending to the server side.
There will be two state for every sensor and device except the GPS.
< the values are greater than predefine safe values.
> the values are less than predefine safe values.
If the sensor values are greater than predefine values that means sensors are active and driver exceed any of the mentioned parameter. If the driver is driving in the influence of alcohol and is under the limit, then there will be no problem. But if the alcohol exceeds the limit, then the sensor will sense that and send that data to the server side. Than that server side will send a text message to the authority and the vehicle owner about the status of that sensor. Similarly, if the smoke sensor senses smoke it will send the data to the server side and then the server will send a new and different text message to the authority and the vehicle owner about the status of that sensor.
Similarly the rpm counter. If the speed of the vehicles more than safe then the smart dashboard will send the data to the server and the server will send a text message to the authority and the vehicle owner. And if any two or all the sensor is active then at that time the text message will contain the status of all the sensors and sever provide option of turn off engine so user make sure driver will not drive that vehicle at this point and can take the appropriate action.

IV. SIMULATION RESULTS

We are implementing this system using various technologies. From hardware, like different sensors and microcontroller to software programmes like visual basics and ardino's own ide. Arduino contain three sensor and one LED light, monitoring page contain link to current location of the vehicle on maps, if user wants to check the location of vehicle it will redirect user to the browser.
It shows the current state of the engine graphically, if the image is red, then that means that the engine is off and if the image is green then that means the engine is on and also it provides a text "ON" or "OFF". It takes data from the control page and control page takes data from arduino. Arduino is connected to COM1 port and GPS is connected to the COM2 port. Users have to select the COM port from dropdown menu. After connection, Connected labels are displayed on the top of the rich boxes. There are two rich text boxes to display arduino's data as well as the GPS coordinates.
The value form first rich text box is divided into three sub strings as the value before X represents the value of the LDR circuit, than the value in mid of X and Y represents the alcohol sensor's value and in last the value in middle of Y and Z represents the speed of the vehicle. If the value of first text box is greater than 400, then that means, the sensor is activated and the system goes into alert mode. If the value of second text box is greater than 100, then system goes into alert mode, and in last if the value of third text box is greater than 400, then the system goes into the alert mode. We have used SWITCH case algorithm to check the status of the system to perform the specific task for specific parameter.
In the alert mode, system start buzzing the alarm so that the sound can catch user's attention. The green lights of the normal state turns into red. If all these are true then user get a SMS of alert mode. Then user can decide to whether turn

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 4, April 2017

OFF the engine or not. If user double clicks on the ”Turn OFF Engine” it disconnect the power supply of the vehicle, we simulate this by turning off the LED.
The second rich text box contain the values of GPS. These value are sorted according to the north and east and about its coordinates. All these data are linked to the monitoring page where user is able to track all these parameters graphically.

Test Cases and Results

ID	Description	Result	Passed
1	Check the sensors and gps are connected or not	All the devices are connected properly	Yes
2	Arduino testing	Communicating to system or not	yes
3	GPS testing	Giving Correct Location	yes
4	Check Sensors values	Giving correct values	yes
5	GUI (Graphical User Interface)	Check the GUI of Login, Control, Monitor, Nad locate me	yes
6	Alert Mode	Alert mode on if the conditions are true	yes
7	Notifications	Sound, Change in status are working or not	yes
8	SMS to the user	SMS is received by user.	yes
9	change in graphics if parameters are exceed	Graphics change is flags are set to 1	yes

Test case Table

- **Output**

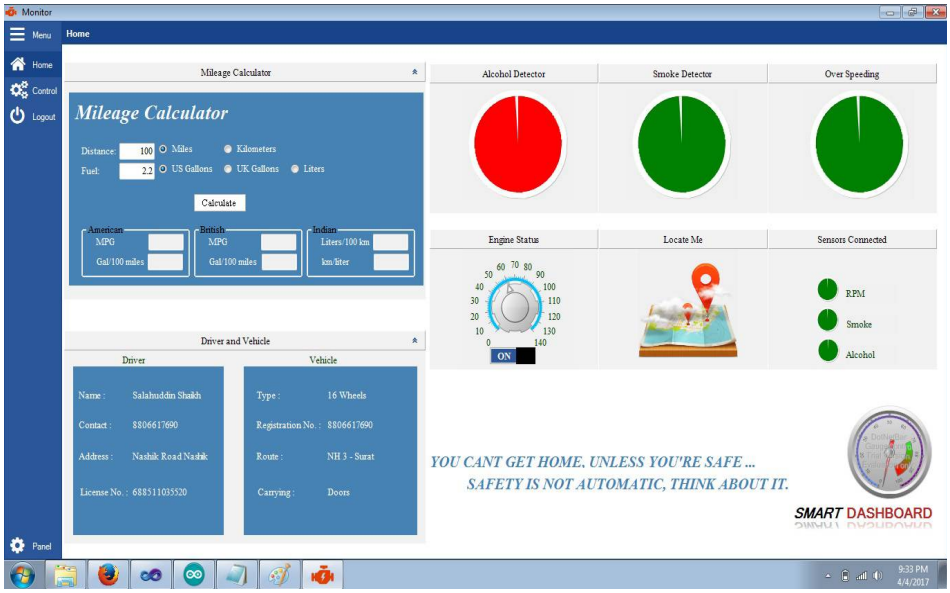

Figure 10.5: Output : Alcohol Detection

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 4, April 2017

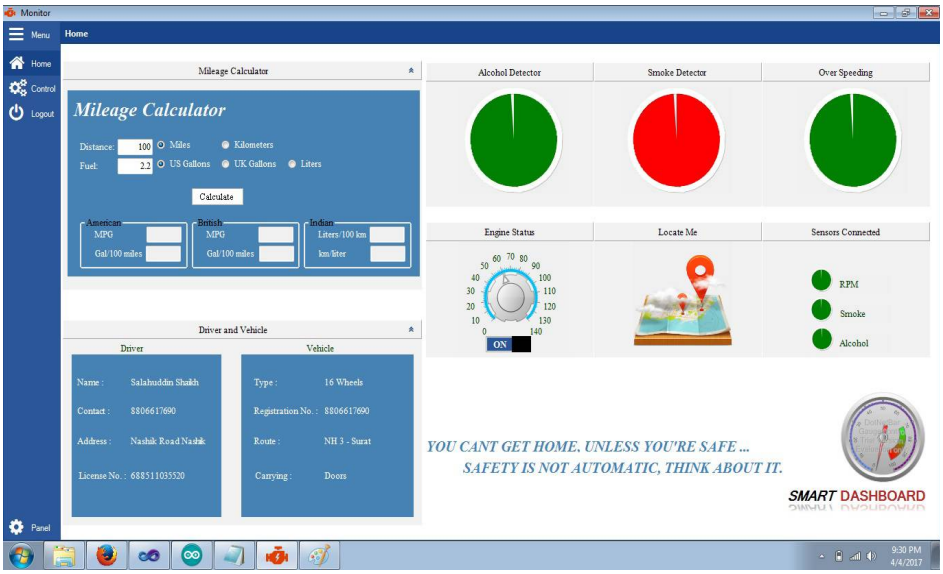

Figure 10.6: Output : Smoke detected

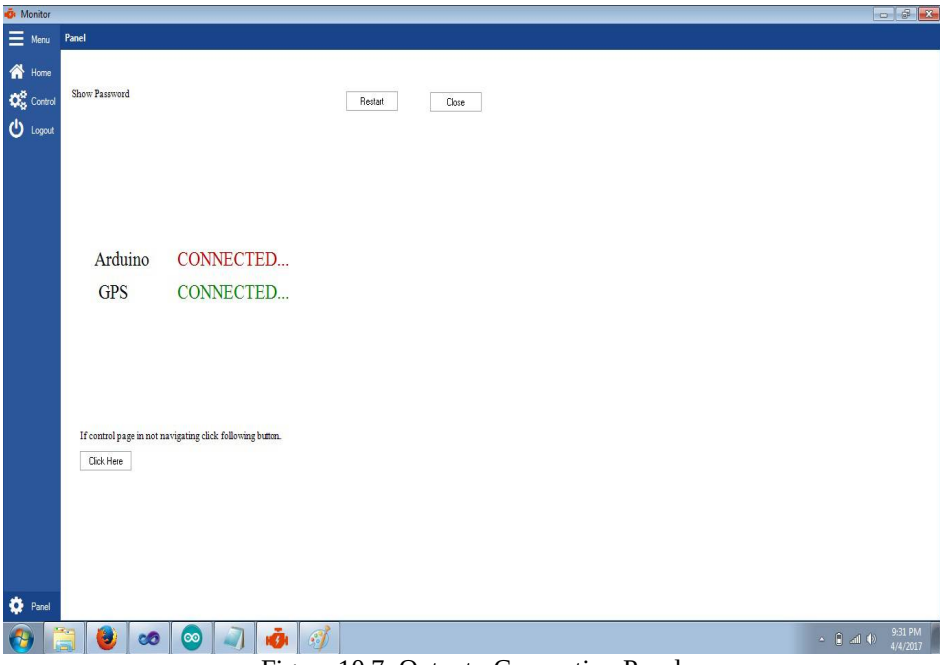

Figure 10.7: Output : Connection Panel

V. APPLICATION

- This smart dashboard can be used in any vehicle.
- It can be used in the large transport trucks to monitor the drivers.
- It can be used in private vehicles to monitor their kids driving.

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 4, April 2017

VI. COMPARISION

http://www.nissan-global.com/EN/TECHNOLOGY/OVERVIEW/dpcc.html
This link takes to a reliable webpage source that shows the Nissan's alcohol detecting system in a vehicle. It also stated that this company is still in its testing phase and that it has only one sensor and that is the alcohol sensor. But in our implemented system we have three sensors named alcohol sensor, smoke sensor and an RPM counter to get the speed of the vehicle. This smart dashboard is a very inexpensive system which can be bought and used in even a low budget vehicle and it is very easy to install.

VII. MATHEMATICAL MODELLING

Let M be a input sequence that maintain the integrity of users data on server.
Such that,
M = (A, S, R, E)
A, S, R, E Represents key generation set of
A = fa0; a1g
Where, A = Set of input parameter of alcohol
S = fs0; s1g
Where, S = Set of input parameter of smoke
R = fr0; r1g
Where, R = Set of input parameter of RPM counter
E = fe0; e1g
Where, E = Set of input parameter of engine status.
A0, S0, R0, E0 = Normal input sequence.
A1, S1, R1, E1 = Activated sensor's input sequence.

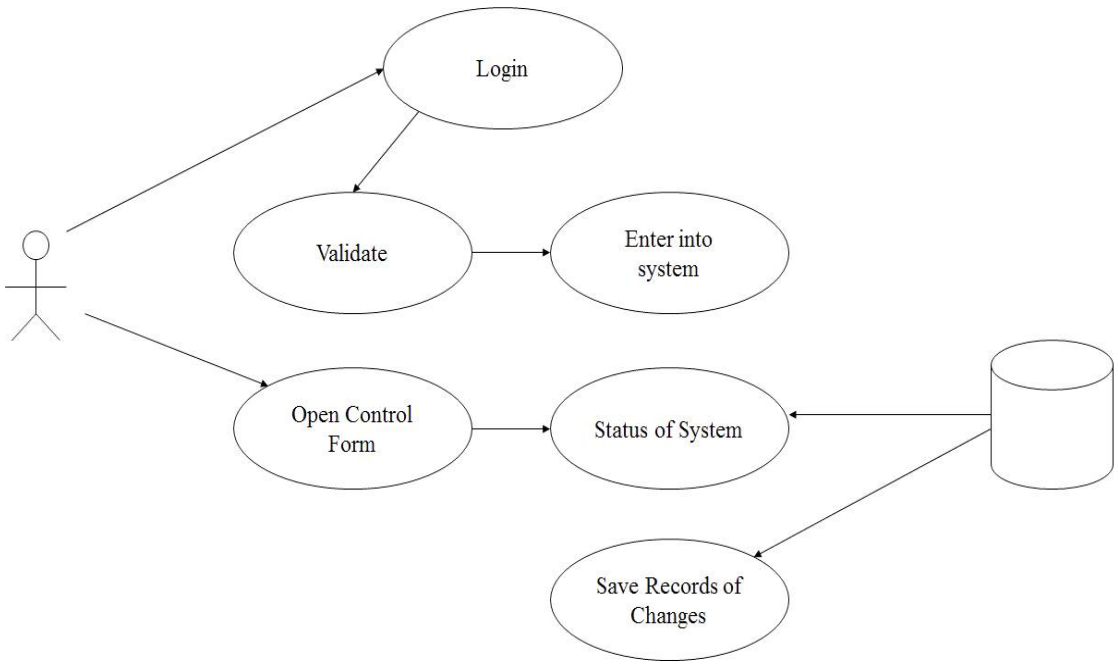

Figure 1: Use case diagram of the system

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 4, April 2017

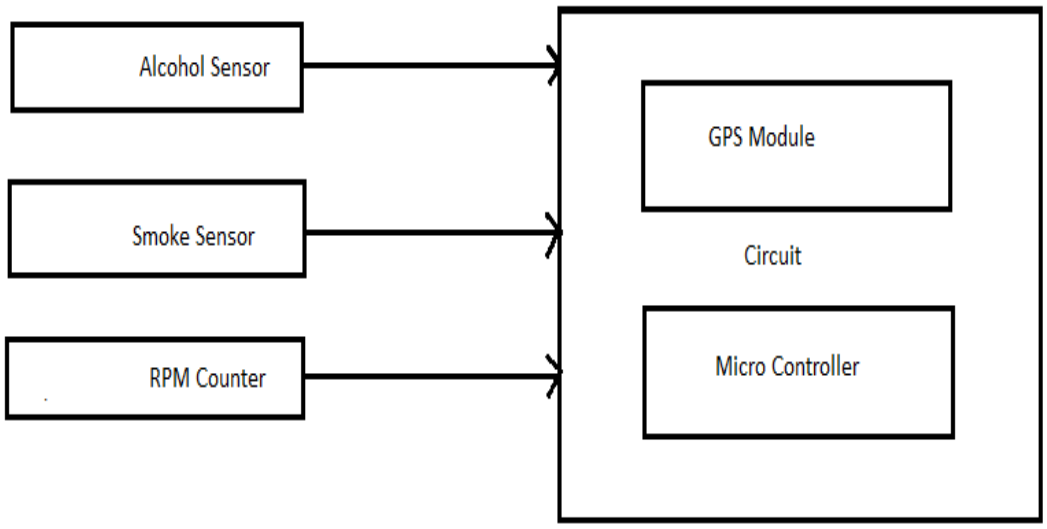

Figure 2. Client architecture

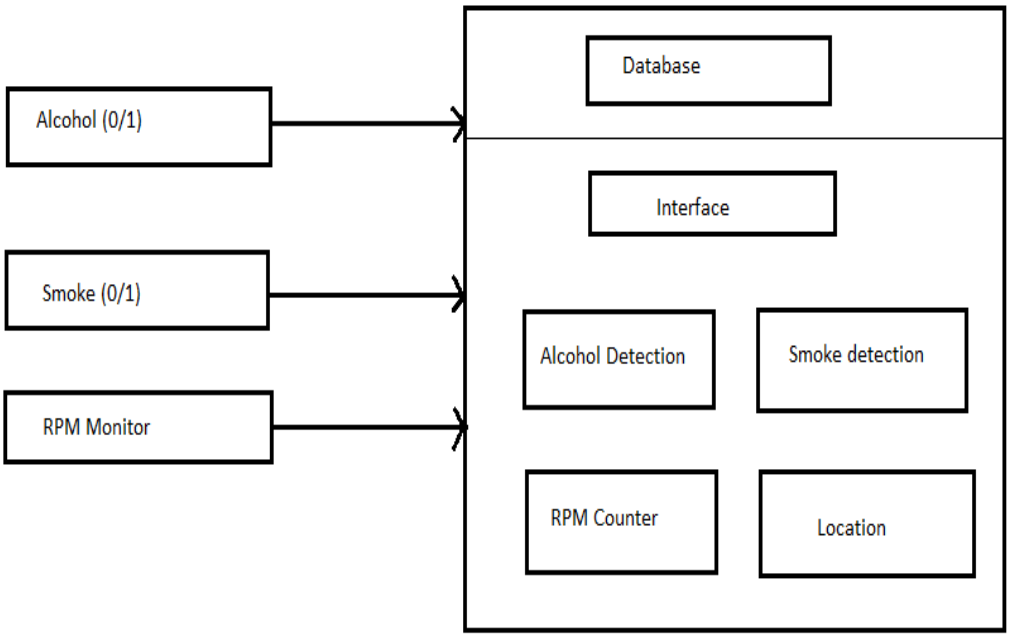

Figure 3. Server architecture

VIII. CONCLUSION

In this paper we conclude that drunk driving, rash driving and over speeding are the main reasons for the road accidents which needs to be solved so that these accidents can be decreased. Therefore there should be some ways to do that. There are very few high end vehicles in the world which have alcohol sensors built into them but that's it, nothing else.

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 4, April 2017

No smoke sensors, no GPS. And the other vehicles which are not high end vehicles they don't even have alcohol sensors into them. So, with this technology, every vehicle can have all the sensors it needs to have to become a smart vehicle and to save people from these common road accidents. Till now there is no technology which can stop vehicle remotely.

IX. ACKNOWLEDGEMENT

We would also like to show our gratitude to prof. Prashant Ahire, for sharing his pearls of wisdom with us during the course of this research. We are also immensely grateful for his comments on an earlier version of the manuscript, although any errors, if there, are of our own.

REFERENCES

1. As Mr. P. Girish, Mr. M. Chinmaya, Ms. P. Shifali, Ms. D. Pooja,"Relative Wireless Rash Driving Detection System:",Int. Journal of Engineering Technology in Computer science Electronics (IJETCSE),2015,vol.14,issue 2,ISSN: 0976-1353.
2. Ankita Mishra, Jyoti Solanki, Harshala Bakshi, Priyanka Saxena, Pranav Paran-jpe,"Design of RF based speed control system for vehicles",International Journal of Ad-vanced Research in Computer and Communication Engineering,2012,vol.1,issue 8.
3. As Prof. P.H. Kulkarni, Ms. Ravina Wafgaonkar, Ms. Shurti S. Gujarathi, Mr. Gaurav Ahirrao,"Alcohol Detection and Automatic Drunken Drive Avoiding System:",Int. Journal of Engineering Research and Application,2014,vol.4,issue 4,pp.21-24.
4. Report on "Road Accidents in India 2011" by ministry of Road Transport and Highway Transport Research Wings New Delhi" in June 2012.
5. Z. Zhu and Q. Ji, "Real Time and Non-intrusive Driver Fatigue Monitoring", in The 7th International IEEE Conference on Intelligent Transportation System,2004, pp. 657-662
6. As A. B. Albu, B. Widsten, T. Wang, J. Lan and I. Mah, "A Computer Vision-Based System for Real-Time Detection of Sleep Onset in Fatigued Drivers","IEEE Intelligent Vehicle Symposium,2008, pp.25-30.
7. as J. Lee, J. Li, L. Liu and C. Chen, "A Novel Driving Pattern Recognition and Status Monitoring System","First Paci_c rim symposium, PSIVT, 2006, pp.504-512.
8. As A.V. Desai and M.A. Haque, "Vigilance Monitoring for Operator Safety: A Simulation Study on Highway Driving", Journal of Safety research, 2006, vol.37, issue 2, pp. 139-147.
9. "Saab Alco Key Helps Drivers", http://www.saabnet.comltsnlpress/061013a.html.
10. U.S. NHTSA, "Tra_c Safety", http://www.nrd.nhtsa.dot.govlPubs/811172.pdf
11. As M.K Telaprolu, V.V. Sarma, E.K. Ratankanth, S.N. Rao, "Vehicular Electronics and Safety (ICVES), IEEE International Conference Pune, 2009.
12. Prof. Prashant Ahire, Rabiya Gupta, Karan Singh, Archana Jamdade, Salahuddin Shaikh, "Smart Dashboard" http://www.ijmter.com/papers/volume-3/issue-10/smart-dashboard.pdf

BIOGRAPHY

Rabiya Gupta is an undergraduate student in Computer Engineering in Sandip Institute of Engineering & Management, nashik india.

Karan Singh is an undergraduate student in Computer Engineering in Sandip Institute of Engineering & Management, nashik india.

Archana Jamdade is an undergraduate student in Computer Engineering in Sandip Institute of Engineering & Management, nashik india.

Salahuddin Shaikh is an undergraduate student in Computer Engineering in Sandip Institute of Engineering & Management, nashik india.

Prashant Ahire is a professor in dept. of Computer Engineering, Sandip Institute of Engineering & Management, nashik india.