Driver Deviation and Drowsiness Detection Alert System

V.Ravi Kishore 1,K.S.B.Ambika 2 , G.Aparna 3 , Dr.SVVSR Kumar Pullela 4

1 Sr.Assistant Professor , Dept. of CSE, Aditya Engineering College(A), Surampalem, India, India
2 Sr.Assistant Professor, Dept. of CSE, Aditya College of Engineering & Technology College,Surampalem,
3. Sr.Assistant Professor , Dept. of CSE, Aditya Engineering College(A), Surampalem, India, India.
4 Professor & Dean, Dept. of CSE, Aditya College of Engineering, Surampalem, India.

ABSTRACT

Reliably various people lose their lives in view of deadly road incidents around the globe and sleepy driving is one of the principal drivers of street mishaps and passing. Exhaustion and little scope rest at the driving controls are consistently the primary drivers of certified disasters. In any case, starting signs of depletion can be recognized before a fundamental condition rises and along these lines, distinguishing proof of driver's shortcomings and its sign is advancing examination subject. By far most of the customary methods to recognize tiredness rely upon direct perspectives while some are intruding and may redirect drivers, while some require expensive sensors. Thusly, at the present time, light-weight, consistent driver's laziness acknowledgment structure is made and executed on the Android application. The structure records the chronicles and recognizes the driver's face in each packaging by using picture taking care of strategies.

Keywords: Intruding, Disasters, Sensors

I. INTRODUCTION

Utilizing python3 and AI the Drivers Deviation and Drowsiness location framework works. The framework will screen the driver's eyes and furthermore outward appearances by utilizing camera. We can recognize side effects of driver weariness sufficiently early to maintain a strategic distance from the individual from dozing. The Advancement of figuring innovation has given a superior way to building astute vehicle framework. Rest identification framework (tiredness location) for driver is one of the potential use of clever vehicle framework. Here we utilize AI to decide genuine human conduct during languor time of the driver. Along these lines, this task will be useful in identifying driver weariness.

At whatever point the driver nods off there will be an admonition yield as alert or pop-ups. So the individual in the driver seat right away wake up and can dodge serious wounds like mishaps. The Drowsiness is the essential reason for street mishaps in excess of an alcoholic driver. So it tends to be decreased to the more prominent degree by presenting the 'Rest Detection System' in the four wheelers or above.

Driver Deviation and Drowsiness Detection System is a constant rest discovery framework. The rest recognition framework consequently record, examine and process the outward appearances progressively. The Sleep Detection System likewise record articulations of eyes and example's of rest for certain timeframe. It shows the driver's real condition whether he is languid or feeling sleepy. On the off chance that a similar example rehashes for in excess of 20 edges, at that point the alarm message is given as a sound and furthermore a notice is passed. It makes the Driver to quickly wakeup and furthermore makes the person in question to get back in condition.

1.1 Existing System

Past ways to deal with laziness identification principally utilized pre-presumptions and general generalizations about the important conduct, concentrating on squint rate, eye conclusion and yawning. The present arrangements detects the pulse examples of the driver, checks the position and unusual examples of guiding, screens the situation of the driver, screens the anomalous development of the head and furthermore eyes. This arrangement shows the neglect and furthermore the state of the individual likes wellbeing and wellness and rest of the driver. Progressively exact outcomes can be watched.

1.1.1. Disadvantages of Existing System

- Directly this element is utilized uniquely in top of the line release and propelled vehicle models.
- Yet, they have to recognize various examples and numerous things to foresee circumstances and driver temperaments.
- Numerous things should be checked to detect the state of mind or the rest of the driver.
- More expense to execute
- Time taking procedure since it has to watch same strange examples over and again.

1.2 Proposed System

We are building up a commonsense and cost-effective execution to this issue. The rest recognition framework records the standards of conduct of eyes of the driver with a computerized camcorder. The recorded edges are set up in the progressing and Machine Learning Algorithms are used to process and perceive the resting instances of the driver in outlines and in the event that the examples are watched for a ceaseless time frame, at that point the driver is cautioned by a sound warning and causes the driver to leave rest. Here we utilize AI to decide genuine human conduct during laziness time of the driver.

1.2.1. Advantages of Proposed System

- ✓ Cost-proficient framework.
- ✓ Safe driving for drivers around evening time.
- ✓ Advanced vehicular innovation.
- ✓ Prevents street mishaps.
- ✓ Even fundamental model vehicles can likewise have the option to utilize this framework.

1.3. Scope

Driver Deviation and Drowsiness Detection System distinguishes eye examples and dozing examples of the driver while driving the vehicles. A non-interfering system to bind the eyes and screen weariness made. Information about the head and eyes position are procured through various self-made picture planning figuring. During the perception, the structure can pick whether the eyes are opened or closed. Precisely when the eyes have been shut for two seconds, an admonishment signal is given. Besides, during watching, the structure can therefore distinguish any eye restricting botch that may have occurred. It helps the ordinary citizens in furnishing with an extra progressed vehicular framework to alarm them in low circumstances and maintain a strategic distance from mishaps. As the driver inputs his drive span in the framework before beginning his/her excursion. The framework begins to catch record and break down all the casings that are caught and checks for the eye separations of the driver and access the no. of edges similar examples or a similar circumstance is watched. An alarm is passed to the driver through a sound which causes the driver to wake up and leave the languor and enjoy a little reprieve which may help the driver in unwinding and can proceed with his excursion for additional time. It examines the eye separation. It helps in keeping up a key good ways from incidents. It channels the rest models and alerts the driver. It gives the

measurements of the excursion to the driver to improve his next drives. It demonstrates the measurements to the administrator with the goal that the drive can be observed and can have a protected drive on streets. It have a few favorable circumstances like existence of the driver can be spared by cautioning him utilizing the alert framework in the vast majority of the causes, can work in dull by utilizing eyebrows observing, simple usage because of promptly accessible equipment and programming, a proficient framework to recognize client mindfulness dependent on exhaustion discovery, traffic the executives can be kept up by diminishing mishaps.

We have to meet a few criteria to make our framework work successfully and to create better result and improve the drive. There ought to be no unsettling influence in the middle of the driver and the framework to catch and sweep the driver designs obviously. The eyes should be obviously noticeable so they can be filtered consistently with no interference. The module and the driver's face should be adjusted an obviously unmistakable way to one another so no mistakes happen. Just straightforward glasses can be utilized by the driver while riding. The driver should be alert while driving with the goal that mishaps can be decreased. The vehicle ought to be either 4-wheeler or above, vehicles ought to contain a rooftop better lighting and to catch plainly. It doesn't acknowledge or don't acts in better manner if there is an unsettling influence between the driver and the camera, it doesn't acknowledge any dull cooling glasses other than straightforward glasses.

This framework conveys an alarm message to advise the driver when he/she is in languor state, ahead of time to that an alarm sound is additionally added to ensure that the driver awakens from the laziness state and have a break to proceed with the excursion. After the total excursion a measurement of the total drive is appeared to the driver to make him/her proficient about his/her excursion and make his/her future excursions progressively sheltered and better.

There are a few limitations that make this framework to work inappropriately. Like aggravations in the middle of the driver and the camera, dim shades inside the vehicle, dim sun glasses, questions that come in the middle of the driver and the camera.

In the event that any dubious information is assembled or caught in the framework while filtering then the information is added to the insights which lead to loud information and low precision in measurements. In this way, the above compels should be followed to make the framework work appropriately in all conditions. On the off chance that any aggravation like scouring the eyes, shutting eyes because of falling of residue, when eye consumes happens because of all the more light, happens then the information is caught and is put away for additional refining.

II.SYSTEM IMPLEMENTATION
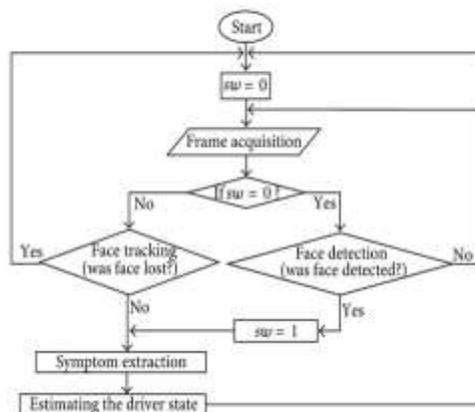
Flowchart of the proposed system.

MySQL is a well known choice of database for use in web applications and is a central portion of the for the most part used LAMP open-source web application programming stack (and other'AMP'stacks).LAMP is a truncation for "Linux, Apache, MySQL, Perl/PHP/Python."Free-programming open source broadens that require a full-included database the board structure consistently utilizes MySQL. For business use, a couple of paid adaptations are open and offer additional value. Applications which use MySQL databases incorporate TYPO3, Joomla, Word Press, phpBB, MyBB, Drupa land another programming..

2.1 Sample Code

Input.py

```
   #window
screen = Tk()
screen.geometry("500x500")
screen.title("Sleep Detection System")
heading = Label(text = "Enter Journey Details", bg = "grey", fg = "white")
heading.config(font=("Courier", 14))
heading.pack()
name = StringVar()
duration = IntVar()
name_label =  Label(text = "Driver's Name")
name_label.config(font=("Arial", 10))
duration_label =  Label(text = "Journey Duration")
duration_label.config(font=("Arial", 10))
name_input = Entry(textvariable = name, width = "40")
duration_input = Entry(textvariable = duration, width = "40")
name_label.place(x = 20, y = 100)
name_input.place(x = 20, y = 130)
duration_label.place(x = 20, y = 180)
duration_input.place(x = 20, y = 210)
#start = Button(text = "Start Now", width = "70", height = "2")
#start.place(x = 0, y = 440)
start = Button(screen, text = "Start Now", width = "15", height = "2", command = popupmsg)
start.place(x = 20, y = 260)
end = Button(screen, text = "Quit", width = "15", height = "2", command = screen.destroy)
end.place(x = 180, y = 260)
```

Drowsiness detection.py

```
def open1():
        def eye_aspect_ratio(eye):
                A = distance.euclidean(eye[1], eye[5])
                B = distance.euclidean(eye[2], eye[4])
                C = distance.euclidean(eye[0], eye[3])
                ear = (A + B) / (2.0 * C)
                return ear
        thresh = 0.25
        frame_check = 20
        detect = dlib.get_frontal_face_detector()
        predict = dlib.shape_predictor("shape_predictor_68_face_landmarks.dat")# Dat file is the crux of the code
        (lStart, lEnd) = face_utils.FACIAL_LANDMARKS_68_IDXS["left_eye"]
        (rStart, rEnd) = face_utils.FACIAL_LANDMARKS_68_IDXS["right_eye"]
        cap=cv2.VideoCapture(0)
        flag=0
        while True:
                ret, frame=cap.read()
                frame = imutils.resize(frame, width=450)
                gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)
                subjects = detect(gray, 0)
                for subject in subjects:
                        shape = predict(gray, subject)
```

```
shape = face_utils.shape_to_np(shape)#converting to NumPy Array
leftEye = shape[lStart:lEnd]
rightEye = shape[rStart:rEnd]
leftEAR = eye_aspect_ratio(leftEye)
rightEAR = eye_aspect_ratio(rightEye)
ear = (leftEAR + rightEAR) / 2.0
leftEyeHull = cv2.convexHull(leftEye)
rightEyeHull = cv2.convexHull(rightEye)
cv2.drawContours(frame, [leftEyeHull], -1, (0, 255, 0), 1)
cv2.drawContours(frame, [rightEyeHull], -1, (0, 255, 0), 1)
if ear < thresh:
        flag += 1
        print (flag)
        if flag >= frame_check:
                cv2.putText(frame, "****************ALERT!***************",
(10, 30),
                        cv2.FONT_HERSHEY_SIMPLEX, 0.7, (0, 0, 255),
        #print ("Drowsy")
    else:
        flag = 0
    cv2.imshow("Frame", frame)
    key = cv2.waitKey(1) & 0xFF
    if key == ord("q"):
        break
cv2.destroyAllWindows()
cap.stop()
if __name__ == "__main__":
    open()
cv2.destroyAllWindows()
cap.stop()
```

TABLES:-

Field	Type	Null	Key	Default	Extra
bs_id	int(11)	NO	PRI	NULL	auto_increment
bs_from	varchar(100)	NO		NULL	
bs_to	varchar(100)	NO		NULL	
bs_ticket_fair	int(11)	NO		NULL	

Table: 2.1   bus_route
This table gives the description of bus route.

Field	Type	Null	Key	Default	Extra
sno	int(11)	NO	PRI	NULL	auto_increment
cname	varchar(50)	NO		NULL	
cid	varchar(20)	NO		NULL	

Table: 2.2 Colleges
This table gives the description of colleges.

Field	Type	Null	Key	Default	Extra
fp_s.no	int<11>	NO	PRI	NULL	auto_increment
fp_sid	varchar<20>	NO		NULL	
fp_bus_route	int<11>	NO	MUL	NULL	
fp_month	varchar<20>	NO		NULL	
fair	int<11>	NO		NULL	
fp_status	int<11>	NO		9	
Expiry	timestamp	NO		0000-00-00 00:00:00	on update CURRENT_TIMESTAMP

Table: 2.3 Fresh_app
This table gives the description of Fresh app.

Field	Type	Null	Key	Default	Extra
r_sno	int(11)	NO	PRI	NULL	auto_increment
r_sid	varchar(20)	NO		NULL	
r_recharge	int(11)	NO		NULL	
r_added_on	timestamp	NO		CURRENT_TIMESTAMP	

Table: 2.4 Recharge
This table gives the description of recharge.

Field	Type	Null	Key	Default	Extra
sc_sno	int(11)	NO	PRI	NULL	auto_increment
sc_name	varchar(50)	NO		NULL	
sc_branch	varchar(50)	NO		NULL	
sc_spin	varchar(20)	NO		NULL	

Table: 2.5 Std_college
This table gives the description of Student College.

III.TESTING

3.1 Unit Testing

We have successfully performed unit testing on "input details" code and we have executed it perfectly.

3.2 Integration Testing

Here spotlight is on plan and development of the product design. Coordination Testing is a recognizing system for working up the program structure while at the same time driving tests to reveal mixes up related to interfacing. The goal is to take unit attempted domains and gathers a program structure that has been made by the course out of action. The target here is to check whether modules can be made sensibly, the element being on attempting interfaces between modules.

3.3 Validation Testing

Right now, as a feature of programming prerequisite examination is approved against the product that has been built i.e., endorsement succeeds when programming limits in a manner that can reasonably be normal by the customer.

3.4 System Testing

Structure testing of programming or hardware is giving coordinated a shot an aggregate, the fused system to survey the structure's consistency with its predefined requirements. System testing falls inside the degree of revelation testing, and taking everything into account, should require no data on the internal structure of the code or method of reasoning. Here the whole programming structure is endeavored. The reference record for this framework is the necessities archive, and the objective is to check on account of programming meets its prerequisites.

IV. TESTCASES

Test case ID	Input	Description	Expected result
OBP_TC01	Name blank Duration blank	A blank name and blank duration is given	Please Enter the name and duration will be displayed.
OBP_TC02	Driver Name Duration blank	Driver name and blank duration is given	Please Enter the duration will be displayed.
OBP_TC03	Blank name Journey duration	A blank name and duration is given	Please Enter the name will be displayed.
OBP_TC04	Driver name Journey duration	Driver name journey duration is given	Device start's recording

Table 4.1 Test case – Entering input

Test case ID	Input	Description	Expected result
OBP_TC01	Correct driver name Correct duration	Driver name journey duration is given	Device starts recording
OBP_TC02	Wrong driver name Wrong duration	Driver name journey duration is given	Device starts recording
OBP_TC03	Correct driver name Wrong duration	Driver name journey duration is given	Device starts recording
OBP_TC04	Wrong driver name Correct duration	Driver name journey duration is given	Device starts recording

Table 4.3 Test case - Add College

V.REPORT GENERATION

Test case ID	Input	Description	Expected result	Reports
OBP_TC01	Name blank Duration blank	A blank name and blank duration is given	Please Enter the name and duration will be displayed.	Fail
OBP_TC02	Driver Name Duration blank	Driver name and blank duration is given	Please Enter the duration will be displayed.	Fail
OBP_TC03	Blank name Journey duration	A blank name and duration is given	Please Enter the name will be displayed.	Fail
OBP_TC04	Driver name Journey duration	Driver name journey duration is given	Device start's recording	Pass

Table 5.1 Test case – Entering input

| Test case ID	Input	Description	Expected result	Reports
OBP_TC01	Correct driver name Correct duration	Driver name journey duration is given	Device starts recording	Pass
OBP_TC02	Wrong driver name Wrong duration	Driver name journey duration is given	Device starts recording	Pass
OBP_TC03	Correct driver name Wrong duration	Driver name journey duration is given	Device starts recording	Pass
OBP_TC04	Wrong driver name Correct duration	Driver name journey duration is given	Device starts recording	Pass

Table 5.3 Test case - Add College
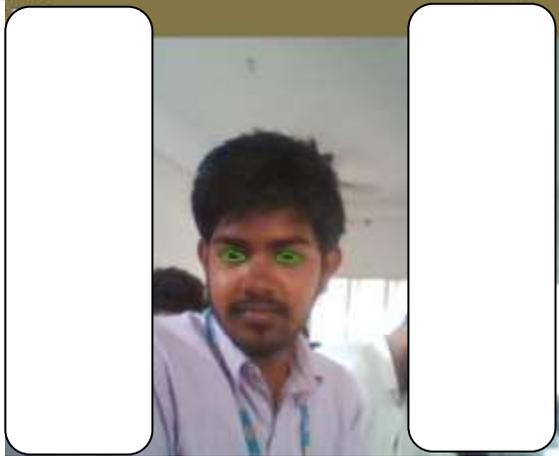
VI. SCREESHOTS
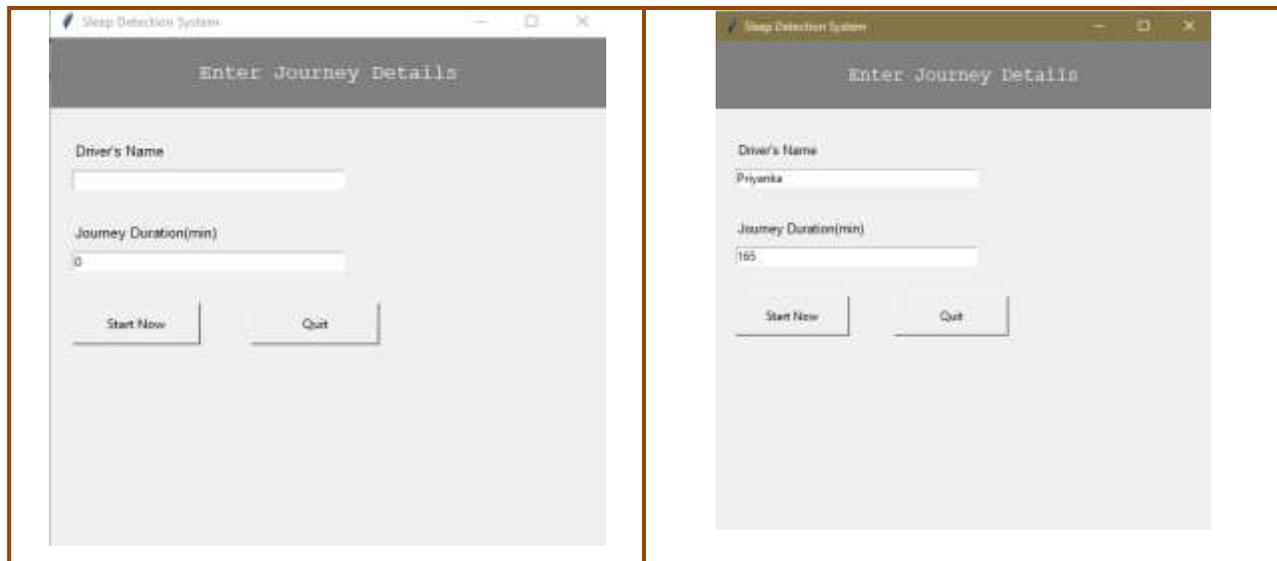
Fig 6.1.Input Page	Fig 6.2 Journey Details

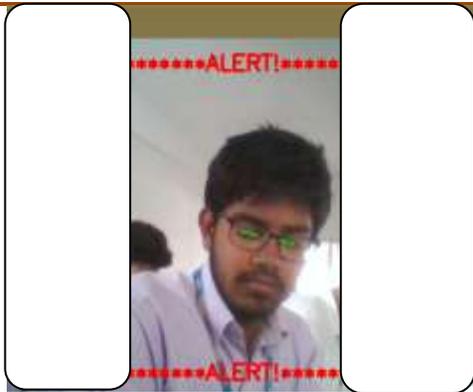| Fig 6.3.Eye Detection without Spectacles	Fig 6.4.Eye Detection with Spectacles
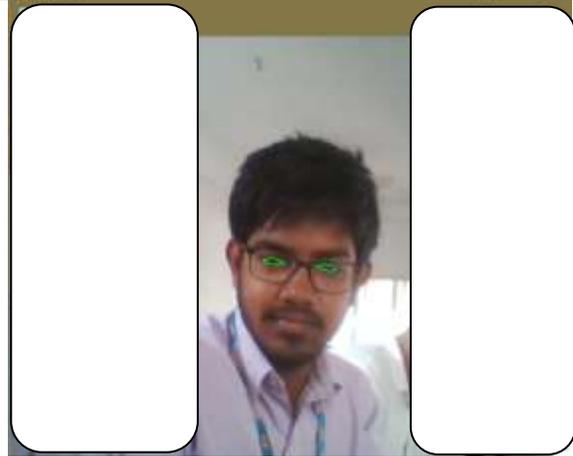
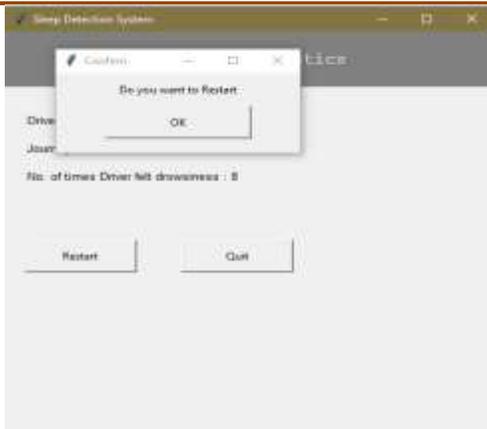**Fig 6.5.Alert**　　　　　　　**Fig 6.6.Journey Statistics**

Fig 6.7.Reset/Exit　　　　　　　**Fig 6.8.Log File Creation**

VII. CONCLUSION AND FUTURE SCOPE

7.1 Conclusion

With our undertaking, the assignment of computerization of giving transport pass nearly diminishes the weight on the understudies and authorities. This robotization task improves the future use of sharing as it were. On the accentuation of robotization gave, APSRTC can get the advantage of efficient, diminishing labor, and so forth.

7.2 Future scope

With the framework we proposed, we are attempting to stretch out this to most extreme degree. The extent of the task can additionally be improved with the goal that it can make crafted by understudies more simpler than the proposed. What's more, the site can additionally be grown with the goal that the installment of client to administrator can be robotized.

In the future the proposed solution can be extended to an advanced alerting system with a supporting prevention system

REFERENCES

[1] M. Hemamalini, P. Muhilan"Accident preventionusing eye blink sensor", vol 1, Issue L11, 2017.

[2] RamalathaMarimuthu, A. Suresh, M. Alamelu and S.Kanagaraj "Driver fatigue detection using image processing and accident prevention", International journal of pure and applied mathematics, vol. 116, 2017.

[3] TejaswiniJagdale, PradnyaJadhav, PrajaktaTotre,MayuraZadane, ShrilekhaMankhai "Driverdrowsiness detection, alcohol detection and accident prevention", IJET, vol3 issue1, jan 2017

[4] BappadityaMandal, LiyuanLiyuan Li, Gang Sam Wang and JieLin "Towards detection of bus driver fatigue based on robust visual analysis of eye state",IEEE transaction on intelligent transportation systems,2016.

[5] Suhaskatkar, Mahesh ManikKumbhar, PritiNavanathKadam"Accident prevention system using eye blink sensor", IRJET, Vol.03 Issue 05, 2016.

[6] Tejasweenimusale, prof B,H. Pansambal, "Real time driver drowsiness detection system using image processing", IJREAM, Vol 02, Issue 08, 2016.

[7] Omkar, RevatiBhor, PranjalMahajan, H.V. Kumbhar "Survey on Driver"s drowsiness detection system",vol.132,2015.

[8] Christy, Jasmeen Gill, "A Review: Driver drowsiness detection system", IJCST, Vol.3 Issue 4,jul-aug 2015.

[9] Deepa K B, Chaitra M, Ankit Kumar Sharma, Sreedhar V S ,Prashanth Kumar H.K "Accident prevention by eye blinking sensor and alcohol detector", IJER, vol.no.4,issue no.7, 2015.

[10] Rajasekar.R, Vivek Bharat Pattni, S.Vanangamudi "Drowsy driver sleeping device and driver alert system", IJSR, Vol.3 Issue4,2014.