

Intoxicated/Sleepy Driver Detection on A Moving Car



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Abstract: The main objective of this paper is that the ignition of car stops automatically. When the driver is intoxicated/sleepy before starting, after starting and while moving of vehicle, the car ignition will be stopped based on intoxicated driver position, gestures, voice recording, Eyeball movement and sleep mood. We introduced to predict the accident with the location tracking which is immediately sent to the server. This paper explores location, map matching and data associated with the positioning and predicts the accidents by intoxicated drivers in cars. This paper work provides safety and security of human beings not only for driver but to the passengers also.

Keywords: ANDON, Raspberry pi 3B+ with camera, Relay, Buzzer, GPS & GSM Modules.

I. INTRODUCTION

Now-a-days every system is automated in order to face new challenges in the global market competition. Present days automated system has fewer manual efforts, operations, flexibility and accurate. At present, every domain prefers automated systems and they play a crucial role in competitive market. Automated systems in the field of electronics are giving satisfactory performance. We usually come across intoxicated/sleepy and driving cases where drunk lash their cars under influence of alcohol causing damage to assets and life. So, here we propose a creative system to get rid of such cases. Our proposed system would be continuously monitoring the driver face. So, if a driver is drunk and tries to drive the vehicle, the ignition of the car will fail to start. The raspberry pi 3B+ is a just like a computer developed in the UK by the raspberry pi foundation.

All models feature a Broadcom system on a chip (Soc), which includes an ARM and an on-chip graphics processing unit (GPU). CPU ranges 700MHz TO 1.2Hz for the pi 3 and on-board memory ranges from 256 MB to 1GB RAM. Secure digital SD cards are used to store operating system and program, HDMI and composite video output and a 3.5 mm phone jack for audio.

Lowest level output is provided by a number of GPIO pins. Some model has an 8P8C ethernet port and Wi-Fi board configurations in 802.11.

The existing system detects methods of driver drowsiness and can be divided into three categories:

- First category is based on the information which displays drowsiness detection on LCD.
- Second category is the method of physiological gesture that includes EEG, ECG, EOG.
- Third category system is wheel chair operation.

II. PROPOSED TRACKING SYSTEM

This method is carried out to crack geographical information and sends an SMS alert about accident. So, the police can quickly locate the location through the GPS MODEM, after receiving the information. Then after conforming the location mandatory action will be taken. [1].

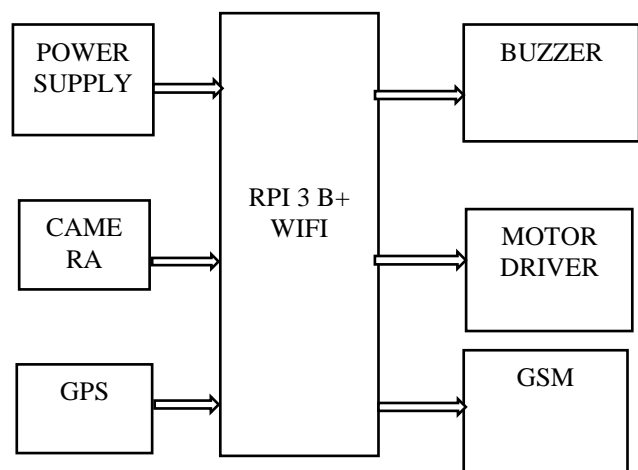


Fig1: Block Diagram

By using web camera, the images which are captured undergo image processing using open CV with the help raspberry pi. The captured images are used to detect the face and eyes by using Haar feature [3].

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III. METHODOLOGY

Here the hardware and software of the GPS network were developed. The vehicle tracking system is an electronic device, which is installed in the vehicle such that tracking of vehicle will be easy and information can be sent to the family at that particular location.

Face detection system is used to detect the face of the drivers without any prefixed face by his/her eye ball movement. This system provides vehicle cabin safety and also driver safety. The location of the car is displaced to the car is displaced to the family members through SMS and the condition of driver can be seen through video. The video is available by placing a camera in the car with certain distance from steering to the driver. Automatically the system detects and tracks what is happening. There is no particular distance in tracking and the distance may be infinite.

A. GPS

Global Positioning System (GPS) is a module and there is no need to connect any external components excluding the power supply. It is constructed with internal backup battery. The significant evolution in GPS performances, correctness, computing capability.



Fig 2: GPS Module

Some specifications are:

- Supply: 3.3V, 45mA
- Antenna: High gain GPS patch antenna (cirocomm)
- Number of satellites trace
- Size: 26 mm x26 mm x 11.7 mm

B. GSM

GSM is a simply serial interface and used to send the SMS. The GSM operations manage AT commands from micro-controllers. It uses a serial interface from SIM900.

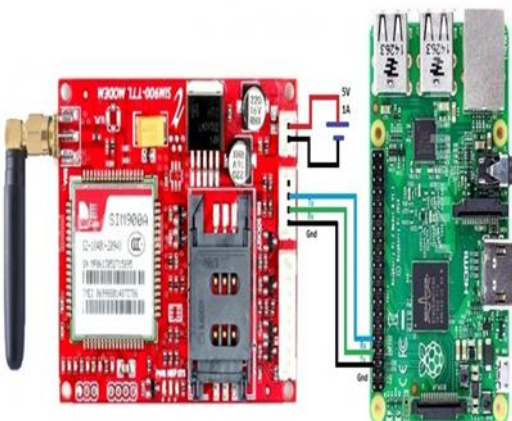


Fig 3: GSM interfacing

Some specifications are:

- Low power consumption
- Weight: 3.4 kg

- Dimensions: 24 mm x 24 mm x 3 mm

C. Camera Module

The purpose of camera module is that the image of the driver position is captured in the vehicle and placed into a frame or window. In that window the face of the driver is present and it goes to next step. [2]. The next step is eye detection, if eyes present by using haar cascade feature represent rectangular window in face and eyes. [10] next is drowsiness detection, which means eyes are closed. Then immediately driver will have an alert and message will be sent at a time [12].



Fig 4: Camera

D. Beeper

A beeper is an audio signaling appliance, which may be piezo. Regularly uses of beeper include alarm device and timers. [9]



Fig 5: beeper

E. Power

Power supply is the simply way to power the raspberry pi, which is micro USB part of raspberry pi tool. This suggested input voltage is 5V and current is 2A.

F. Motor Driver

Motor driver an electronic component. it is used to convert electricity into mechanical. The motor driver is slowly run when drowsiness alert.

IV. SIMULATION AND ANALYSIS

In this paper we use raspberry pi 3B+ and to study programming skills python is used in industrial sector. The raspberry pi 3 B+ is a very low-cost system that runs in widows, Linux. [7]

V. RESULTS AND DISCUSSION

After complete execution, the LED will be on, motor runs slowly and message will be transmitted to the family members.

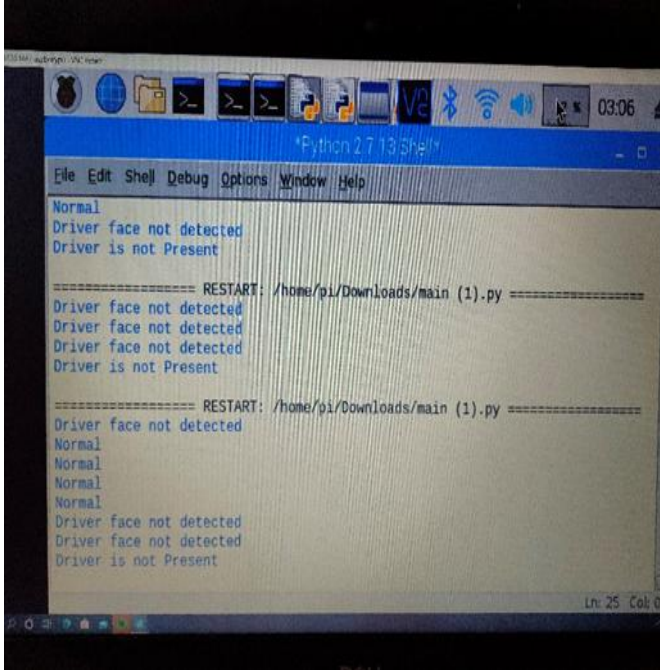


Fig 6: detect the driver position

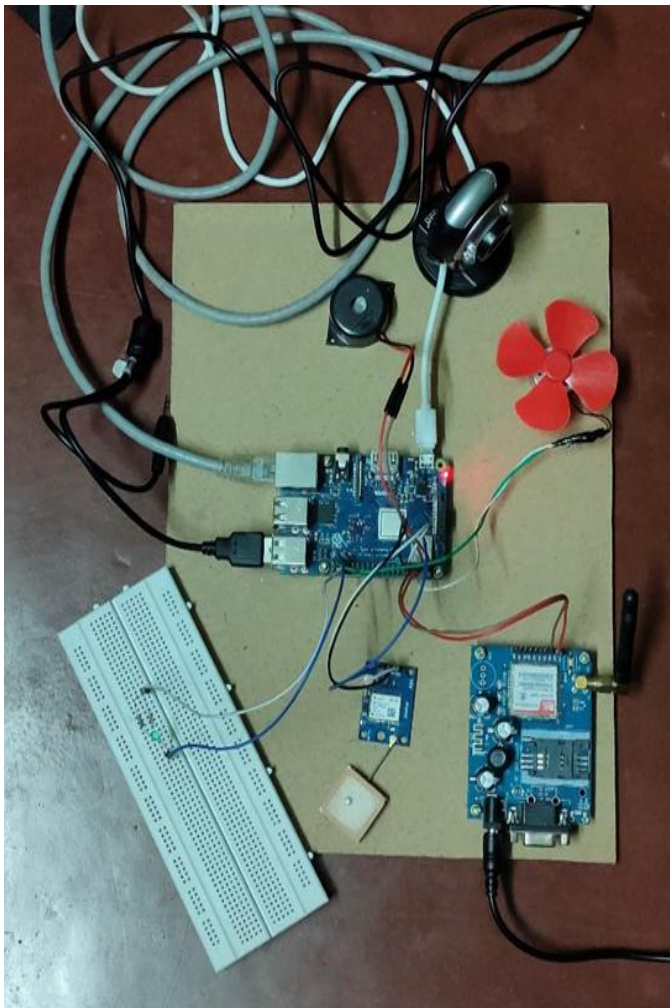


Fig 7: intoxicated driver detection off condition

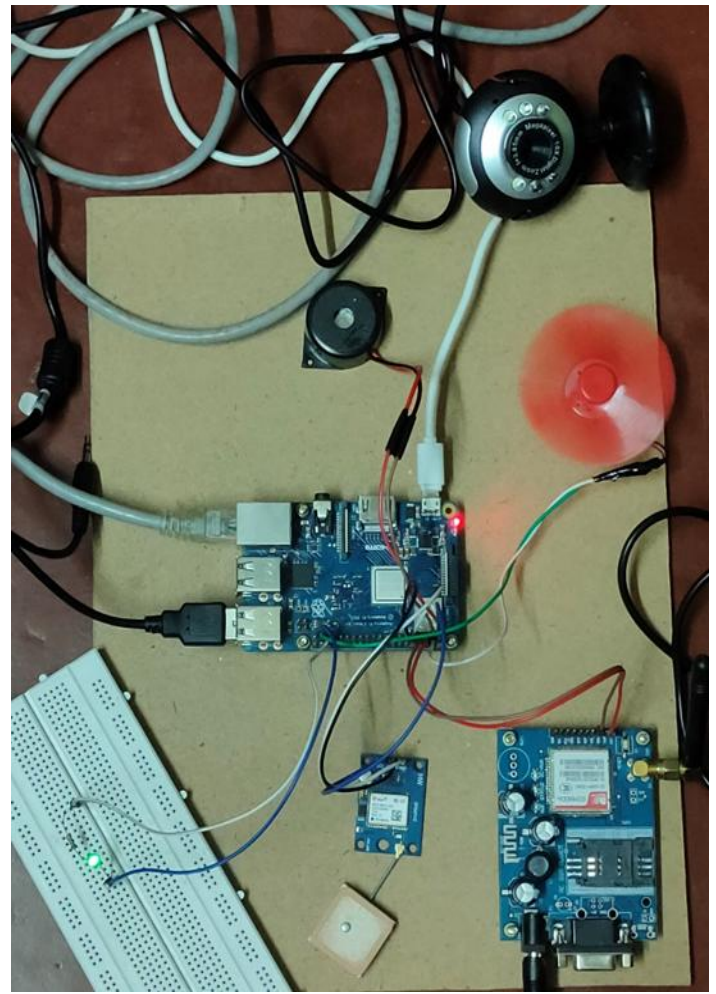


Fig 8: intoxicated driver detection on condition.

VI. CONCLUSION

By using this system, the number of accidents will be reduced to some extent using this method called GSM and GPS technology. Using this object, we can not only track the left vehicle but also, we can find sleeping mode vehicle handled by the owner or authorized person. When theft or sleepy mood is identified the responsible people gets warning and location through SMS and issues the control signal to stop the engine motor. This system can apply on any automobile or motor cycle.

VII. FUTURE SCOPE

At present this has implemented in two or four wheelers only. But in future it can be implemented in companies/organizations for employee for security (security). And it can also implement by yawning.

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