

IMPLEMENTATION OF SAFETY DEVICE FOR LMV USERS USING ANN

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Abstract— This method is proposed using ANN algorithm to detect the state of the driver proposed by using a camera in order to prevent drunken driving. The method detects whether the driver is drunken or not by using iris which is linked into a matlab program to simulate the captured image which then provides a signal going to a microcontroller and the state of the driver is displayed by using LCD and necessary action is taken by the microcontroller for safety of the driver and vehicle. A GPS receiver is used in the vehicle to determine its location. This position information is sent using GSM modem to the police station, when the driver is abnormal, so that vehicle can be tracked.

Keywords— Artificial Neural Networks; GPS; GSM; Drunken Driver; Controlling Speed

1. INTRODUCTION

The purpose of this paper is to develop a system that captures the Iris image of the driver by detecting if the person is drunk and likewise to develop a reliable algorithm for Iris Recognition. This paper is composed of hardware and software system which focuses on the implementation of an algorithm based on Gabor Filter. The system consists of CCD Camera and Analog-to-Digital Converter, which is linked into a MATLAB program to simulate the captured image which then provides a signal going to the microcontroller and a relay circuit to manipulate the car ignition. If the MATLAB program detects that the driver is under the influence of alcohol, a bypass system follows through a password which is recognized by the MATLAB program then the car/vehicle starts.

ANN algorithm proposed a method to detect a drinking state of a driven by using a camera in order to prevent drunken driving. The method detects whether the driver is drunk or not by using iris which is linked into a matlab program to simulate the captured image which then provides a signal going to a microcontroller and the state of the driver is displayed by using LCD and necessary action is taken by the microcontroller for safety of the driver and vehicle. A GPS receiver is used in the vehicle to determine its location. This position information is sent using GSM modem to the police station, when the driver is abnormal, so that vehicle can be tracked.

Iris Recognition System is a biometrically based technology for identification and verification purposes using an individual's iris prints. It has been studied over a year that iris recognition has a very distinct and accurate data acquisition due to the detailed structure of it. It has been claimed that every iris is unique particularly in its structure. These differences do not change over a long period which makes it more specific to other types of the biometric system today.

Furthermore, Iris Recognition also used for security system applications and already in operation worldwide. In fact, Ophthalmologists proved that Iris Recognition is expected to prevail as the best way to go for human recognition. It is considered to have the best results along with DNA pattern recognition. Comparing more features of the iris increases the likelihood of uniqueness. The proposed Iris Recognition design differ from other published Iris Recognition in terms of:

- Reliability
- Safety
- Convenience

To Design the Alcohol Detection for Car Users through Iris Recognition using ANN, it focused on three main tasks. First is capturing an iris image. Secondly, it is necessary to encode the iris information into a format which is responsive to calculation and computation. Finally, a signal coming from the open source recognition system will manipulate the car/vehicle through the use of microcontroller which literally connected to the ignition system of the car/vehicle.

2. OBJECTIVE

To avoid the accidents cause by drunken driving .An intimation will be given to the driver when he is attempt to sleep. The driver notifies the alarm given by the buzzer and gets wakeup.

The web cam enabled system continuously monitors the driver's eyes to figure out if he is drunk .Upon detecting the positive parameter a warning message will be intimated requesting to stop the car. If the car keeps running after a specified time the system will automatically slow down the car.

3. CONSTRUCTION AND WORKING

Transmitter and receiver are the key components of the system. Overview of the system design is presented in this section.

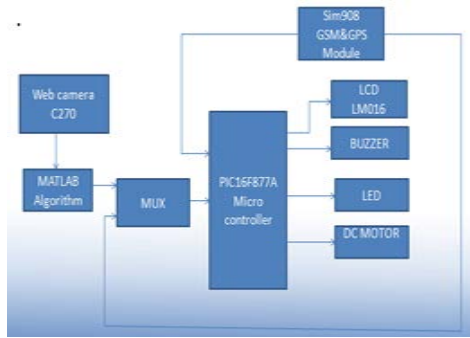


Fig 1: Block diagram

This section comprises PIC microcontroller, LCD, DC motor, Buzzer, GSM and GPS module, web camera. The web camera is employed as a monitoring device. The input from the camera is compared with preset images using MATLAB algorithm. The PIC microcontroller acts as a main computing unit. If the controller detects if a driver is asleep it triggers the buzzer. In case if the driver is drunk it displays the warning message on the LCD. If the driver continues to drive the car despite the warning the system sends out the alert message to nearby police station using GSM module and then slows down the car automatically and parks a car on the left side while triggering blue indicator to blink.

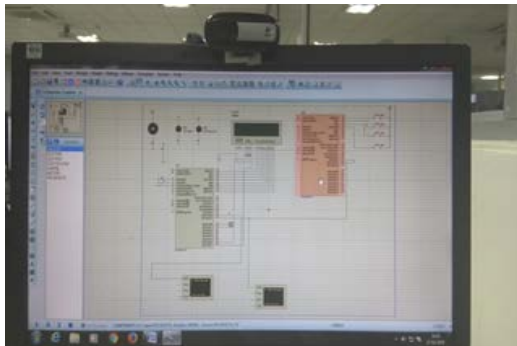


Fig 2: Image sensing module

The eye of the driver is monitored using web cam. The web cam will be fixed on the dash board and MATLAB uses the web cam to measure the centroid values of the driver's eye.

If the measured centroid value is below the threshold value then the sequence of events will be triggered by the controller.

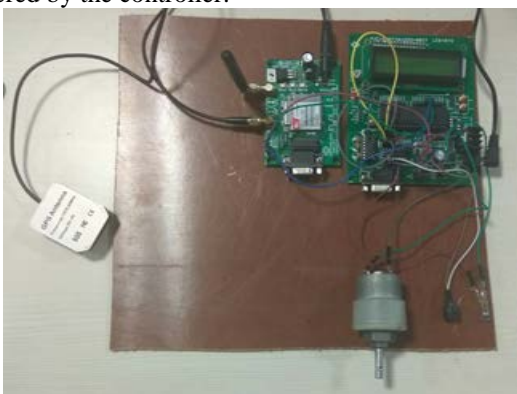
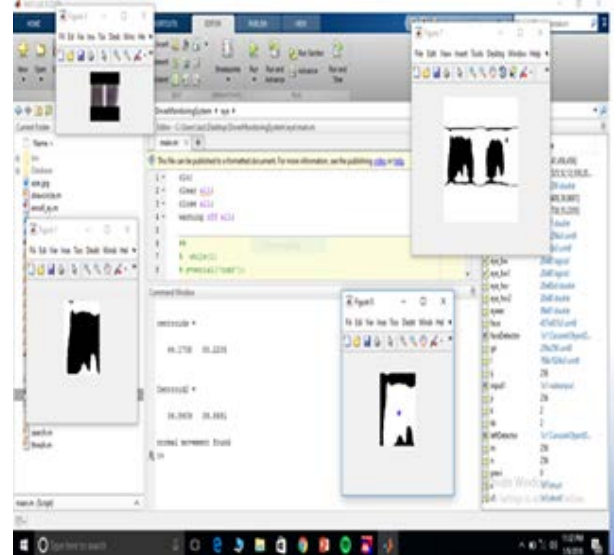


Fig 3: Hardware module

The hardware module includes GPS, GSM, DC motor, Buzzer, LCD, LED, PIC microcontroller. The GPS module pin points the driver's location and then sends the alert message to the police station through GSM module. The DC motor is put in its place to control the speed of the vehicle.

The LCD displays the current status of the driver and also displays the warning message to the driver in case of any abnormality.



Matlab is synchronized with Embedded systems, the web cam capture the full face of the driver and crop the eye of the person, it will detect whether the person is drunk or in a sleep mode by using the algorithm (centroid) in Matlab systems

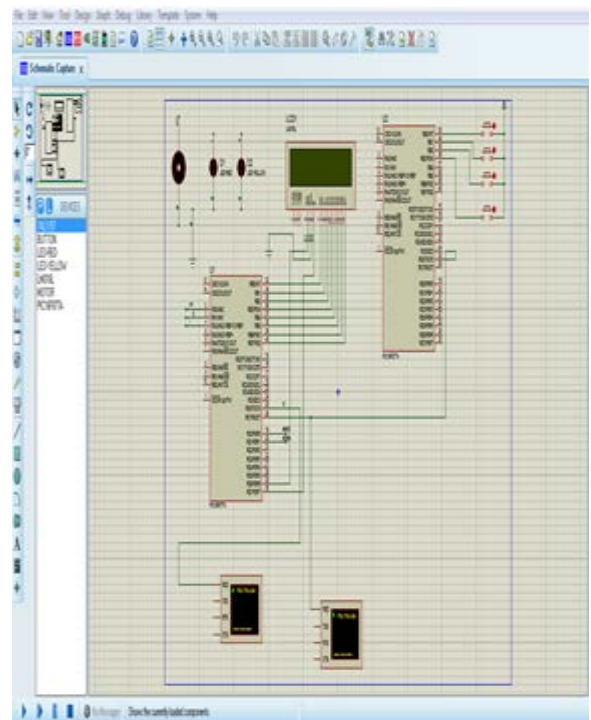


Fig 5: Simulation Output

In embedded system we use proteus software to link the matlab simulation output with MP lab idle coding software output. Finally, the whole system will be implemented in the proteus software to check the system.

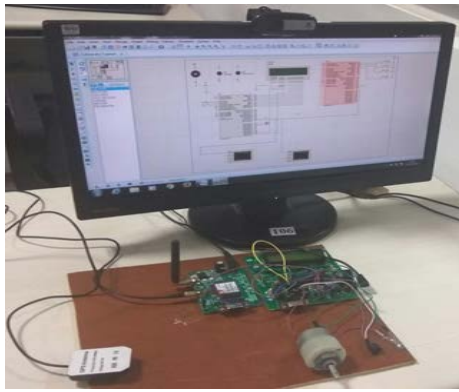


Fig 5: Working Module

This project is developed to reduce the accidents made by drunken driving. The module contains GPS, GSM, web camera and it uses ANN (artificial neural networks) for real time. The accidents is mainly occurs due to loss of handling in vehicles caused by sleepiness and drunken driving. This can be prevented by alerting system placed in light motor vehicles to keep driver's attention in driving. Our project is mainly concentrated to give a solution on this problem. And our system has a web camera placed in front of the driver to monitor the eyes to detect the person whether he/she sleeps or drunk. This can be achieved by ANN (artificial neural network) when in comparison of eyes of the person when he/she in sleeps and normal as well as in drunk. The person's eyes is captured every time he/she start to drive, the images is compared with his images that is already stored in system which is automatically saved when every time he drives the vehicle. These images are compared with one another to detect the person whether he drunk or sleepy or in normal stage. As like the ANN the system also uses for real time detection .as the same procedure in previous method but only think that is the image is not compared instead of comparison the image file is processed in matlab by variations in retina of the eyes when the persons in normal stage. When the result of the image is sleep the alert is given by the buzzer .when the result is drunk the warning message is given to the driver to in LCD and also alert in buzzer to stop the vehicle .if he does't respond to the warning and alert and continue to drive the vehicle is controlled by motor to slowdown in the side of the road. Important thing is the location and image of the driver is send to the nearest police station so that the person can't escape in law and order. If the person respond to alert and warnings the location will not send to the nearest police station when the result is normal the system allows the driver to drive the vehicle and make the process continue for detect if the person is attains to sleep. The process is entirely repeated for keep the driver's attention in driving.

4. CONCLUSION

The image recognition confirmed to be a very functional system precise way to identify an individual that there is no possible way for human error. The study also suggests using for drunk drivers and reliable security measure. It is an easy and higher resolution camera for more great images with less noise and no reflection. Since

the device that being used for MATLAB program is a laptop which is not applicable in the car, the study suggests using a touch screen devices that is Microsoft base. GSM/GPS module helps to track the person which is the additionally concluded in this project. Finally, from this project we can expect to reduce the accidents that made by drunken drivers.

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