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Drunk Driving Prevention and Automatic Bus Pass Tracking by using Image Processing

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***Abstract* – Now a days manual bus pass checking is done in schools and colleges, and many accidents occurs due to drunk and driving. Due to manual bus pass checking it leads to more time consumption and misusage of bus pass occurs. Our proposed product performs Image processing and finds the unauthorized person entering into the bus. Camera will take a snap of the unauthorized person and it will send the snap to the authority by using IoT. Alcoholic sensor [MQ3] will sense whether the driver is drunk or not, suppose if the driver is drunken the camera will take a snap of the drunken driver and it will send the snap to the person in-charge by using IoT.**

***Keywords*– Accidents, Drunk and Driving, Image processing, Camera, IoT, Alcoholic sensor.**

I. INTRODUCTION

In this modern world accidents are increasing every day by day and the consumption of alcohol also increases, many people are losing their lives in accidents due to drunk and driving. The death rate for accidents due to drunk and driving increases drastically as the years passes. Due to drunk and driving the person who drunken and the person travelling around him also losing their lives. Our proposed product will neglect the drunk and driving completely. In schools and colleges manual bus pass checking is implemented it leads to more time consumption and the misusage of bus pass occurs. Our proposed product will automatically check the student's bus pass by performing image processing.

Driving while either intoxicated or drunk is dangerous and drivers with high blood alcohol content (BAC) are at increased risk of car accidents, highway injuries and vehicular deaths. Ethanol has more capacity to absorb IR rays. An IR Sensor which is mounted on steering. An IR source led-894 directs IR Energy through the sensor continuously. If the flow of IR rays is interrupted by absorption of alcohol vapor a relay circuit is activated. This relay circuit has control over the fuel supply system and it cuts-off the fuel supply to the engine. This makes the car to come to halt slowly .The higher the concentration of ethanol, the more infrared absorption occurs (same way that a Coolers absorbs visible light, alcohol absorbs infrared light) [1].

The system implemented aims at reducing the road accidents in the near future due to drunken driving. The system detects the presence of alcohol in the vehicle and immediately locks the engine of the vehicle. At the same time an SMS along with the location of the vehicle is send to three pre-selected contacts. Hence the system reduces the quantum of road accidents and fatalities due to drunk driving in future [2].With India reporting as many as 1.34 lakhs fatalities in road accidents every year, a vast 70 per cent of them being due to drunken driving, questions are now being raised on whether the mushrooming growth of liquor vends along the highways is responsible for costing precious lives in an untimely manner. The system implemented by us aims at reducing the road accidents in the future due to drunken driving. The purpose of this project is to develop vehicle accident prevention by method of alcohol detector in effort to reduce traffic accident cases based on driving under the influence alcohol. In this methodology image processing system and alcohol in sweat palm for drunk and driving detection is used to detect the drunken person [5].

In this paper [6] a model based on IoT is proposed with the aim to safeguard drunk and drowsy drivers especially at night. It also discusses several models which have already been proposed and attempts to assimilate the best ideas which are proposed there. It includes analysis of alcohol concentration, eye-blinking rate and the rate at which the car is made to turn to detect a drunken or drowsy state and hence undertake protective measures. Such measures include speed reduction, triggering an alarm, informing the traffic control, activation of auto-pilot etc. The objective of this work is to avoid accidents due to drunk and driving and to automate the bus pass checking in colleges and school buses in an efficient manner by performing image processing technique.

II. BLOCK DIAGRAM

The block diagram of our proposed system is shown in fig.1. Power supply of less than 5V is given to the

raspberry pi as input by using mobile charger. The alcoholic sensor will check whether the driver is drunk or not. Suppose if the driver is drunken the alcoholic sensor will give a signal to the raspberry pi and the camera will take a snap of the particular driver and sends the snap to the concerned person in in-charge by mail through IoT. By using image processing the students face is processed, supposed if the students face does not match with the recognized face then the camera will take a snap of the student and sends the snap to the concerned person in in-charge by mail through IoT.

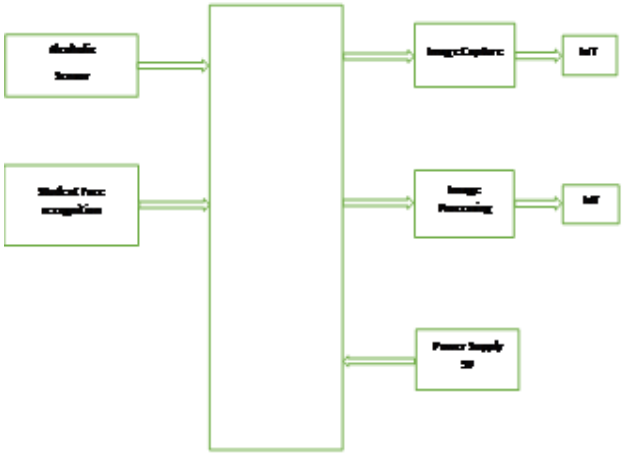

Fig. 1 Block Diagram.

III. ALGORITHM FOR PROPOSED METHOD.

Step 1: Start
Step 2: The dataset coding is run in the system
Step 3: The camera will ON automatically
Step 4: The camera will take snap of the person and the images are stored in the dataset
Step 5: The Training coding is run in the system
Step 6: The camera will ON automatically
Step 7: The face of the person is trained, until it recognizes the face of the person completely for 100 percentages in the background it will check the stored image with the appearing image if both the image matches then the face of the person is trained. If the face of the person doesn't match then it will display unknown person detected.
Step 8: The face recognition coding is run in the system
Step 9: The camera will ON automatically
Step 10: The appearing face of the person is compared with the images in the dataset, if the face in the dataset and the appearing face doesn't match then the appeared image is captured and the image of the person is sent to the concerned authority by mail
Step 11: The alcohol detection coding is run in the system
Step 12: The alcohol sensor will ON automatically
Step 13: The alcohol sensor will check whether the driver is drunken or not.
Step 14: Suppose if the driver is drunken green color light is glow in the alcohol sensor
Step 15: The camera will ON automatically
Step 16: The camera will take a snap of the drunken person and the image of the person is sent to the concerned authority by mail.
Step 17: Stop

IV. EXPERIMENTAL RESULTS

Through the experimental results we can easily understand how our proposed model works. The hardware experimental results for dataset are shown in figure 3 with its description. The need of dataset is to store the captured image of the person. The hardware experimental results for training are shown in figure 4 with its description. The need of the training is to compare the live image with the image stored in the dataset. The hardware experimental results for face recognition are shown in figure 5 with its description. The need for face recognition is to identify the live image with the image stored in the dataset and to check whether both the images match or not. The hardware experimental results for alcohol detection are shown in figure 6 with its description. The need for alcohol detection is to identify whether the person is drunken or not.

Table –I: Components used

Sl.No.	Component name	Specifications
1.	Raspberry pi 3	Model B+, Power supply 5V
2.	MQ3 Alcohol sensor	Power supply 5V
3.	Camera	Power supply 5V
4.	Computer	-
5.	Mouse	-
6.	Keyboard	-
7.	Mobile charger	2A
8.	Connecting Cables	-

1. Result for Dataset

Fig .2 Result for Dataset.

The above figure 2 shows the hardware result for dataset. In the system dataset coding is made to run.Dataset coding is run in the system.Then automatically camera will get ON it will take snap of the person and the images are stored in the dataset. Captured live image of the person and already stored image of the person is compared.If live image of the person and stored image of the person are get matched.It implies and identifies that authorized person only entering into the bus.Otherwise if live image of the person and stored image of the person are get dispatched.Then it identifies that unauthorized person entering into the bus.

2. Training the Model

In the system training coding is made to run. Training coding is run in the system.Dataset training is executed.Now the camera will get ON automatically. The need of the training is to compare the live image with the image stored in the dataset. The face of the person is trained, until it recognizes the face of the person completely for 100 percentages in the background. Then it will check the stored image with the appearing image.If both the images get matches then the face of the person is trained. If both the images get mismatches then it display unknown person detected. If the face of the person is trained for 100 percentage then it identifies the face of the person as soon as possible.

3. Face Recognition

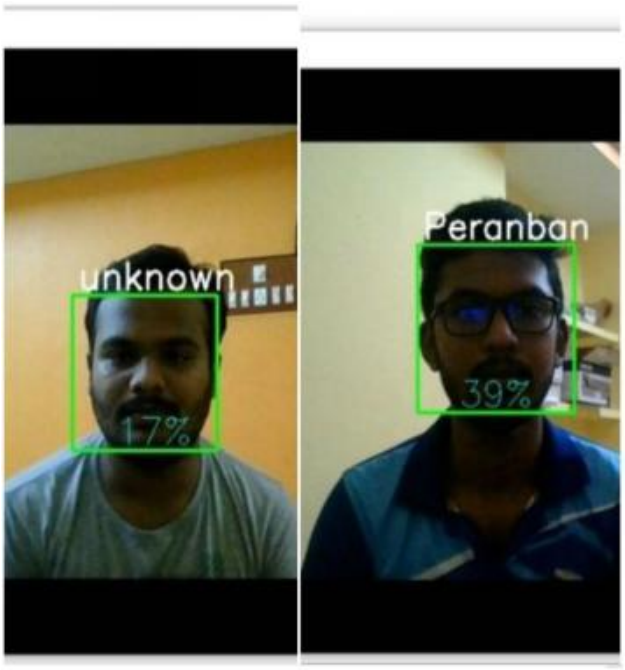

Fig. 3.Face Recognition .

The above figure 3 shows the hardware result for Face recognition. In the system face recognition coding is made to run. Face recognition coding is run in the system. Now the camera will get ON automatically. When the camera sees a face of the person it determines whether or not it's someone in your database of known faces. The appearing face of the person is compared with the images in the dataset. If the face in the dataset and appearing face get mismatched, then the appeared image of the person is captured. Then the image of the person is sent to the concerned authority by mail.

4. Alcohol Detection

The figure 4 shows the hardware result for Alcohol detection. In the system alcohol detection coding is made to run. Alcoholic detection coding is run in the system. Now the alcoholic sensor (MQ3) will get ON automatically. MQ3 sensor will check whether the driver is drunk or not. Incase if the driver is drunken, green colour light will glows in the alcoholic sensor. Then the camera will get ON automatically and it will take a snap of drunken person. Finally the image of the person is sent to the concerned authority by mail.

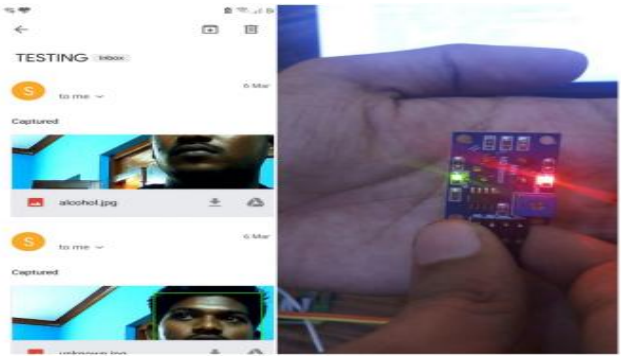

Fig .4. Alcohol Drunken Detection.

5. Hardware Setup

Fig .5.Hardware Setup.

The above figure 5 shows the entire hardware setup of our proposed project. Power supply is given to the raspberry pi through a mobile charger. The vcc pin of mq3 is connected to the second pinof raspberry pi that is to the pin of 5V power. The ground pin of mq3 is connected to the thirty ninth pin of raspberry pi that is to the pin of ground. The DO pin of mq3 is connected to the twelfth

pin of raspberry pi that is to the pin of GPIO18. Through the different ports of raspberry pi camera, mouse and keyboard is connected

V. CONCLUSION

Our proposed product will automatically perform image processing and finds the unauthorized student entering into the bus, through this bus bass checking is automated and the misusage of bus pass is neglected completely. Alcoholic sensor [MQ3] will sense whether the driver is drunk or not, suppose if the driver is drunken the camera will take a snap of the drunken driver and it will send the snap to the person in in-charge by using IoT, through this drunk and driving is neglected completely. To check how our proposed system works we have tested more number of person faces and how fast it recognizes the face of the person. We also tested how fast it recognizes the alcohol content in the drivers body by spraying different kinds of liquid which having alcohol content level at minimum to maximum percentage.

VI. FUTURE SCOPE

The above proposed design can also be implemented in two wheelers. Proximity sensors could be used to indicate that the vehicle is going to stop. This could be useful for the vehicles behind. This system is a drunk-driver detection and alert system that detects the drunk driver situation of the vehicle with high level of certainty. By the use of multi-sensor fusion using breath-based sensors at different locations in the vehicle, vision system to recognize facial/eyes expressions of the driver and use of touch sensor. There is possibility to incorporate others features such as different security mechanism in the vehicle such as theft, accident detection, fuel quality detection along with vehicle tracking system. We can also implement Heart Rate Pulse Variability to find accurately identify the driving behavior of drivers and to assist them.

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