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Number Plate Detection and Fatigue Detection using Image Processing

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Abstract—— **Traffic accidents are one of the major issues in today's world. The accident occurs due to our mistakes and also neighboring vehicle's mistake. Many systems are developing to avoid this. But the accidents are increasing. In this paper, a system is developed that continuously detects the number plate of neighboring vehicles and sent that through telegram. And also the eye of the driver is monitored continuously to detect the fatigue of driver. If the eye is closed a buzzer alert is produced. The number plate recognition helps the investigators to find the neighboring vehicles if any accident occurs.OCR is used for number plate character extraction. The alert is produced using text to speech alarm.**

Keywords— OCR,Text to Speech Conversion

I. INTRODUCTION

When an accident or a crime happens, information related with those accidents is needed to find out the cause of the accident or the culprit of the crime. Conventionally that kind of information is gathered non-systematically by the investigator by means such gathering rumors or asking for the observers who happen to pass by the place at the time of accident. Also driver fatigue is a significant factor in a large number of vehicles accidents. Recent statistics estimate that annually 1,200 deaths and 76,000 injuries can be attributed to fatigue related crashes[1]. There has been ample development in the field of safety in case of accidents in the form of air bags, etc. However the development of technologies for detecting or preventing drowsiness at the wheel is a major challenge in the field of accident avoidance systems. Drowsiness happens on road. So it needs to avoid that.

The aim of this project is to develop a system that detects the number plate of neighboring vehicles and also detects the fatigue of the driver. The system uses two cameras, one for the detection of number plate and other for the detection of fatigue. The number plate is detected and the characters are extracted and sent through telegram. The eye of the driver is detected and a buzzer alert is produced using text to speech conversion if the driver's eye is closed. The main advantage of this system is that the investigators can identify the nearby vehicle at the time of accident. Also the accidents can be reduced due to the driver's fatigue. There are millions of cars being manufactured every year and it is a universally accepted fact that the fatigue among drivers is a potent accident factor. Hence car manufacturing companies are the biggest market for such a system

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The proposed system solves problems of existing system. The proposed system consists of two cameras, one for driver fatigue detection and another one for number plate detection of neighboring vehicles. The proposed system detects the number plates of neighboring vehicles and send them through telegram. So the investigators can get the details of the neighboring vehicles through the telegram. So it becomes easy for the investigators to find the culprit easily than that of the existing system. Also the fatigue of the driver is detected that can reduce the number of accidents due to driver's fatigue. The proposed system is less expensive and it can be build on any vehicles.

II. SYSTEM DESCRIPTION

The proposed system solves problems of existing system. The proposed system consists of two cameras , one for driver fatigue detection and another one for number plate detection of neighboring vehicles. The number plate is detected using one camera and the black characters is converted into white characters and the white plate is converted into black. Then the characters is extracted using Optical Character Recognition. Then the characters are validated and then it is sent through telegram. The eye of the driver is detected using another camera. At first the face is detected , then the eye region is cropped out. The next step is to find out the driver is displaying signs of fatigue. A threshold value is set for the eye openness.

Then the area of eye is calculated. If the area is less than the threshold value it is detected that the eye is closed. It is checked whether the eye is closed more than on time. If the system detects the eye is closed more than one time a command 'sleeping detected wake up 'is passed. This command is then converted into speech using text to speech conversion.

The best aspect of this system is that it can be implemented very easily, similar to our needs. It is a time saving method and is known to give good results. So considering this fact, it will be really useful to us as we are making a real-time system which must respond quickly and accurately.

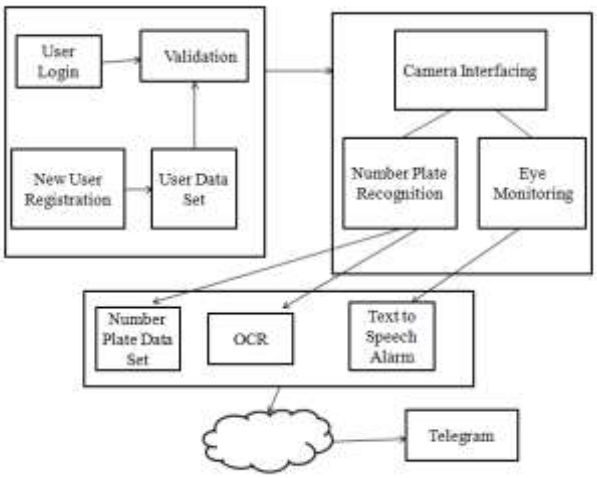

Figure 1. Block Diagram of the proposed system

III.SCOPE

Our proposed system is designed to collect the details of the neighboring vehicles if an accident occurs and to detect the fatigue of the driver. Since there is no system to identify the details of the neighboring vehicles if an accident occurs the proposed system gains importance. The aim of this project is to find the most efficient and effective way to extract the registration information from the digital image that is captured. Also since there are many ways to detect the driver fatigue, the system that contains number plate detection and fatigue detection with low expense gains more importance. . There are millions of cars being manufactured every year and it is a universally accepted fact that the fatigue among drivers is a potent accident factor. Hence car manufacturing companies are the biggest market for such a system.

IV.CONCLUSION

This system detects the number plate of the neighboring vehicles and the driver's fatigue is also detected. Since the detected number plate is sent through telegram it is easy to identify the nearby vehicles if an accident or any traffic violations occurs. Also the driver's eye is continuously monitored so that the fatigue can be easily detected and accidents can be avoided to an extent. This system is less expensive than the existing systems.

This system can be enhanced in future with more advanced algorithms that can detect all type of number plates and also the lane and color of neighboring vehicles. Also the system can be enhanced with a technology to stop the vehicle if the driver's fatigue is detected

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