Drowsiness Detection System

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Abstract-**The major aim of this project is to develop a drowsiness detection system by monitoring the eyes; it is believed that the symptoms of driver fatigue can be detected early enough to avoid a car accident. In such a case when drowsiness is detected, a warning signal is issued to alert the driver. This detection system provides a noncontact technique for judging different levels of driver alertness and facilitates early detection of a decline in alertness during driving. In such a case when fatigue is detected, a warning signal is issued to alert the driver. The system also has additional feature of slowing down the vehicle if driver fails to respond to the alarm and ultimately stops the vehicle.**

I.   INTRODUCTION

In this paper we are presenting a method towards automobile safety and security as well as peoples safety in this we propose a Drowsiness Detection System.This paper combines Image Processing,Computer Vision,pattern recognisation,Matlab Based programming.

Nowadays Driver fatigue is a major factor in a large number of vehicle accidents. Recent statistics estimate that annually 1,200 deaths and 76,000 injuries can be attributed to fatigue related crashes. The development of technologies for detecting and avoiding drowsiness at the wheel is a major challenge in the field of accident avoidance systems. Because of the hazard that drowsiness presents on the road, methods need to be developed for counteracting its affects.
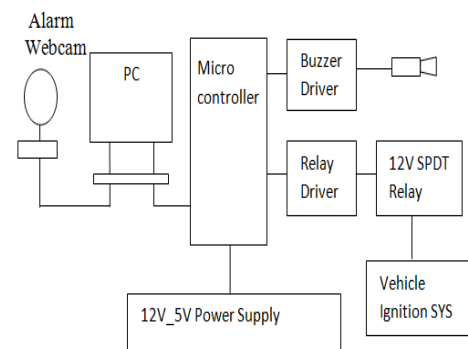
The aim of this project is to develop a prototype drowsiness detection system. The focus is on designing a system that will accurately monitor the open or closed state of the driver's eyes in real-time. By monitoring the eyes, it is believed that the symptoms of driver fatigue can be detected early enough to avoid a car accident. Detection of drowsy involves a pattern of images of a face, and the observation of eye movements and blink rate. The analysis of face images is a popular research area with applications such as face recognition, virtual tools, and human identification security systems. This

project is used the localization of the eyes, which involves looking at the image of the face, and determining the position of the eyes by developing matlab program. Once the position of the eyes is located, the system is designed to determine whether the eyes are opened or closed, and detect drowsiness. The purpose of this study is to detect drowsiness in drivers to prevent accidents and to improve safety on the highways.
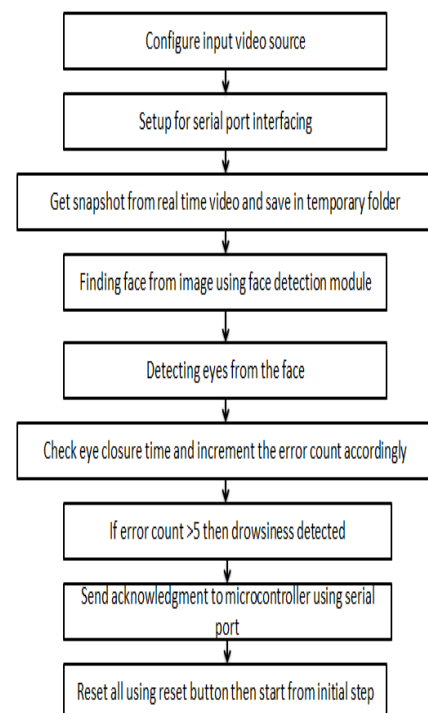
A method for detecting drowsiness in drivers is developed by using a camera that point directlytowards the driver's face and capture for the real time video. Once the video is captured, monitoring the face region and eyes in order to detect drowsy. The system able to monitoring eyes and

determines whether the eyes are in an open position or closed state. In such a case when drowsiness is detected, a warning signal is issued to alert the driver. It can determine a time interval of eye closure as theproportion of a time interval that the eye is in the closed position. If the driver's eyes are closed cumulatively more than a standard value, the system draws the conclusion that the driver is falling asleep, and then it will activate an alarm sound to alert the driver.

II.   PROPOSED WORK

III.   MATLAB ALGORITHM

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IV.   SALIENT FEATURES

- Simple application of Image processing
- Easy to install and used
- Micro controller based interface using PIC16F72 RISC MCU
- USB Web camera Interfacing
- Automatic Vehicle Speed Control
- Image processing based drowsy detection
- Real time video capturing and image processing
- Working Voltage – 12V AC/DC
- Operating Current - 500ma Approx
- Relay Contact Rating – 230V AC / 500W
- Buzzer for alarm indication
- Diode protection for reverse polarity connection of DC supply to the PCB

V.   CONCLUSION

A non-invasive system to localize the eyes and monitor fatigue was developed. Information about the eyes position is obtained through self-developed image processing algorithm. During the monitoring, the system is able to decide if the eyes are opened or closed. When the eyes have been closed for too long, a warning signal is issued. In addition, during monitoring, the system is able to automatically detect any eye localizing error that might have occurred. In case of this type of error, the system is able to recover and properly localize the eyes.

The following conclusions were made:

• Image processing achieves highly accurate and reliable detection of drowsiness.

• Image processing offers a non-invasive approach to detecting drowsiness without the annoyance and interference.

• A drowsiness detection system developed around the principle of image processing judges the driver's alertness level on the basis of continuous eye closures.

With 80% accuracy, it is obvious that there are limitations to the system

VI.   FUTURE SCOPE:

This technology is still in the early research stage of development. Based on the work completed thus far, following modifications can be implemented:

• Capture individual driver's steering activity while drowsy

• Conduct additional simulator experiments to validate the algorithm, test additional road

conditions, and test a more diversified group of drivers,

• Test and refine the algorithm based on the road test data, and conduct research on warning systems integrated with the detection system.

VII.   REFERENCES

I.   Weirwille, W.W. (1994). "Overview of Research Driver Drowsiness DefinitionDriver Drowsiness Detection,"14th International Technical Conference on Enhanced Safety of Vehicles, pp 23-26.

II.   Neeta Parmar Instructor: Peter Hiscocks, "Drowsy Driver Detection System" Department of Electrical and Computer Engineering", presented at Ryerson University © 2002.

III. Singh, Sarbjit and Papanikolopoulos, N.P. "Monitoring Driver Fatigue Using Facial Analysis Techniques",*IEEE Intelligent Transport System Proceedings* (1999), pp 314-318

IV.   Gonzalez, Rafel C. and Woods, Richard E. "Digital Image Processing", *PrenticeHall:* Upper Saddle River, N.J., 2002.