

SMART MONITORING DRIVER

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ABSTRACT

Monitoring the driver behavior is one of the ways to prevent the serious accidents and it is necessary to alert the driver when they are in drowsy state. Distraction and drowsiness of the driver have been important factors for a large number of major accident. A large number of serious or fatal accidents are occurred due to excessive or inappropriate speed of the vehicle and fatigue nature of the driver. With the new developed systems (sensors) there is a possibility of self controlling the vehicle when the driver was fatigue in order to reduce the major accidents. There is also a possibility of tracking the location of the vehicle through wireless access technology (GSM, GPS) so that proper measures are taken at a correct time

KEYWORDS: Web Camera, Microcontroller, GSM, GPS, Relay

1. INTRODUCTION

In recent year the vehicle accident are increases due to inadequate driving. At present time private vehicles are widely used daily by huge numbers of people. Regarding the increased use of private transport, the biggest problem is the rising number of fatalities. To avoid this accident by using advance technology. We are developing one unit to avoid accident. The main function of this project is to measure the eyes blinking, and also how to determine if the eyes are open or closed. Once the eyes blinks, measuring are measured. If the system finds that the driver is sleepy, then this system will reduce speed of the vehicle and stop to avoid accident. At the same time the system will send a message to the family member via GSM message. The system captures the movement of eyes and determines if the eyes are open or closed.

There are various functionalities that have been added in different Vehicles to avoid road accidents or sometimes to minimize the effect of accidents.

Driver's drowsiness or fatigue has been found as one of the main causes of accidents. To determine the drowsiness there are different measures that are useful like heart beat rate, brain signals and eye blinking of a driver. From all, eye blinking is found to be the most robust parameter which can detect drowsiness of driver more accurately.

2 RELATED WORK

A. EXISTING SYSTEM

'**Drowsy Driver Detection Using Eye movement**' has been proposed for detecting drowsiness. The focus is placed on designing a system to work accurately to 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 fatigue involves a sequence of images of a face, and the observation of eye movements and blink pattern.

Disadvantages of the Existing Systems: Component does not establish interface with drivers, Due to varying illumination error in detecting occurs.

'**In Accident Prevention Using Eye Blinking**' the efficiency is found to be medium. This system is further

increased by using web camera with high resolution. Eye based control will be the future of all types of device control, thus making the operation so comfortable and much easier with less human presence. The results are subject to ambient illumination. If illumination is increased system fails to detect face and object. This limitation helps the system whenever multiple faces are found in an image frame, then the system detects only face which is closer i.e. having sufficient illumination.

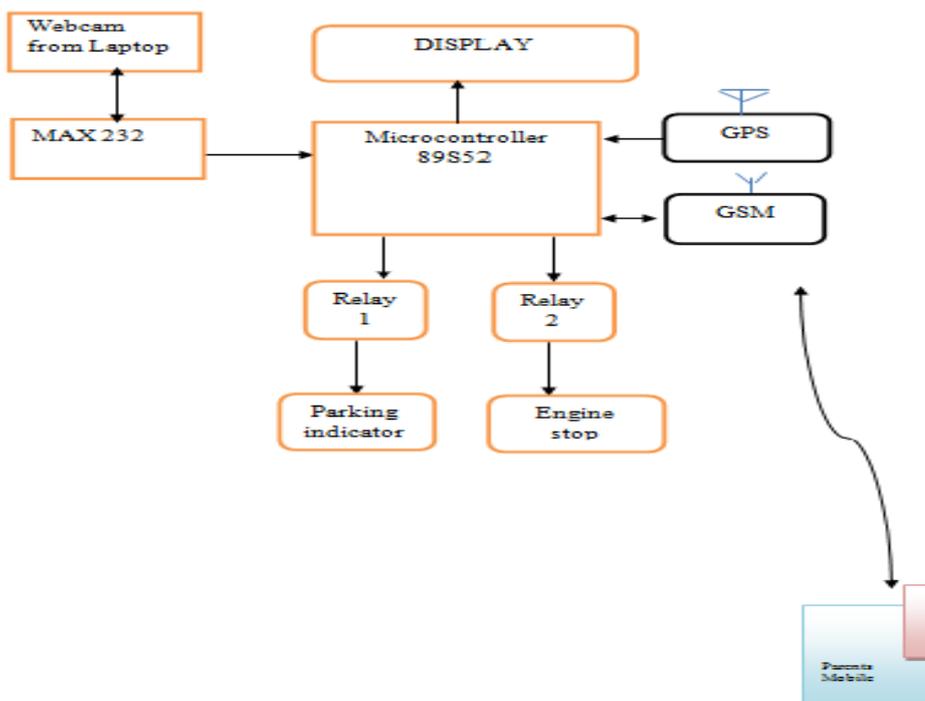
B. DISADVANTAGES OF EXISTING SYSTEM

There are some disadvantages of the existing system, these are given below:

- 1) Image processing doesn't allow driver to wear goggle in day time.
- 2) As the system runs on the power provided by engine and it suddenly gets off then it does not help with GSM or GPS to work properly and the system fails

3. EMBEDDED SYSTEM DESIGN

The Embedded system design consisting of 89s52 microcontroller, web camera, max232, relays, GSM-global subscriber module, GPS-global position system. Most of the researchers tried to monitor the behavior of the vehicle or the driver in isolation, while others have focused on monitoring a combination of the vehicle, the driver and the environment in order to detect the status of the driver so as to prevent road accidents.



From above block diagram shows that web camera is fitted in car. When driver is in drowsy condition then camera capture the position of eye then it will be given signal to microcontroller through the max232 which used to convert voltage level to TTL and viceversa. If the sensor detects that the eye of the driver is closed, then it'll send signal to the microcontroller via monostable to provide stable input. The microcontroller will process the signal to find if the eye is closed for more three seconds then the microcontroller will control speed and stop the vehicle with the help of relay circuit. Then this data given to corresponding parent through GPS and GSM system.

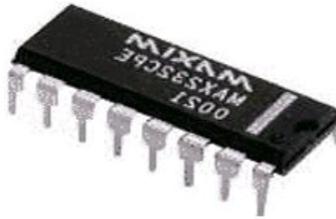
4. MODULES

4.1 WEB CAMERA

We use web camera for image capturing process. As per eye blink the variation across eye will detect through the web camera. When camera capture the position of closed eye, automatically ignition of car will

be stop. Web camera is used to predict whether the eye is in closed position or in open position. The resultant output is given to a logic circuit to indicate the alarm. It is mainly used to prevent the accidents.

4.2 MAX 232 :



In many microcontrollers boards a MAX232 chip has been used. It is a dual RS232 transmitter / receiver which satisfy all RS232 specifications. It uses only +5V power supply. It has two onboard charge pump voltage converters. From a single 5V supply it generates +10V to -10V power supplies. It has four levels translators, two of which are RS232 receivers which convert RS232 input to 5V. Another two level translators are RS232 transmitters which converts TTL/CMOS input levels to +9V RS232 outputs. The Typical MAX232 circuit is shown below.

4.3 MICROCONTROLLER AT89S52:



The AT89C52 is a low-power, high-performance CMOS 8-bit microcomputer with 8K bytes of Flash programmable and erasable read only memory (PEROM). The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the industry-standard 80C51 and 80C52 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with Flash on a monolithic chip, the Atmel AT89C52 is a powerful microcomputer which provides a highly-flexible and cost-effective solution to many embedded control applications.

MICROCONTROLLER AT 89S52 FEATURES

Compatible with MCS 51 products

- 8k bytes of in system Re-programmable Flash Memory
- Fully static operation : 0 Hz to 24 MHz
- 256 x 8 bit internal RAM
- 32 programmable I/O Lines
- Three 16 bit Timer or Counters
- 8 Interrupt sources
- Programmable serial channel
- Low power Idle & power down modes

4.4 RELAY DRIVER IC ULN2003

Relay Driver IC Circuit

Relays are components that permit a low-power circuit to control signals or to switch high current ON and OFF which should be electrically isolated from controlling circuit.

4.5 LIQUID CRYSTAL DISPLAY (LCD):



A liquid crystal display (LCD) is a flat, thin display device which is made up of number of monochrome or color pixels which are arrayed in front of reflector or a light source. The features of LCD are Energy efficient, cost effective, Space economy, reduction of radiation and lighter weight.

4.5 GLOBAL POSITIONING SYSTEM (GPS)



The Global Positioning System (GPS) is a navigation system which is satellite based. It sends and receives radio signals. By Using GPS technology, one can determine the exact location, time, velocity, 24 hours a day, in any weather conditions & anywhere in the world.

GPS was mainly intended for most of the military applications, but in the early 1980s, the government made the system necessary for civilian use. GPS receivers are used for locating; positioning, surveying, navigating and determining the time. GPS are employed by both private individuals and companies.

4.6 GSM MODULE



One of the most leading digital systems is GSM. GSM uses narrow band Time Division Multiple Access (TDMA). Of all time GSM becomes the world's fastest growing communications technology. It is the leading global mobile standard.

GSM is an open, digital cellular technology, which is used for transmitting both data services and mobile voice. The operating frequency of GSM lies in between 900MHz and 1.8GHz bands. GSM is able to support data transfer speeds of up to 9.6 kbps. It also allows the transmission of basic data services such as SMS.

5. RESULT

A) OUTPUT 1

SR.NO.	CONDITION	OUTPUT
1.	When eyes are open	Motor is in running condition
2.	When eyes are close	Motor becomes stop

B) OUTPUT 2

When ignition stop, then the location has send to parents mobile of the driver through GSM system to avoid accident.



6. CONCLUSION

A system to localize the eyes and monitor drowsiness is proposed. During the monitoring, the system will be able to decide if the eyes are open or closed. When the eyes are closed for a long time, then the microcontroller will control speed and stop the vehicle with the help of relay circuit. 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.

Our project accident avoidance by eye blink sensor through web cam complement successfully. Thus we can avoid drowsy related road accident and hence these kinds of detectors have a great pertinence. It can also used in schools, colleges, offices and some public places such as hospitals, libraries etc.

7. FUTURE SCOPE

- 1) If the driver is in drowsy then car locks up the ignition system thereby preventing the driver from accident.
- 2) If anybody steals our car we can easily find our car around the globe. By keeping vehicle positioning vehicle on the vehicle.

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