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Ear Based Drowsiness Detection System

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ABSTRACT: This paper presents a device to detect rash driving on highways and to alert the traffic authorities in case of any violation. In past, lot of devices to detect rash driving on highways has been made. Most of the approaches require human concentration and involve a lot of effort, which is difficult to implement. In this paper we intend to design a system aimed at early detection and alert of dangerous vehicle driving patterns related to rash driving. The entire implementation requires an IR transmitter, an IR receiver, a control circuit and a buzzer. The speed limit is set by the police who use the system depending upon the traffic at the very location. The time taken by the vehicle to travel from one set point to the other is calculated by control circuit and displays that on seven segment displays. Moreover, if the vehicle crosses the speed limit, a buzzer sounds alerting the police. Transportation is widely used to allow user travel conveniently from place to place, for a personal or official purpose.

KEYWORDS: DROWSY,CAR ACCIDENT,EYE ASPECT RATIO,AURDIUNO UNO,TRANSPORTATION

I. INTRODUCTION

Overview:

The failure of drivers in any vehicle incidents is a very important part of the dangerous problem facing the community. It can cause serious accidents for a variety of reasons and sometimes fatal as most drivers are out of control. Various things involved in car crashes such as high speed, sleep while driving other distractions such as texting while driving, talking to others, playing with children, etc. Citizens are aware of dangerous drive cars but do not understand the level of driving. fatigue. About 1374 people die every day, and about 400 people die. Approximately 57 road accidents and 17 deaths per hour as a result of motor vehicle accidents. In car accidents, 54.1 percent are between the ages of 18 and 34. The Government of India, the Department of Border Transport and the Department of Highways are planning to reduce the number of road accidents and fatalities by 50 percent by 2022. Globally, car accidents have proven to be one of the world's biggest security concerns. In 2015 about 5 lakh road accidents occurred in India. A tired driver is not able to steer the car by those who are sleep at work, he is unable to take adequate steps leading to an accident so it is necessary to monitor the driver's drowsiness to avoid accidents. We focused on this issue using the eye twitch sensor to introduce a car accident prevention program. This paper examines the detection of various collisions and the reduction of such a system.

II. LITERATURE SURVEY

In this section several literatures were reviewed to study the current methodologies adopted to detect speed and vehicle type for mixed traffic conditions. C. Mallikarjuna et al. developed a system to automatically analyse traffic videos and extract macroscopic traffic data such as classified vehicle flows, average vehicle speeds and average occupancy. This paper involves measure and control of the eye blink using IR sensor. In [1] the IR transmitter was used to transmit the infrared rays in the eye. The IR receiver was used to receive the reflected infrared rays of eye. If the eyes were closed, it means that the output of IR receiver is high otherwise the IR receiver output is low. This is to know whether the eyes are in closing or opening position. This output is given to a logic circuit to indicate the alarm. This paper involves the control of accidents due to unconscious through Eye blink. Here, one of the eye blink sensor was fixed in vehicle to detect unconsciousness and was indicated through an alarm. It presents the development of an automatic microcontroller based crash avoidance system that employs obstacle detection and distance measurement using ultrasonic sensors to detect obstacles and their distances. To reduce the accidents caused by human-error, research work have proposed and implemented a system in which has two main functionalities. Avoidance of sudden unintended acceleration- Such unintended acceleration caused by human errors are monitored and pedal mix-up is avoided by converting the sudden unintended acceleration into deceleration. Drowsiness detection system- A system which can



identify whether the driver is drowsy or not by monitoring the eye blinking of his/her eyes and then raise an audible alarm in the vehicle in an effort to alert the driver. The transportation modes and its importance also increases rapidly. The proposed design models in contributed the safety of vehicles and pedestrians. It uses advanced Microcontroller unit to detect the fatigue symptoms and sends an electric O/P signals to motors which thereby reduces the speed of vehicles & avoids any accidents.

III. EXISTING SYSTEM

In existing system the project containing only object detection i.e the engine gets slow down automatically when any vehicle comes near to the front our vehicle by detecting the ultrasonic sensor.

PROPOSED SYSTEM:

Eye blink (IR): related to sleep detection and alert the driver with the components used in the proposed operation are Eye blink length and frequency, Power supply, Buzzer, LED ARDUINO (UNO), Relay Module, DC as shown in Figure 2. The main component is Arduino Uno which is an ATmega328 based microcontroller (MC) that performs all functions related to controlling the embedded system circuit. The blinking module works by illuminating the eye area with infrared light, and then detecting changes in scattered light using an image transistor and a separation circuit. The system works with the goal of the eye twitch sensor that receives the driver's sleep. This effect is given to the buzzer. The rotation speed is reduced when the driver is sleep, while on the other hand the blink sensor receives the sensor stops the wheel. This program offers a new way to stop drowsy men. The device has an installed blink sensor. Once the driver has started the engine, the sensors automatically detect the blink of an eye and check the his or her breath. The process is depicted by the flow diagram shown in fig 7. On this device the sensor output is given to compare with ARDUINO. If the value exceeds the limit when the buzzer automatically generates vibration, the LED glows and the car stops automatically.

Working principle



TRANSFORMER

The potential transformer will step down the power supply voltage (0-230V) to (0-6V) level. Then the secondary of the potential transformer will be connected to the precision rectifier, which is constructed with the help of op-amp. The advantages of using precision rectifier are it will give peak voltage output as DC, rest of the circuits will give only RMS output.

BRIDGE RECTIFIER

When four diodes are connected as shown in figure, the circuit is called as bridge rectifier. The input to the circuit is applied to the diagonally opposite corners of the network, and the output is taken from the remaining two corners. Let us assume that the transformer is working properly and there is a positive potential, at point A and a negative potential at point B. the positive potential at point A will forward bias D3 and reverse bias D4. The negative potential at point B will forward bias D1 and reverse D2. At this time D3 and D1 are forward biased and will allow current flow to pass through them; D4 and D2 are reverse biased and will block current flow. The path for current flow is from point B through D1, up through RL, through D3, through the secondary of the transformer back to point B. this path is indicated by the solid arrows. Waveforms (1) and (2) can be observed across D1 and D3.

One-half cycle later the polarity across the secondary of the transformer reverse, forward biasing D2 and D4 and reverse biasing D1 and D3. Current flow will now be from point A through D4, up through RL, through D2, through the secondary of T1, and back to point A. This path is indicated by the broken arrows. Waveforms (3) and (4) can be observed across D2 and D4. The current flow through RL is always in the same direction. In flowing through RL this current develops a voltage corresponding to that shown waveform (5). Since current flows through the load (RL) during both half cycles of the applied voltage, this bridge rectifier is a full-wave rectifier. One advantage of a bridge rectifier over a conventional full-wave rectifier is that with a given transformer the bridge rectifier produces a voltage output that is nearly twice that of the conventional full-wave circuit. This may be shown by assigning values to some of the components shown in views A and B. assume that the same transformer is used in both circuits. The peak voltage developed between points X and y is 1000 volts in both circuits. In the conventional full-wave circuit shown—in view A, the peak voltage from the center tap to either X or Y is 500 volts. Since only one diode can conduct at any instant, the maximum voltage that can be rectified at any instant is 500 volts. The maximum voltage that appears across the load resistor is nearly-but never exceeds-500 volts, as result of the small voltage drop across the diode. In the bridge rectifier shown in view B, the maximum voltage that can be rectified is the full secondary voltage, which is 1000 volts. Therefore, the peak output voltage across the load resistor is nearly 1000 volts. With both circuits using the same transformer, the bridge rectifier circuit produces a higher output voltage than the conventional full-wave rectifier circuit.

IC VOLTAGE REGULATORS

Voltage regulators comprise a class of widely used ICs. Regulator IC units contain the circuitry for reference source, comparator amplifier, control device, and overload protection all in a single IC. IC units provide regulation of either a fixed positive voltage, a fixed negative voltage, or an adjustably set voltage. The regulators can be selected for operation with load currents from hundreds of milli amperes to tens of amperes, corresponding to power ratings from milli watts to ten. This may be shown by assigning values to some of the components shown in views A and B. assume that the same transformer is used in both circuits. The peak voltage developed between points X and y is 1000 volts in both circuits. In the conventional full-wave circuit shown—in view A, the peak voltage from the center tap to either X or Y is 500 volts. Since only one diode can conduct at any instant, the maximum voltage that can be rectified at any instant is 500 volts of watts.

IV. CONCLUSION



People are increasingly exposed to dangers today. Therefore, we need to take action against this as an engineer and have the solution we need. Any automation is designed to protect a person. Such a model is tasked with developing a system for diagnosing and controlling the speed of vehicles to prevent accidents. To some extent, modern technology offers some hope of stopping these. This paper includes monitoring the blink of an eye with the help of an IR sensor. On this device the output of the sensor is provided for comparison with ARDUINO. When the value reaches the set level, the buzzer automatically vibrates, the LED glows, and the car stops automatically when the eye blink sensor receives a signal from the transmission component.

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