International Journal of Scientific Research and Engineering Development—Volume2 Issue 2, Mar –Apr 2019

Available at www.ijsred.com

RESEARCH ARTICLE OPEN ACCESS

DROWSINESS AND PEDESTRIAN DETECTION WITH DRIVER ASSISTANCE SECURITY

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ABSTRACT:

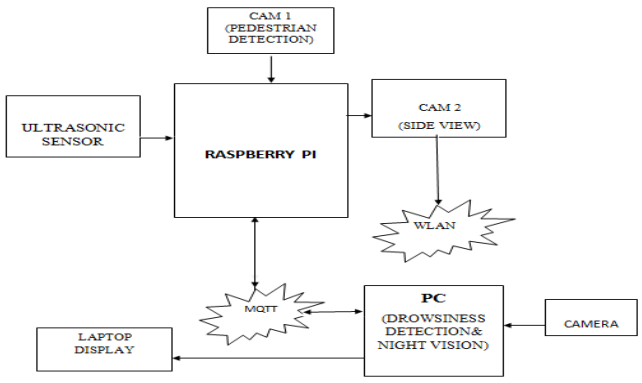
Accident may occur with some marked effect due to unpredictable and unintended external action with no apparent. We propose three distinct but closely related concepts viz. a Drowsy Driver Detection system, a traffic detection system with external vehicle intrusion avoidance based concept, Pedestrian Detection and Night vision. A new approach towards automobile safety and security with autonomous region based automatic car system is proposed in this concept. In recent time's automobile fatigue related crashes have really magnified. In order to overcome this we introduce an embedded based intelligent system that incorporates driver alert system by monitoring both the driver's eyes as well as sensing driver situation based AI system is proposed. This prototype is designed with minimum number of circuits.

I. INTRODUCTION:

The patterns of interaction between these neurons are represented as thoughts and emotional states. According to the human thoughts, this pattern will be changing which in turn produce different electrical waves. A muscle contraction will also generate a unique electrical signal. All these electrical waves will be sensed by the brain wave sensor and it will convert the data into packets and transmit through Bluetooth medium. Level analyser unit (LAU) will receive the brain wave raw data and it will extract and process the signal using Mat lab platform. Then the control commands will be transmitted to the robotic module to process. With this entire system, we can move a robot according to the human thoughts and it can be turned by blink muscle contraction. A brain-computer interface (BCI) is a new communication channel between the human brain and a digital computer.

Different brain states are the result of different patterns of neural interaction. These patterns lead to waves characterized by different amplitudes and frequencies. This neural interaction is done with multiple neurons. This project dealing with signals from the brain. Different brain states are the result of different patterns of neural interaction. These patterns lead to waves characterized by different amplitudes and frequencies. The signal generated by brain was received by the brain sensor and it will divide into packets and the packet data transmitted to wireless medium (blue tooth). The wave measuring unit will receive the brain wave raw data directly through Raspberry Pi. Then the instructions will be sending to the home section to operate the modules (bulb, fan). The project operated with human brain assumption and the on off condition of home appliance is based on changing the muscle movement with blinking.

II. BLOCK DIAGRAM:



III.BLOCK DIAGRAM EXPLAINATION:

- In the first pc camera take the image. Then face detection and also the eye detections and marking the length which makes drowsiness detection over internal vehicle using user
- Alert system have been enabled with PC control
- Ultrasonic is connected to the controller to distance calculation over the front up going vehicles
- Night vision problem estimation has been done up with the camera connected to detect the driver night opponent vehicles.

IV.PROJECT DESCRIPTION:

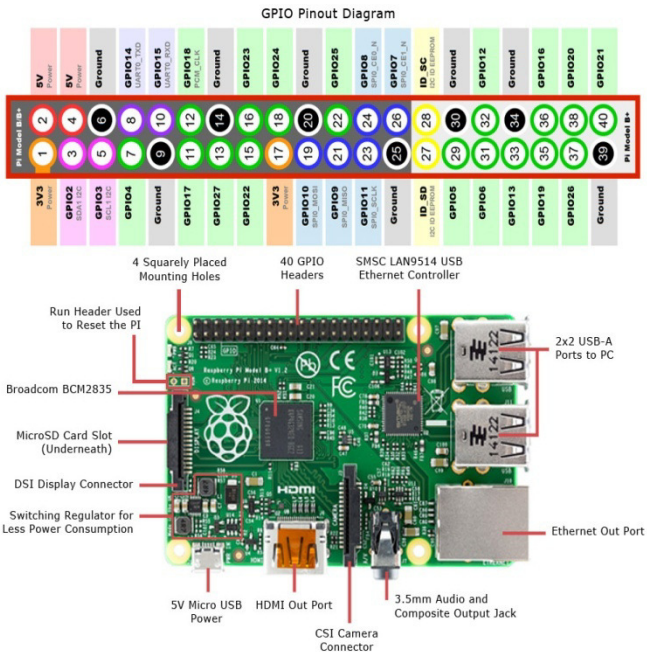
A. RASPBERRY PI:

In this project we are using Latest version of Raspberry i.e. Raspberry Pi 3.Raspberry Pi is a small single-board Computer developed in UK by Raspberry Pi foundation to promote the teaching of computer science.One powerful feature of the Raspberry Pi is the row of GPIO (general purpose input/output) pins along the top edge of the board. These pins are a physical interface between the Pi and the outside world. At the simplest level, you can think of them as switches that you can turn on and off (output).Of the 40 pins, 26 are GPIO pins and the others are power or ground pins (plus two ID EEPROM pins).

B. WEB CAMERA:

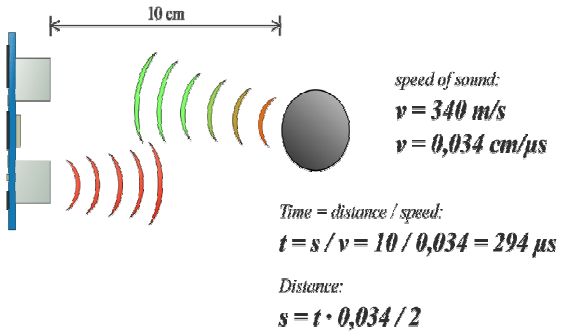
The purpose of a webcam is, not surprisingly, to broadcast video on the Web. Webcams are typically small cameras that either attach to a user's monitor or sit on a desk. Most webcams connect to the computer via USB, though some use a Fire wire connection.

C. PIN CONFIGURATION:



D. ULTRASONIC SENSOR:

An Ultrasonic sensor is a device that can measure the distance to an object by using sound waves. It measures distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back. It is important to understand that some objects might not be detected by ultrasonic sensors.



E. DRIVER MODULE:

The Device is a monolithic integrated high voltage, high current four channel driver designed to accept standard DTL or TTL logic levels and drive inductive loads (such as relays solenoids, DC and stepping motors) and switching power transistors. To simplify use as two bridges each pair of channels is equipped with an enable input. A separate supply input is provided for the logic, allowing operation at a lower voltage and internal clamp diodes are included. This device is suitable for use in switching applications at frequencies up to 5 kHz.

F. RASPBIAN OS:

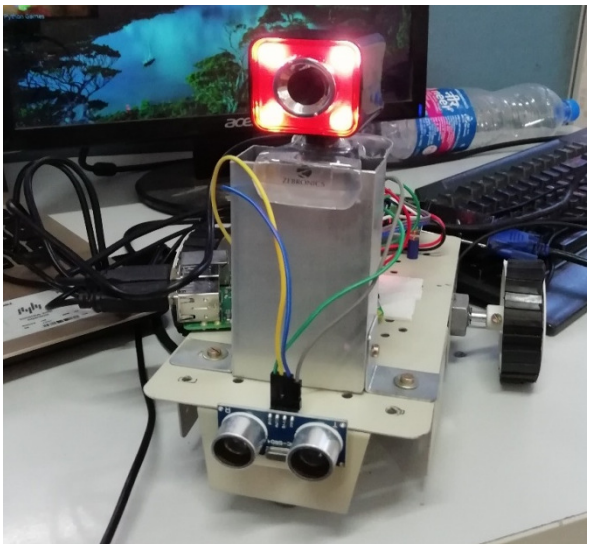
Raspbian is a free operating system based on Debian optimized for the Raspberry Pi hardware. An operating system is the set of basic programs and utilities that make your Raspberry Pi run. However, Raspbian provides more than a pure OS: it comes with over 35,000 packages, pre-compiled software bundled in a nice format for easy installation on your Raspberry Pi.

G. PYTHON IDLE:

In this project we will be using Python IDLE, it is Python's Integrated Development and Learning Environment, where we are going to write our code. IDLE has two main window types, the Shell window and the Editor window. It is possible to have multiple editor windows simultaneously. Output windows, such as used for Edit / Find in Files, are a subtype of edit window.

V. RESULT:

The development of environment perception and modelling technology is one of the key aspects for intelligent vehicles. This paper presents an overview of the state of the arts of environment perception and modeling technology. First, the pros and cons of vehicular sensors are presented. Next, popular modeling methods and algorithms of lane and road detection, traffic sign recognition, vehicle tracking, Drowsiness detection and behaviour analysis, and scene understanding are reviewed. Public datasets and codes of environment perception and modeling technology are also described. Current challenges for environment perception and modeling technology are due to the complex outdoor environments and the need of efficient methods for their perception in real time. The changeable lighting and weather conditions, and the complex backgrounds, especially the presence of occluding objects still represent significant challenges to intelligent vehicles. Furthermore, it is very important to recognize road in the off-road environment. Since environment perception and modeling technology stage is the link with the work of localization and map building, path planning and decision-making, and motion control, the next step is to develop the entire system.



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