Drowsiness detection and health monitoring system Mr. Ravindra P. Dhongadi (Guide)

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***ABSTRACT*—Drowsiness is the main cause for major accidents which leads to the injuries, deaths and damages. To overcome this problem, we propose a system which uses various sensors. These sensors are used to detect the driver drowsy and monitors the health of the driver. The buzzer is used to alert the driver whenever the driver feels drowsy. Whenever the sensorvalues are not in the range of threshold value, the motor stops. In case of emergency, the GPS module determines the location and this information is sent through GSM to the particular person or in charge ward. All these sensor operations are controlled by Microcontroller. With the help of this system, the major road accidents can be reduced by alerting the driver**

I INTRODUCTION

Driver drowsiness is one of the main reason for the accidents. About 50% of the accidents are road-accidents. The drowsiness of the driver has become a major cause for the road accidents.Some methods need to be developed to prevent the driver from his drowsiness during driving. This has become a major challenge to develop a system for the prevention of this issue. In earlier systems, visual analysis of eye state and head pose (HP) for continuous monitoring of alertness of a vehicle driver were used . The Raspberry pi camera and Raspberry pi 3 module were used to calculate the level of drowsiness in driver . A module for Advanced Driver Assistance System (ADAS) was presented to reduce the number of accidents due to driver fatigue thus the visual information and artificial intelligence were used . Researchers have attempted to determine driver drowsiness using the following measures: vehicle-based measures; behavioral measures and physiological measures

.The aim of this paper is to develop a prototype of driver drowsiness detection system. This system mainly focuses on monitoring of the driver's body temperature and eye blink rate

II LITERATURE SURVEY

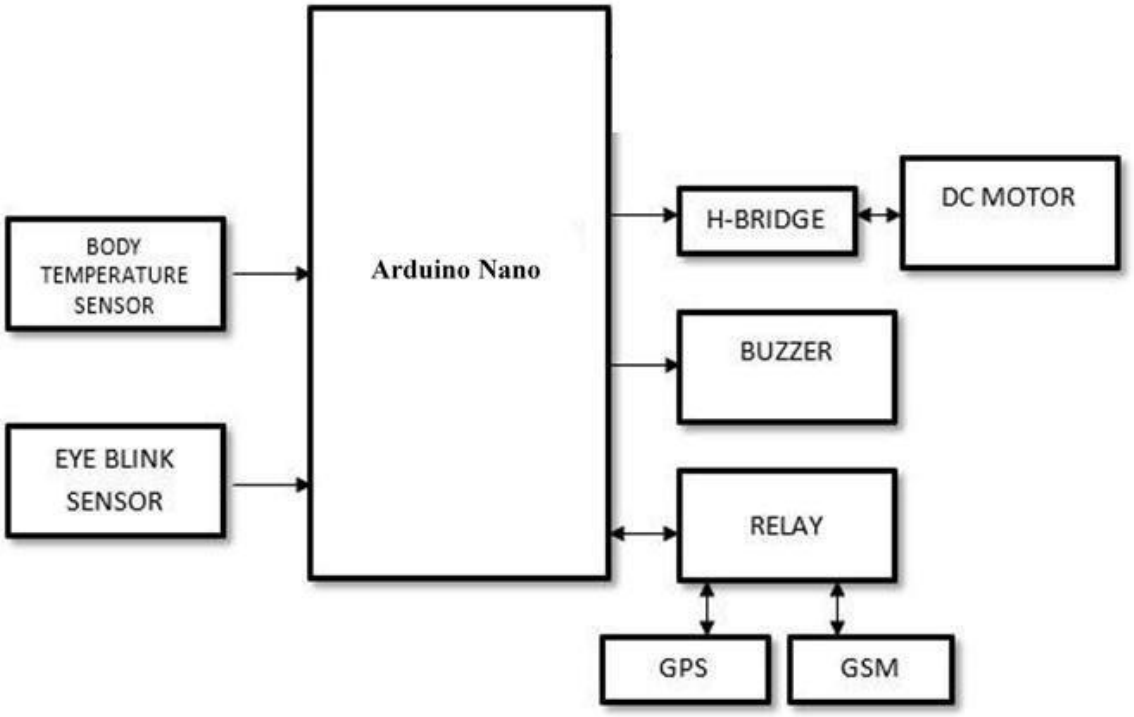
1] Jemai introduced a technique for drowsy warning system using wavelet networking. That network tracks eyes with the help of classifying algorithms like Wavelet Network Classifier (WNC) that relieson Fast Wavelet Transform (FWT), which specifically leads to binary way decision (conscious or not).

2] Budak designed a drowsy detection system through EEG technique which is designed with various components, and wavelet transform algorithm. This process effectively analyses the state of sleepiness using the brain indicator signal (EEG), camera, and sensors that are activated with the help of machine learning method to alert drowsy driver.

3] Omkar Dharmadhikari introduced detection of driver drowsiness based on yawning measurement and head position of driver. Research paper on "Drowsy Driver Detection Through Facial Movement Analysis"

III BLOCK DIAGRAM

In this block diagram, the working is shown as when the drowsiness is detected then the within few milisecounds the signal is captured by the eye blink sensor and it is given to the ardiuno nano (Controller) we programmed ardiuno like after detetction of drowsiness the car is stop automatically with the help of relay circuit and buzzer will start and GPS send the actual location of that car to the emergency phone number



IV WORKING PRINCIPLE

The advised machine is a driving force face tracking machine that detects driving force hypo vigilance through eye and face processing (each weariness and attention). Following the seize of a photograph, the primary degree of processing is face detection. Low vigilance indicators are then extracted from the face picture.

However ,an specific eye detection section isn't used to decide the attention withinside the face; instead, a number of the maximum extensive signs associated with the attention area (top-1/2 of section of the face) are collected, making it computationally costly to rebuild the face popularity technique for all frames. It may also use alcohol pulse detection to peer if the man or woman is ordinary or not. Face monitoring algorithms are utilised to observe the driving force`s face in destiny frames till it's miles misplaced after the primary frame's face detection.

This may primarily be extended to provide an alert prior to sleeping by computing the heart beat measure without causing physical disturbance, i.e., a non-intrusive way utilising modified ECG methodologies. It will also employ alcohol pulse detection to determine whether or not the person is normal. Typically, critical body locations (such as the chest, head, and wrist) are wired in the ECG technique. Sticking wire can be prevented using the

V METHODOLOGY

The methodology used to design the Drowsiness Detection System is an iterative research and analysis cycle. The research stage generates concepts and the analysis stage selects concepts, analyze requirements and constraints. The cycle is then repeated to generate more refined concepts and these concepts are further analyzed.is extended procedure. This will lead to a method for determining the optimal degree of sleepiness.

VI HARDWARE SPECIFICATIONS

1. .Power supply
2. Microcontroller arduino nano
3. Eye blink sensor
4. Temperature sensor
5. GPS
6. GSM
7. Buzzer
8. Relay
9. .DC motor

VII ADVANTAGES

- Better service to passengers
- Helpful for strangers
- Driver or conductor no need to shout always
- Low cost and flexible in design.
- This module can reduce the passengers tension in journey to unknown place

VIII Disadvantages

- Automated system requiring less manpower.
- It uses a voice chip which records and plays the desired voice.
- Reusability of the recorded message.
- Databases need not be maintained.
- The model can also be interfaced to provide automatic opening of doors.

IX FUTURE DEVELOPMENT

- The system can be made more accurate using various other parameters such as State of the Car, Detecting Foreign Substances on Face etc.
- An application can be developed where it can alert or prevent the user from sleeping
- It can be used to develop an IOT device that can be installed in the car to detect driver's drowsiness.
- Similar models and techniques can be used for various other uses such as Netflix, Hotstar and other streaming service platforms can detect whether the person is sleeping and stop the video accordingly

X APPLICATIONS

- Waste-to-energy plants burn municipal solid waste (MSW), often called garbage or trash, to produce steam in a boiler that is used to generate electricity. MSW is a mixture of energy-rich materials such as paper, plastics, yard waste, and products made fromwood.
- Biogas.
- Power Generation.
- Anaerobic Digestion.
- Gasification.
- Incineration.
- Energy Technology.

XI CONCLUSION

Drowsiness detection is vital to save precious human life and monetary losses. This study proposes a hybrid drowsiness detection model using multiple measures to detect driver drowsiness in all conditions that also reduces the false positive rate. It has been concluded that noneof the four distinct measures, taken separately, can ensure accuracy. Each measure has limitations in different contexts and is ineffective in detecting drowsiness. These limitations can be eliminated by combining two or more measures to detect driver drowsiness and making the system work under all conditions. The literature review indicates that combining behavioral measures, which are non-intrusive, with sensor-based physiological measures, which are intrusive, produces better results and overcomes certain limitations. A hybrid model that helps to detect driver drowsiness in all conditions is proposed. The driver's facial features are extracted using a camera as a behavioral measure and the GSR sensor as physiological measure to investigate the transition from alert to drowsy state. Improved accuracy and reduced false positive detection rates are the outcome of the proposed model. This model considers a driver to be drowsy when PERCLOS > 0.24, FOM > 0.16 and SC < 250. When PERCLOS > 0.24, FOM > 0.16 and SC > 250, the person is less sleepy, and PERCLOS < 0.24, FOM > 0.16 and SC > 250 shows the normal state of the driver.

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