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Heart Attack and Alcohol Detection System Using Internet of Things

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Abstract— *In this system we tend to implement a heart-beat observation and heart failure detection system victimization using the Internet of things. Recently we have got enlarged range of heart diseases as well as enlarged risk of heart attacks. The detector is then interfaced to a microcontroller that enables checking pulse rate readings and transmittal them over web. The user might set the high likewise as low levels of heart beat limit. Once setting these limits, the system starts observation as shortly as patient heart beat goes on top of an explicit limit, the system sends response to the controller that then transmits this over the net and alerts the doctors likewise as involved. This technique is employed to watch heartbeat rate of the motive force perpetually and prevents from the accidents by dominant through IOT. IOT conveys the emergency message to the Owner, auto and therefore the Police. Arduino processor ATmega328 is ready to handle a lot of functions than standard microcontrollers. This technique is intended for the protection of individuals sitting within the vehicle.*

Keywords- *Arduino, IOT, system.*

I. INTRODUCTION

In today's world because the population is increasing day by day the numbers of auto-vehicles, conjointly will increase on the road and highways. This ends in a lot of accident that results in the traffic jams and public not get facilitate outright. This downside is thanks to rider's poor behaviors like speed driving, drunk driving, riding with no helmet protection, riding while not enough sleep etc. Therefore, road safety is one issue that desires special attention. In most of the accident cases, the victims lose their lives attributable to inconvenience of medical facilities on the correct time.

This accident detection and coverage system issued to avoid wasting the lives by creating the medical facilities inbound on time. In this paper we tend to area unit developed a wireless system exploitation MEMS measuring instrument and GPS/GSM for accident detection and coverage. If any accident happens, this wireless device can send machine-driven message to Emergency medical services (EMS) and loved one giving the precise position of the spot wherever the crash had occurred. So that they will offer correct medical treatment to the patients. This technique is employed to record info associated with accident like temperature knowledge, position Datatec. In order that it are often wont to analyses the accident simply and to settle several disputes associated with accident like insurance settlements. This technique additionally will observe whether or not the driving person was in boozy state and therefore the vehicle wouldn't start thereafter. The full system relies on arm controller. This controller is employed to co-ordinate all the activities within the system.

This alert message is sent to the rescue team in a very short time, which is able to facilitate in saving the precious lives. A Switch is additionally provided so as to terminate the causing of a message in rare case wherever there's no casualty, this will save the valuable time of the medical rescue team. Once the accident happens the alert message is sent mechanically to the rescue team and to the station house. The message is shipped through the GSM module and therefore the location of the accident is detected with the assistance of the GPS module. The accident may be detected exactly with the assistance of each small Electro system (MEMS) sensing element and vibration sensing element. The angle of the rolls over of the automotive may be notable by the message through the MEMS sensing element. This application provides the optimum resolution to poor emergency facilities provided to the roads accidents within the most possible method. The main purpose of this paper is to introduce the conception of a Vehicle safety for application in India. The most purpose of this device is to act as Associate in Nursing emergency device for vehicle drivers who are in potential whereas accident happens. The motive force possessing this device is an SMS containing the latitude and coordinates which are to be sent to pre-fed mobile numbers, informing them of the danger and therefore the location. The received coordinates may be viewed on Google maps to see the situation of the driver and applicable facilitations can be provided. This idea was devised within the wake of great accident case register in India.

II. PROBLEM INTERPRETATION

To monitor heartbeat rate of driver heartbeat detector are connected in seat belt of the automobile. Once the driver starts the vehicle and wears the safety belt, this sensing element mechanically monitors the heartbeat rate of the driving force through internet of Things. When the heartbeat rate goes abnormal (i.e., higher than the reference value), IOT notifies the emergency message to the owner of the automobile, close motorcar and therefore the Police to forestall from accident and save the driver's life. Belt is buckled by driver then only engine is allowed to begin this makes drivers to buckle up the seat belts mandatory to drive automobile. The alcohol sensing element can live the extent of alcohol perpetually and

send to picture microcontroller, which check whether or not the driver is drunk or not. If the picture microcontroller detected the alcohol drunken by driver then it'll send message to owner and police.

III. PROPOSEDSYSTEM

A. To check the driver's Heartbeat rate constantly

To monitor heartbeat rate of driver heartbeat sensor will be attached in Seat belt of the car. Once the driver starts the vehicle and wears the seat belt, this sensor automatically monitors the heartbeat rate of the driver through Internet of Things. When the heartbeat rate goes abnormal (i.e., above the reference value), IOT notifies the emergency message to the owner of the car, nearby Ambulance and the Police to prevent from accident and save the driver's life. This emergency message will be conveyed to the respective person via GSM. Main concept is if and only if the seat belt is buckled by driver then only engine is allowed to start this makes drivers to buckle up the seat belts compulsory to drive car. This is done by small concept that is the message will be send from heartbeat sensor which is fixed in seatbelt then only the PIC microcontroller allow or permit the driver to start engine.

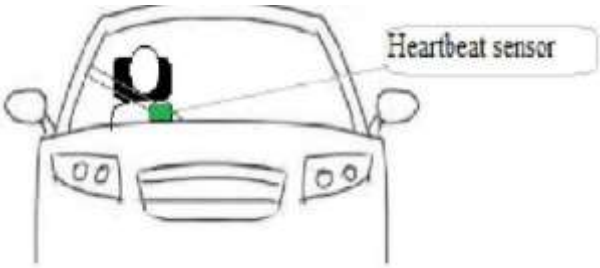

Figure 3.1 Heartbeat sensors in seatbelt

In this concept we used figure 3.1 heartbeat sensor which will constantly detect the heartbeat rate of driver. If the heartbeat rate goes to abnormal rate then the message will be send to owner, hospital and police using GSM or IOT. If the message is received by owner he will able to stop the automatically from anywhere through GSM or IOT.

A. Vehicle ON/OFF control based on alcohol detection using breathe sensor circuitry

While driving, driver should not drink alcohol is the one of the rule should be followed but in our country it is increasing day by day. To follow that rule alcohol sensor is fixed on the steering which will detect the alcohol level from the air breath out by driver, if in case it accuracy is not that much then just fix the alcohol sensor in the seat belt. There is a possibility to some other chance to get the smell of the alcohol, but by using our concept we can overcome those challenges.

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Figure 3.4 Vehicle gets stopped automatically if the driver consumes alcohol

In figure 3.4, the alcohol sensor will measure the level of alcohol constantly and send to picture microcontroller, which check whether the driver drunk alcohol or not. If the picture microcontroller detected the alcohol drunken by driver then it will send message to owner and police

IV. DOCUMENTATION REVIEW

Due to higher accident rates vehicle trailing is extremely necessary now days. This may be done simply by the utilization of the GPS technology. Numerous different applications also can be accustomed do. These applications are employed in fleet management, anti-theft vehicle systems and accident recovery. The planned system in deals with associate automatic accident detection system involving vehicles that sends data regarding the accident together with the situation, the time and angle of the accident to a rescue team sort of a first aid center and also the police office. Mobile phone is employed virtually by all individuals .With internet usage also are in any respect. so these portable conjointly offer communication platform as they're equipped with 2G or 3G network .There are numerous reason for accident of automobile and they are drunk ness of driver, sleepiness of driver, cognitive state of driver, and plenty of time what happen driver is not liable for accident however their (car) neighboring automobile behavior even have created role to enforce accident. There are some system are enforced to avoid accident however that don't offer correct answer to implement in automobile to avoid numerous accidents that they're commonly being happen. As an example once driver at speed suppose eighty km/h suddenly stop mechanism could result in probabilities of dangerous accident.

[1]That they had use PIC 16876A controller, Alcohol device, liquid crystal display show and alarm to send word driver solely, mechanism was straightaway off once detected alcohol.

[2]GSM and GPS were used to send location and alcohol detected connected message to relative of driver. Location was commonly in line of longitude and latitude that was troublesome to find. Mechanism directly put off once detected alcohol.

[3]IR light-emitting diode 894 was used. it absolutely was produces high intensity IR ray's ,which mean's it absorb alcohol of solely high content from air, therefore this symbolizes that this mechanism can work only driver is over drunk for lower concentration of alcohol it absolutely was detected accurately.

[4]IR device was wont to discover obstacle that comes ahead of this sensor (vehicle), and once obstacle detected vehicle was stop. it absolutely was conjointly observance the poisonous gases like greenhouse emission, LPG, Alcohol from within space of the vehicle .If there's high content of gases then SMS had been send to approved person to send word solely.

[5]It describes a period of time on-line epitome driver-fatigue monitor. It uses remotely set charge-coupled device cameras that were equipped with active infrared illuminators to accumulate video pictures of the driver. Numerous visual cues that generally characterize the extent of alertness of an individual square measure extracted in real time and consistently combined to infer the fatigue level of the driving force.

V. SOFTWARE REQUIREMENT SPECIFICATION

Before you begin to format your paper, first write and save the content as a separate text file. Keep your text and graphic files separate until after the text has been formatted and styled. Do not use hard tabs, and limit use of hard returns to only one return at the end of a paragraph. Do not add any kind of pagination anywhere in the paper. Do not number text heads-the template will do that for you.
Finally, complete content and organizational editing before formatting. Please take note of the following items when proofreading spelling and grammar:

A. Introduction

Internet of Things (IoT) is revolutionizing the method devices/things move with one another. And after you have IoT with Python on your aspect, you will be able to build interactive objects and style them. By the end, you may be able to develop IoT prototypes with Python, libraries, and tool. Programming for IoT is sometimes a polyglot (multiple languages) effort since the Internet-of-Things (IoT) may be a system of interrelated computing devices that are supplied with distinctive identifiers and also the ability to transfer knowledge over a network

B. Functional Requirements

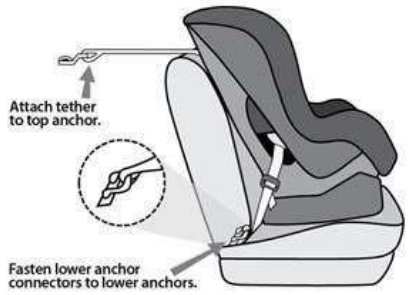
- System must be fast and efficient
- User friendly GUI
- Reusability
- Performance
- System Validation input
- Proper output

C. External Interface Requirements

User Interface:

The Interface will be in the form of sensor. It is designed to be functional and minimal in its styling. heart attack detection sensor used for measuring heart beat rate. Alcohol detection sensor used for alcohol that may be accurately detected by evidential breath testers is 220 µg/100 ml air.

Hard Ware Interfaces:



Seat-Belt

Node MCU

Motor

Alcohol-Sensor

Heart-beat-Sensor

Software Interfaces :

- **Arduino IDE**
- **Python Package**

D. System Requirements

- Processor:- Intel Pentium 4 or above
- Memory:- 2 GB or above Other peripheral:- Printer
- Hard Disk:- 500gb

System also has some software requirements like:
Technologies and tools used in Policy system project are as follows Technology used:

1) **Front End**
   - IOT webpage

2) **Back-End**
   - Node MCU

IV. IMPLEMENTATION

In India almost 400 persons are killed in road accidents per day. In India most of road accidents are occurring due to drink and drive not buckle up seat belt, driver got heart attack.

Car and persons on the road. In our concept driver should buckle up seat belt to start car engine, in traffic signal automatically the car will be controlled by PIC microcontroller, driver cannot able to drive car if he drink alcohol before start driving or while driving. All this concepts mostly prevent from road accidents which will help to prevent lakhs of person's life. In our concept main motivation is to order drivers to obey the rules then only the drivers are allowed to drive the car.

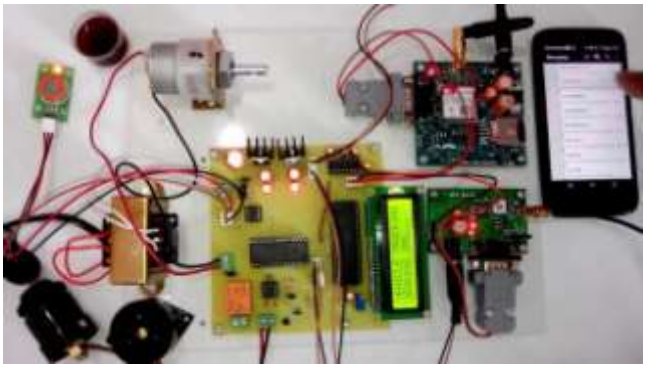


Figure 4.1 Smart car system demo circuit

In figure 4.2, the heartbeat sensor is used to check the drivers heartbeat rate. If the heartbeat rate is abnormal then the emergency message will goes to the people whose contacts are available in the GSM (SIM).Heartbeat sensor which will constantly detect the heartbeat rate of driver. If the heartbeat rate goes to abnormal rate then the message will be send to owner, hospital and police using GSM or IOT. If the message is received by owner he will able to stop the automatically from anywhere through GSM or IOT.

E. Nonfunctional Requirements

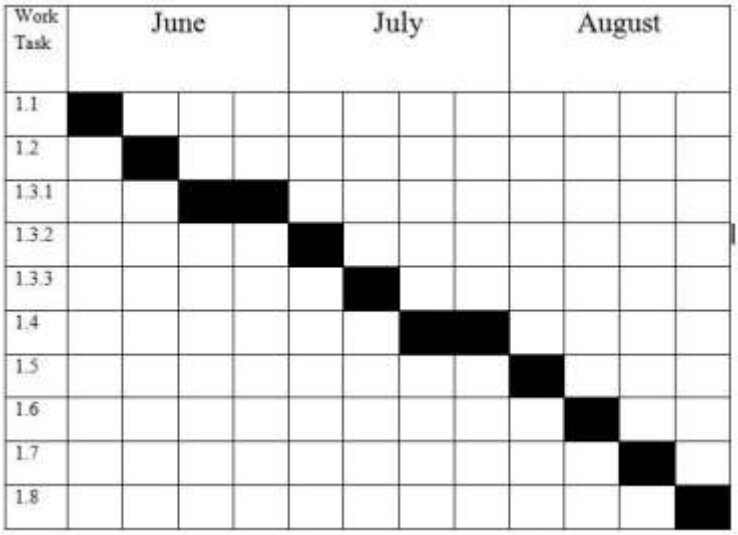
- Accessibility
- Capacity, current and forecast
- Compliance
- Documentation
- Disaster recovery
- Efficiency
- Effectiveness
- Extensibility
- Fault tolerance
- Interoperability
- Maintainability
- Privacy
- Portability
- Quality
- Reliability
- Resilience
- Response time
- Robustness
- Scalability
- Security
- Stability
- Supportability
- Testability

F. Analysis Models: SDLC Model to be applied

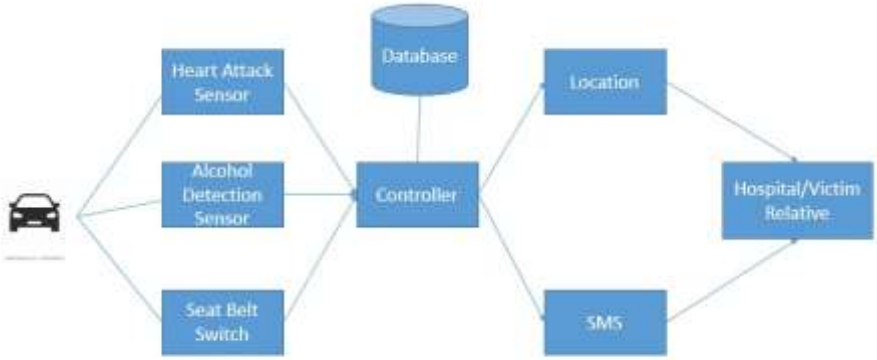
Agile SDLC model may be a mixture of repetitive and progressive method models with specialize in method ability and client satisfaction by fast delivery of operating software product. Agile strategies break the item for consumption into little progressive builds. These builds area unit provided in iterations. Each iteration in general lasts from about one to three weeks. Every iteration involves cross functional teams working concurrently on various areas like − Planning

- Requirements investigation
- Modeling
- Coding
- Unit Testing and Acceptance Testing.

G.System Implementation Plan



VI.SYSTEM ARCHITECHTURE



System Architecture plan is the implemented in order to get the Data flow diagrams and DFD Levels to make it easy to remove smallest of the possible limitation and make system more reliable. Use Case diagram describes efficiently the communication between users and their Family/ Hospital

VII. SPECIFICATIONS

Advantages:

- It is environment friendly system.
- Quick and correct results.
- Maintenance is straightforward
- System respond time is comparatively quick.
- The system doesn't need any mobile application.
- To prevent accident because of drunk driving.

B. *Limitations:*

- User must have network connectivity.
- Device must be on.
- Device must be small.

C. *APPLICATIONS*

- It is used for safety of Vehicle Driver.
- It can also be used for Emergency Service.
- It can also be used as a vehicle tracking system.

VIII. CONCLUSION

The above report was on my module "Accident Prevention", that comes beneath the project topic "Heart Attack & Alcohol Level Detection, An Attaching Clip using IOT".
This report tells us regarding Security Fetters of any vehicles that facilitate to driver to induce rescue in dangers scenario and find emergency help from hospital and family. Alcohol detector can lock the automobile and don't let driver drive automobile where as he was drunk it help to avoid accident.

IX. FUTURE WORK

1. Vehicle Safety System Module
2. Mobile and other valuables safety system module.

The advance technology makes the system additional sturdy and reliable. Because the new modules offer the practicality that enhance the protection and security. so it helps to meet the aim of the project.

ACKNOWLEDGMENT

The preferred spelling of the word "acknowledgment" in America is without an "e" after the "g". Avoid the stilted expression, "One of us (R.B.G.) thanks." Instead, try "R.B.G. thanks". Put applicable sponsor acknowledgments here; DO NOT place them on the first page of your paper or as a footnote.

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