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# Self Aiding Car (SAC)

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***Abstract:*** *This paper tells about the smart car which has sensors and certain other features to avoid accidents. This car has HEART RATE sensors attached to the steering which will sense if the driver is suffering from cardiac arrest. Once sensor senses then it sends the information to nearby hospital and ask them to send ambulance to that place through IOT. In addition to this the car acts like a google car and it does self-parking with the help of GPS. This car also has ALCOHOL (MQ3) sensor which sense whether the driver has consumed alcohol. Once the sensor senses it locks the steering of the car and the driver will no longer able to drive the car. Drunken drive is the major reason for accidents. To avoid those accidents this sensor is used. We have also used sleep warning system and Adaptive Front Lightning System (AFS) to prevent accidents.*

***Keywords:*** *Heart rate sensor, alcohol sensor, sleep warning system, AFS, IOT,GPS,PLC.*

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## I. INTRODUCTION

The car designed by us will be helpful for the drivers to avoid accidents. It has certain special sensors which will sense and take necessary action**. HUMAN PROTECTION and DEATH PREVENTION** are the main concepts behind our project.

### I. *ARTIFICIAL INTELLIGENCE*

### A) DETECTION AND PROTECTION OF CARDIAC ARREST

- These days we have an increased number of heart diseases including increased risk of heart attacks.
- In this part, we have interfaced heart rate sensor in the steering.
- If the driver suffers cardiac arrest it will detected by the sensor and signal is produced.
- The flow of blood volume is decided by the rate of Heart pulses and since light is absorbed by blood, the Signal pulses are equivalent to the heart beat pulses.
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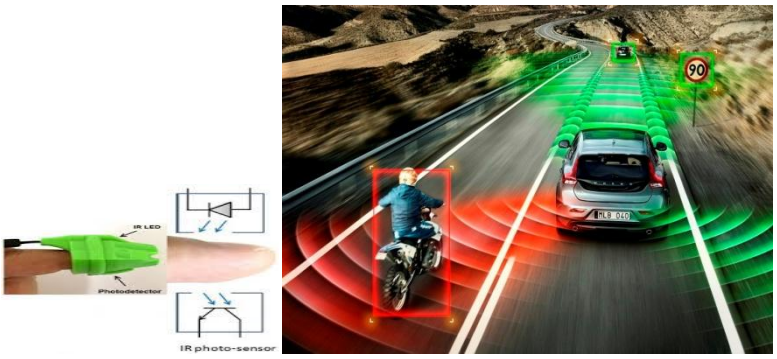
- The basic heartbeat sensor consists of a light emitting diode and a detector like a light detecting resistor or a photodiode.
- The heart beat pulses causes a variation in the flow of blood to different regions of the body.
- When a tissue is illuminated with the light source, i.e. light emitted by the led, it either reflects (a finger tissue) or transmits the light (earlobe).
- Some of the light is absorbed by the blood and the transmitted or the reflected light is received by the light detector.
- The amount of light absorbed depends on the blood volume in that tissue.
- The detector output is in form of electrical signal and is proportional to the heart beat rate.
- This signal is actually a DC signal relating to the tissues and the blood volume and the AC component synchronous with the heart beat and caused by pulsatile changes in arterial blood volume is superimposed on the DC signal.
- Thus the major requirement is to isolate that AC component as it is of prime importance.
- **Bumper-mounted radar, which is already, used in intelligent cruise control, keeps track of vehicles around 360 degrees.**
- **Once emergency condition is predicted the car gives alarm and goes to Auto Pilot Mode which tracks for safe Parking with the help of GPS.**

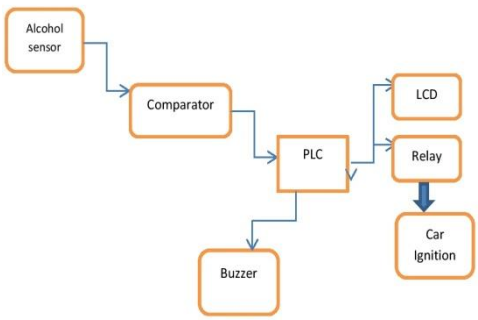



**IOT**

- Smart sensors inside the vehicle could detect medical emergencies, such as Heart attack.
- By using IOT, a message will be sent to nearby hospital.
- At the same time a message will be sent to the driver's family.
- Ambulance from nearby hospital will come to the spot to rescue the person by tracking the GPS.
- A proposed architecture provides high speed wireless communication to exchange information between hospital system infrastructure and the car which is prone to accident.


**B) ALCOHOL LOCKING STEERING**

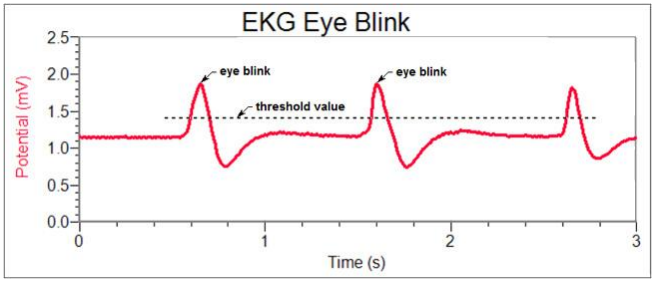
- In this we have interfaced alcohol (MQ3) sensor in the steering.
- Our proposed sensor would be constantly monitoring the driver breath by placing it on the car steering where the driver's breath can be constantly monitored by it.
- If a driver is drunk and tries to drive the car, the sensor detects alcohol presence in his breath and goes for safe mode in which the ignition will cut off within 60 seconds so driver can park car safely.
- At this moment, steering will be automatically locked.




**OTHER MATERIALS**

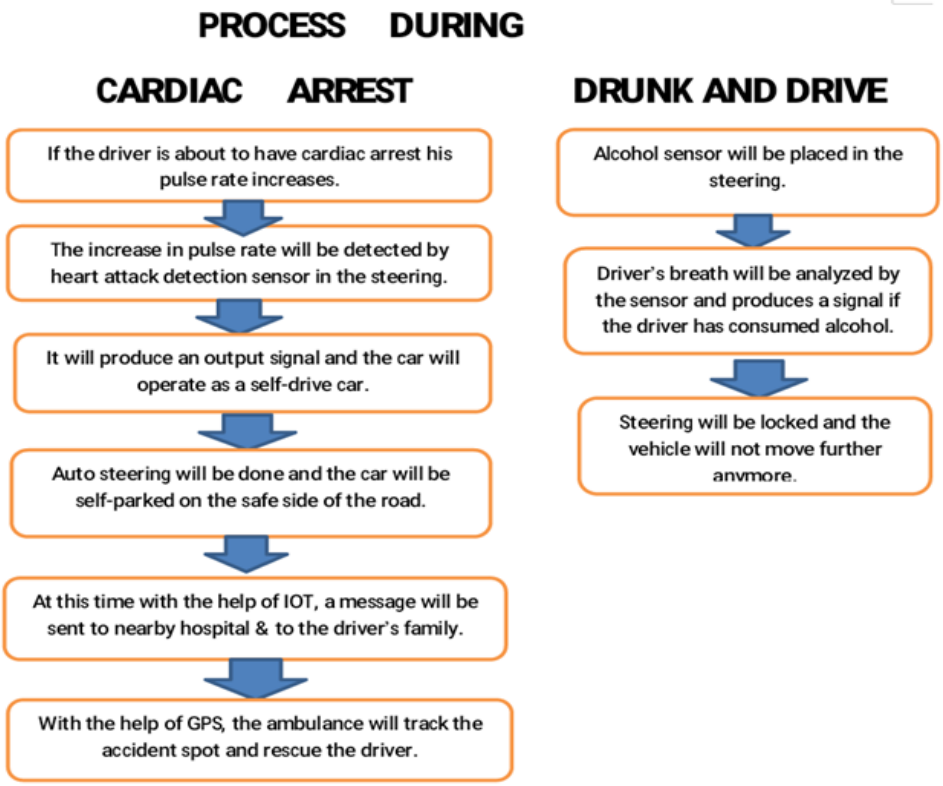
A**) SLEEP WARNING SYSTEM**

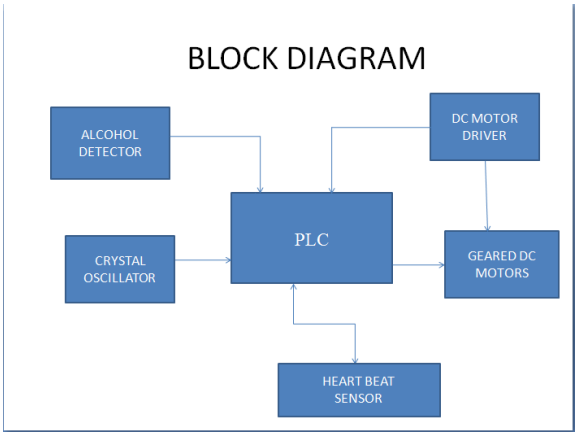
- It is a reflective sensor that includes infrared emitter and phototransistor in a lead package which blocks visible light.
- One main condition is that the IR transmitter and receiver should be in a straight line for optimum performance. The transmitter transmits IR rays into the eye of the driver.
- Depending on whether the eye is closed or open, there will be high output for closed eye and low output for open eye.
- The transmitted signal is captured by the IR receiver.
- This receiver is connected to the comparator.
- The comparator is an op amp where the reference voltage is given to inverting input terminal and the output of receiver is given to non-inverting terminal.
- When the IR transmitter passes the rays to the receiver, the receiver is conducting due to the fact that non inverting input voltage is less than inverting input voltage.
- Now the output of comparator is GND, so output is given to PLC.




**B) ADAPTIVE FRONT LIGHTING SYSTEM**

- One of the most important factors in mitigating driver fatigue and increasing safety during night driving is providing a well-illuminated field of view.
- Adaptive Front-Lighting System (AFS) The AFS catches the car's moving direction by using the direction sensor implemented in the wheel and then using the unit's control motor to rotate the headlight and with the installation of High Intensity Discharge (HID) Xenon light to extend the light illuminating range so as to enable the pedestrians and the obstacles in the vehicle direction to be visible to the driver.
- **In combination with discharge headlights, the system illuminates a greater distance and more brightly compared to halogen headlights, improving the driver's field of vision and visibility around curves and at intersections during night driving.**
- Mated with the auto-leveling function, the system offers a stable distribution of light unaffected by the vehicle's position.
- Maintaining the illumination axis, the system helps to prevent drivers of oncoming vehicles from getting blinded when many people or a lot of luggage weighs down the back of the car, or when the vehicle position changes going over a bump or driving up a slope.




## II. CONCLUSION

From comparatively scanty information, an increased traffic accident risk appears to be associated with several chronic medical conditions including alcoholism, cardiovascular disease and drowsiness. When a person has a medical emergency behind the wheel, fellow passengers and motorists also face risk of death or serious injury. We aim to develop a new system that can predict if a car driver is about to have any such medical problem and can help the person to get recover at the early stage by adopting new technologies.

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