iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 6 **Issue:** XII **Month of publication:** December 2018

DOI:

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 6 Issue XII, Dec 2018- Available at www.ijraset.com

Real-Time Vehicle Security System using TPMS.

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Abstract: ***Now-a-days health care environment has become technology oriented. Humans are facing a problem of unexpected death due to accidents caused due to the factor of human error or vehicle failure.***
So, we are developing a project to avoid such casualties by using Real-Time Vehicle Security System. In this system, it contains mainly three components or sub-modules in such a way that it reduces the risk of accidents as well as if accidents occur, the system will help the user for easy medical and legal support.
In this system the first module consist of a Vehicle Tyre Pressure Monitoring System (TPMS) using Iot, Android and Cloud as Domain. Incase of tyre failure, the system will alert the user via an android application to avoid accidents.
The second module works incase when accident has occurred due to some reasons. In second module various shock sensors are placed on the vehicle so that to automatically detect the accident when taken place.
The module will contact the SOS ie it will contact the police as well as ambulance inorder to avoid further complications and save the life of the victims.
The third module helps the second module inorder to reach the victims as soon as possible. In the third module the system monitors the movement of the police and ambulance.
This system helps the SOS support ie police and ambulance quick to the victims with the help of GPS shortest route tracing technology.
With the help of this the life of the victims can be saved easily quickly and if any person is present with the victims, the person can monitor the SOS support with the help of android application.

I. INTRODUCTION

In today's life a lot of accidents take place which gives rise to loss of human life and resources and in most cases help doesn't reach the accident spot on time which leads to further consequences.
The main motive of this project is to create a system to help to avoid accidents , if accidents occur it should help in such a way that the accident affected people can get help and can be recovered from the accident zone.

II. OBJECTIVES OF THIS SYSTEM ARE

A. Identification of tire failure and alerting the user to avoid accident.
B. Quick help to the victims in case of accidents.
C. Real time monitoring and quick route tracing to save lives of victims.

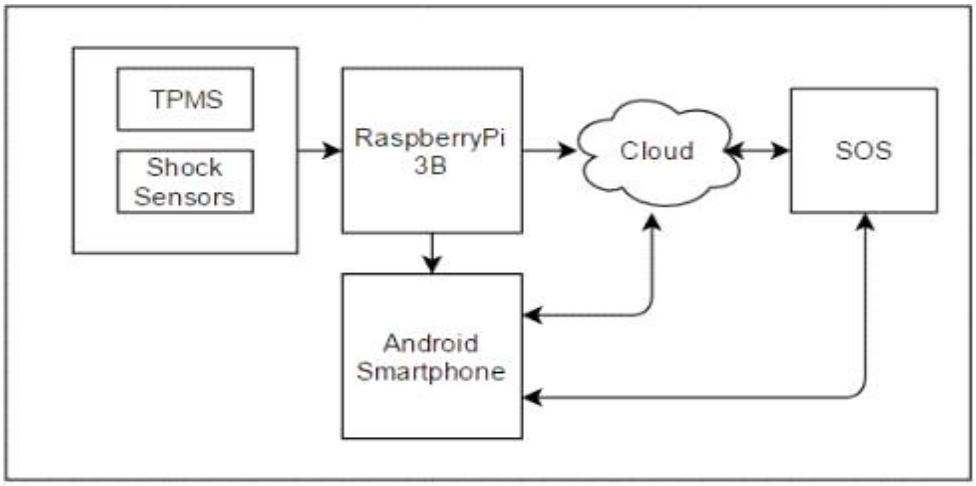
III. REQUIREMENTS SOFTWARE REQUIREMENTS

1) Android OS.
2) Raspberrian OS.
3) Amazon Web Server.
4) Secure Cloud.

A. Hardware Requirements
1) Raspberry Pi B3.
2) TPMS Sensors (bmp180).
3) Shock Sensors (ky002).
4) Android Device.

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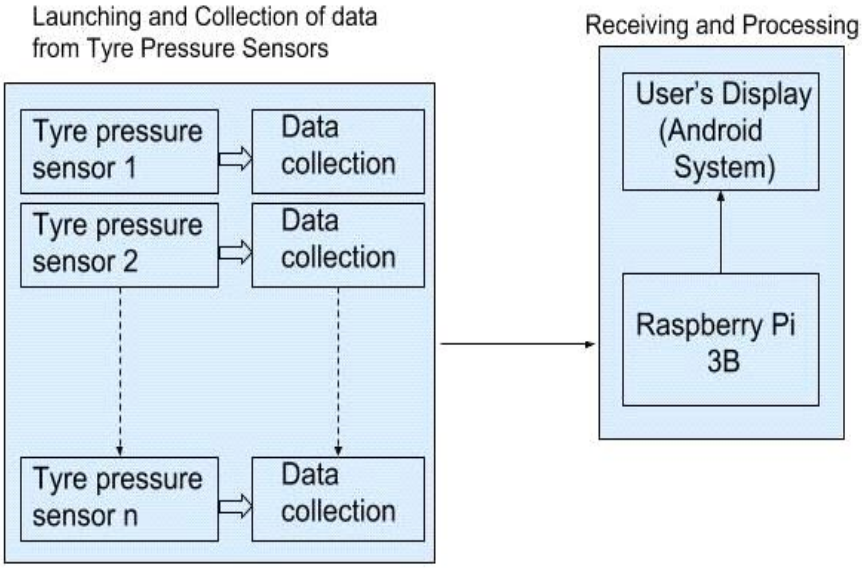
IV. SYSTEM ARCHITECTURE



A. Modules

1) Modules Of This System Are

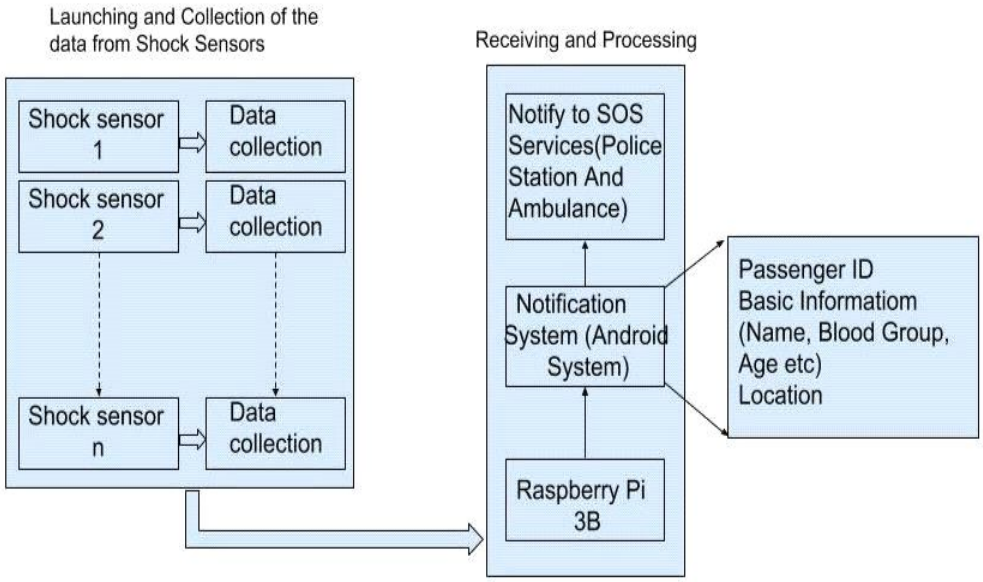
a) TPMS Module: This sub-model is the very first and the most basic model. In this model a Tyre Pressure Monitoring Sensors are used which regularly monitors the **Air-Pressure** of the vehicle. This sensors send the gathered information to the driver(user) at a Real-Time basis with the help of an Android application i.e. the user can have an eye on the pressure of the tyres at continuous intervals. When-ever the **Air-Pressure** is not in the specified range it gives an alert to the user inorder to avoid accidents (accidents caused by tyre puncture or over air-pressure).



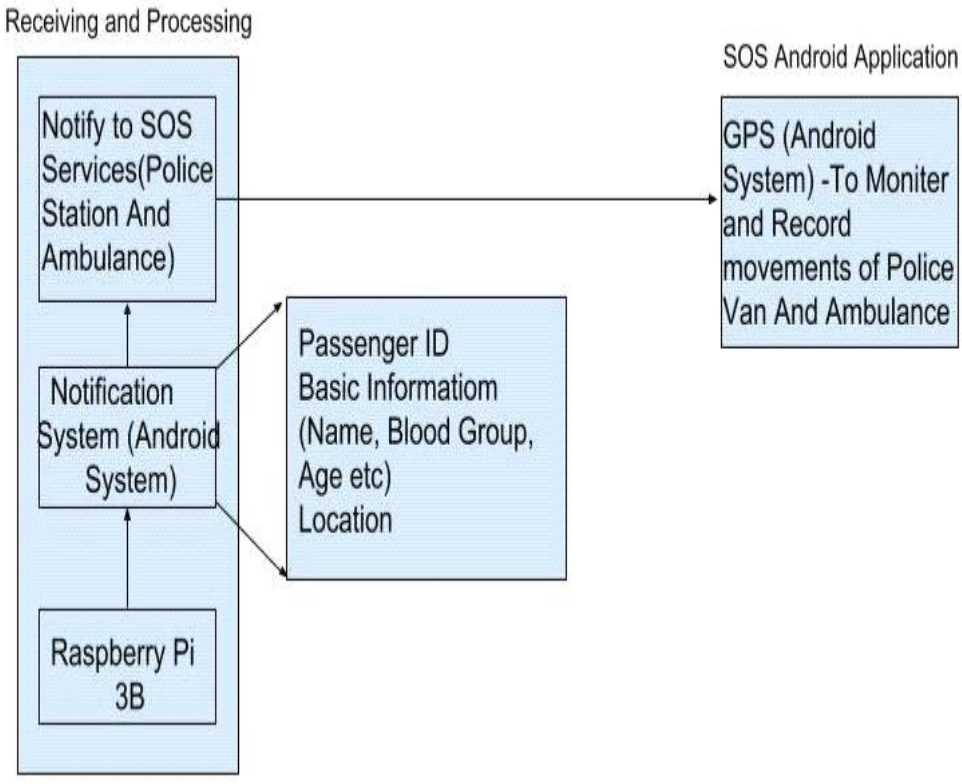
b) Accident Safety Module: This model is the second sub-model which defines the main project model. This model is purely inspired by the Air-Bag system present in the modern cars. In this model impact also known as shock sensors are being used. This sensors in-case of accidents automatically contacts the **SOS** service also known as emergency help-line service. When-ever an accident occurs (vehicle dashes to some object) shock impulses are produced which are being sensed by the sensors this sensors then automatically contact the helpline service (Police & ambulance) for the rescue of the victims.

c) Realtime Sos Monitoring Module: This model is the very important as well as very helpful sub-model of the project. In this model there exist a feature that when incase of accident the SOS is contacted for help of the victims, the android application monitors the Police Van & Ambulance (SOS) via GPS and records the movements of the SOS and displays to the user till they reach the victim.

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This feature or sub-model helps the SOS to reach the user at a very less time by optimized routes and help save many lives.



V. TECHNOLOGY USED

A. Android
B. IoT
C. Cloud

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VII. CONCLUSION & FUTURE WORK

This device helps to monitor vehicle tyre pressure and gives alert in case of failure(puncture) , this helps to avoid accidents and incase of accidents the system provides quick SOS(helpline support) automatically and provides real-time monitoring to Ambulance as well as Police vehicles for help.

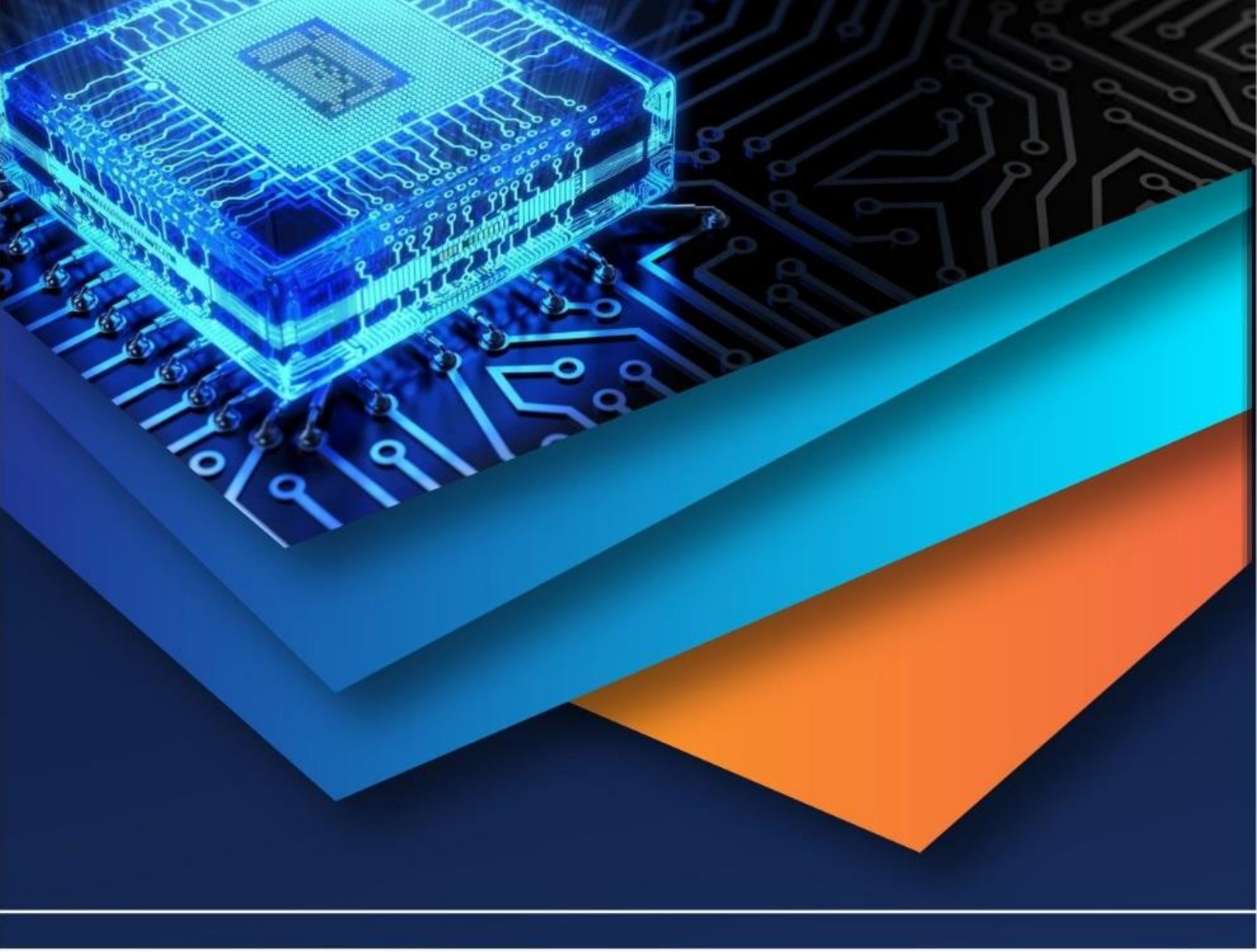
The devices can be modified to as well as sense the gases emitted by vehicles and methods to reduce it to minimize pollution .

The device can be modified in such a way to keep a note of vehicle parameters like fuel and give notifications to user accordingly.

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