# Rash Driving Detection System

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**Abstract:**

The present world is advancing at the speed of light in the field of trade and business, and the development in technology has been significantly influencing this growth. However, transportation by road is one of the major factors that have been affecting the commercial development of our country. With increasing vehicular population and their movement on the roads, accidents are also steadily increasing. It has become a nightmare for the authorities to prevent or reduce such fatal accidents on the road and all their efforts are in vain. According to the Indian road accidents survey, every year there are more than 135,000[3] incidents of road accidents[6]. Out of these, most of them are due to rash driving. According to Indian Constitution, IPC section 279 , rash driving is an offence[1][2]. So, this project aims to design a module which can detect the vehicle whenever it is rashly driven or driven above permissible speed limit, and transmit the data to the concerned authority. For example, when the cab driver is driving rashly or beyond the speed limit a message would be transmitted to the cab owner or the cab agency stating this, or the police could monitor vehicles to check whether they are driven correctly or not[4].

**Introduction**:

Whether the driver is rash or not is one of the major concerns of the vehicle owners before appointing the driver. Present devices for detection of the same are costly as well as inefficient as they focus only on one parameter that is drastic speed changes. This project will be including one more parameter that is crowd conditions also, it will be available in less cost

## A. Technical Background

In present devices the detection of rash driving is done by considering the drastic speed changes by using accelerometer.When the speed changes go beyond certain limit the vehicle owner gets notification.Also on inserting throttle the speed can be restricted to certain limit[6].

## B. Proposed Solution

Public transport drivers, heavy vehicle drivers appointed by government officials, owners etc. get appointed on basis of licence only, detecting whether driver is driving safely or not is nearly impossible.
For this we will be making a mobile application and a web portal which will collectively provide graph of each driver (For

approx. 20 days) on basis of crowd conditions and drastic speed changes. By testing driver for specific time span, owners can decide whether to appoint that driver on permanent basis or not.

An application include traffic conditions along with the speed limits as an extra parameter.

Taking traffic conditions into consideration will make rash driving detection more precise.

The speed changes and crowd detection will be done using an IOT device which will be fitted in each vehicle and by analysing the data obtained the graph will be shown to owners.

Fig. 1.1 Our project consists of Raspberry pi3 and 2 sensors, gps sensor and hall effect speed sensor.
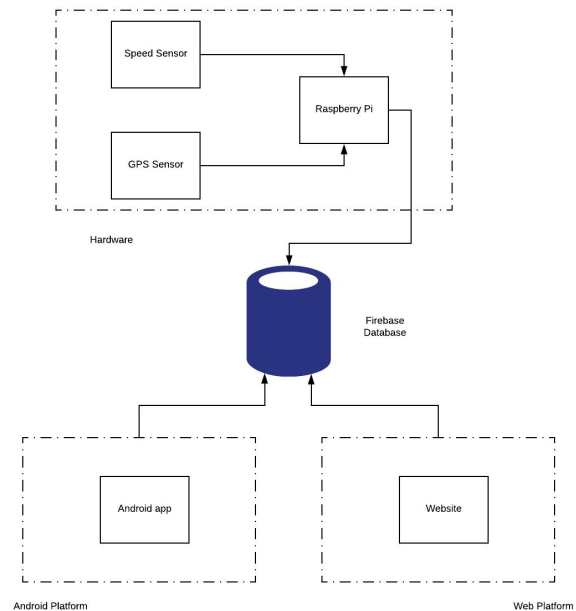
## C. Hardware implementation

The main component in the hardware will be the raspberry pi 3. Since multiple sensors are used in the device, raspberry pi was preferred rather than arduino. The sensors include speed sensor(Linear Hall Effect sensor) and GPS (NEO6MV2) sensor. The data collected from the speed sensor and GPS sensor is sent to the database and from the database it is accessed by the respective platforms. The account will be on android application and on the website. The code used in the

raspberry pi to send the data to the database is written in python and the algorithm

Is explained in the following section.



**Fig. 1.1** The Flow of the system

## D. Software implementation

The above diagram gives a brief overview about the overall implementation of the rash driving detection system. The software part implemented here mainly consists of the website and the android app. User(i.e. Owner) will have to login and he has to specify the details about the vehicle like number etc. along with the name of the driver driving the car. Then once logged in, the user i.e. the owner of the vehicle will be able to see the graphs, charts of the way the driver drove the car. Also owner will be able to monitor the road undertaken by the driver during the journey. Finally owner will get the idea that whether the driver is rash or not.

**Equations for speed calculations:**

T1:time of appearance of first high

T2:time of appearance of immediate next high

R:radius of shaft on which magnet has placed

$$speed = (2 \times \Pi \times R)/(T2 - T1)$$
$$(\Pi = 22/7)$$



**Fig. 1.2** The algorithm implemented

**Results:**

The testing was implemented on a prototype which was a RC car. The sensors were fitted to the car and the car was drove in all the conditions. For testing purpose we kept the location constant( i.e. crowded) and tested the car. Whenever the speed went above the expected speed it was recorded to the database successfully and the data was being displayed on the android app and the website successfully. At the end the owner can get an answer to the question that whether the driver of the car is rash or not!

**Conclusion:**

This project will be useful to detect rash driving and over speeding of vehicles. No device is currently available to detect rash driving or over-speeding and this project provides that facility. This project can further be extended to keep the data of each and every driver across India. The database can be maintained by the Indian Government, so that the licence of a regular rash driver can be cancelled accordingly.

Vehicle manufacturing companies should take up the initiative to embed this system into the vehicles, this can help in saving millions of lives. Also the traders and truck owners should use this system to find a suitable driver for their vehicle so that ultimately the society will be a safer place for every pedestrian.
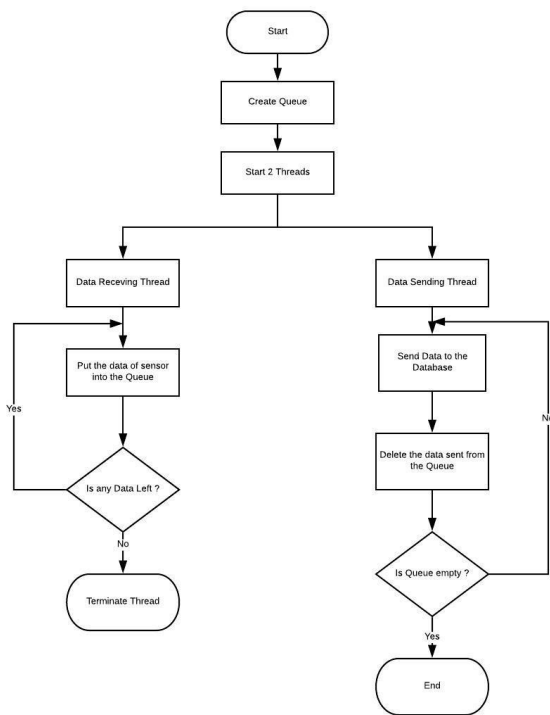
**G.1 References: Links**

[1]https://indiankanoon.org/doc/1270101/

[2]https://indiankanoon.org/doc/1402213/


[3]http://en.wikipedia.org/wiki/Traffic_collisions_in_India

[4]https://www.madamletmetellyouonething.com/rash-driving/

[5]https://timesofindia.indiatimes.com/india/90-deaths-on-roads-due-to-rash-driving-ncrb/articleshow/61898677.cms

**G.2 References: Papers From Conference**

[6]

**Name:** Overspeeding and Rash Driving Vehicle Detection System.

**Author**: Vangala Praveen Kumar, Kampati Rajesh, Motike Ganesh, Ivaturi Ram Pavan Kumar, Sanjay Dubey.

**Available:**

https://ieeexplore.ieee.org/document/7899206