

# VEHICLE IDENTIFICATION DURING COLLISION USING NETWORK SENSORS

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## ABSTRACT

About 1.24 million people die each year as a result of road traffic crashes. A lot of Hit and Run cases occur in India and around the world. There are 7 Hit and Run cases in every hour in India. Where the guilty runs away without being reported. So our system will help in such cases. In many cases no one takes the responsibility to take the injured to the hospital, so our system will notify the nearest hospital about the accident. The objective of this project is to design an efficient automatic authorized vehicle identification system by using the RFID Tag & Sensors. The developed system firstly detects the collision and using RFID tag it swaps information of the vehicle. And then resulting data is used to compare with the records on a database and data extracted from RFID Tag. And in database there can be specific information like vehicle's owner name, place of registration, or address, etc. If the ID and the number are matches with the database then it show the message "authorized person" else "unauthorized person". Both should be match with the database. If accident occur with any vehicles then system will send notification police, family and ambulance.

**Keywords:** - Data Mining, Sensors, RFID, Microcontroller.

## ARTICLE INFO

### Article History

Received: 28<sup>th</sup> March 2018

Received in revised form :  
28<sup>th</sup> March 2018

Accepted: 31<sup>st</sup> March 2018

**Published online :**

**1<sup>st</sup> April 2018**

## I. INTRODUCTION

Hit and run is the crime of a driver of a vehicle who is involved in collision with another vehicle, property or human being, who knowingly fails to stop to give his/her name, license number, and other information as required by statute to the injured party, a witness, or law enforcement officers. If there is only property damage and no other person is present, leaving the information attached to the damaged property may be sufficient provided the person causing the accident makes a report to the police. Hit and run statutes vary from state to state. It is not a violation of the constitutional protection against self-incrimination to be required to stop and give this information since it is a report and not an admission of guilt. Some hit and run cases are difficult to determine, such as the driver leaves the accident scene to go a block to his/her house or the neighborhood repair garage, and then walks back to the scene.

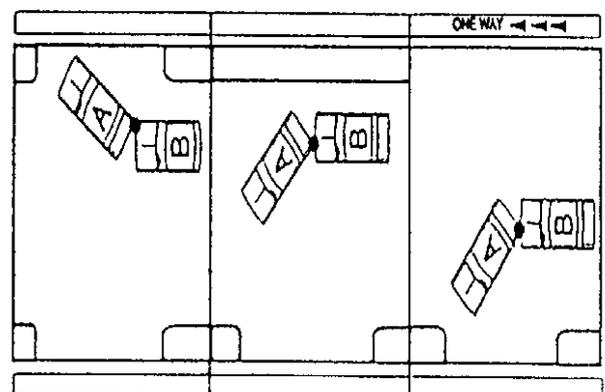


Figure 1: Different Types of Collisions

### a. Collision Detection

Collision occurs when two vehicles collide with each other. It generates the vibrations and damages the body of vehicle, as well as it may cause the death of vehicle's driver. The collision can be detected by the vibration that is generated.

Piezoelectric sensor is used to sense the vibration. When two vehicle collide each other, the Piezo electric sensor detects vibration on collision. After detection of vibration sensor sends signal to micro controller. On receiving signal from sensor the microcontroller activates RFID reader. The activated RFID reader reads the RFID tag of the other vehicle. Using RFID tag the information of the vehicles identified and it is swapped between those two vehicles (One would get another vehicle’s information).

b. Data Mining

Data mining is the technique of sorting through large data storage to identify patterns and establish relationships to solve problems using data analysis. Data mining is the process of analyzing large amounts of data stored in a data warehouse for useful information which makes use of artificial intelligence, neural networks, and advanced statistical tools to reveal trends, patterns and relationships. Data mining tools allow business market to predict future trends. Information generated through data mining is used for decision making. Data mining supports many different techniques for knowledge discovery and prediction such as classification, clustering, sequential pattern mining, association rule mining and analysis, sequence or path analysis. In our system we are using data mining for analyzing where most of the accidents/collisions are taking place, so that authorities can take necessary steps to avoid such collisions.

II. OBJECTIVE

Representing a feasible, and holistic approach, in order to overcome various issues and challenges faced by current system/victim of hit and run cases and to reduce casualties in Hit and Run cases by timely informing to nearest hospital. Another one is to prevent the future accidents by analysing the log of accidents in a particular area and overcoming the flaws in the current infrastructure.

III. PROPOSED METHODOLOGY

Primary goal is to modernize the present system and style of the new solutions for identification and registration of vehicles supported RFID technology and network sensors. Frequency identification technology, as a result of contactless manner of identification of things and objects, provides higher and safer solutions, particularly in conjunction with an accident detect system.

A. Proposed Algorithm

- Step 1-** When two vehicle collide each other, the Piezo electric sensor detects vibration on collision.
- Step 2-** After detection of vibration sensor sends signal to micro controller.
- Step 3-** On receiving signal from sensor the microcontroller activates RFID reader.
- Step 4 -** The activated RFID reader reads the RFID tag of the other vehicle.

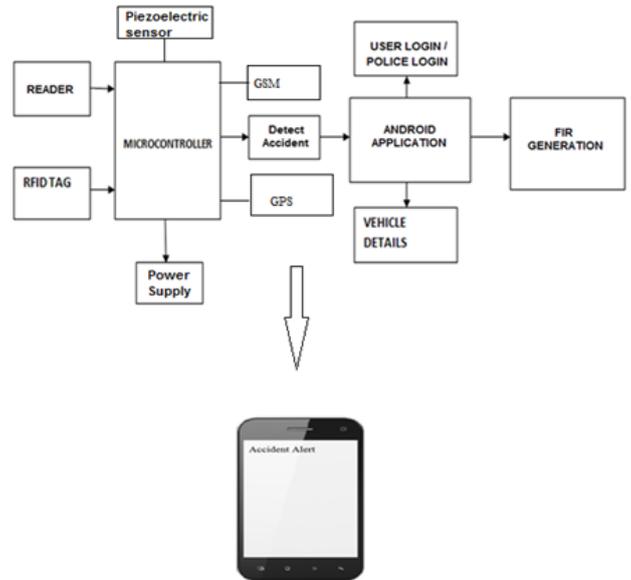


Figure 2: Proposed System Architecture

- Step 5-** Using RFID tag the information of the vehicles identified and it is swapped between those two vehicles (One would get another vehicle’s information).
- Step 6-** Then the mounted GSM module on vehicle sends the notification about the accident and it’s co-ordinates with the help of GPS system to the nearest hospital and their (vehicle owners) family member.

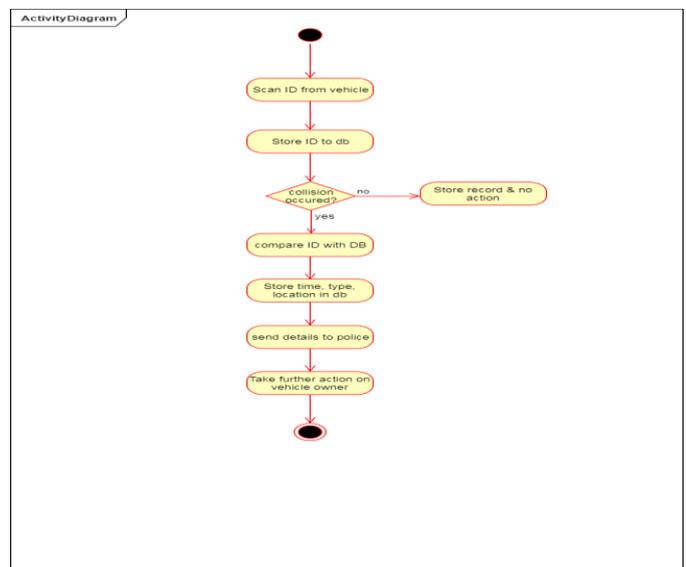


Figure 3: Activity Diagram

- Step 7-**A log about accident is generated and it is stored on server.
- Step 8-** The authorities can file a complaint about accident using these logs.
- Step 9-** Making use of these logs authorities can also survey on which road most of the accidents are taking place. So it

may also help for better construction of roads or deciding certain speed limit on such roads

#### IV. CONCLUSION

This paper has proposed a model to detect the collision and to identify the vehicles which collide on each other. This model will help to identify the vehicle owner information and later one can generate FIR. It will also notify the nearest hospital and the family of the injured whenever the accidents take place. The data related to accidents will be saved on the server. Hence using Data Mining we can predict and prevent accidents if at one place accidents are happening more often.

#### V. FUTURE SCOPE

In future we can have vehicles with in-built vehicle collision detection system. Vehicles can use obstacle sensors to detect any object present in the path. That object can be anything like human or another vehicle. Instead of RFID reader to read identification tags, LiFi can be used. LiFi uses light for transferring information. It creates an angular field of light so that the objects within that field can be identified. Future vehicles may have such algorithm that if vehicle crosses certain speed limit then speedometer sends signal that the vehicle has crossed the maximum speed limit and there is a chance of an accident. It is more like guessing collision may occur after certain speed limit on certain roads like in traffic vehicle cannot have speed more than 20kmph to 30kmph. On highways the vehicle cannot have speed more than 80kmph to 100kmph. It may cause collision

#### ACKNOWLEDGMENTS

This research was carried out under the keen guidance of Prof. Santosh A Darade.

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