

# RFID based vehicle identification during collision

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## ABSTRACT

*The RFID (Radio Frequency Identification) based impact recognition essentially utilizes crash sensors to identify a crash between two vehicles. Once an impact is recognized, RFID per users on both vehicles are initiated and they separate vehicle subtle elements from RFID labels. This framework makes it simpler for vehicle proprietors to find rash drivers in attempt at manslaughter cases. The points of interest extricated can likewise be utilized for protection guarantees, as court proof, and so forth.*

**Keyword :** - ARM7 , Collision sensor, GSM module, RFID reader & tag.

## 1. INTRODUCTION

In recent years, with the number of vehicles on the roads increasing exponentially, vehicle safety has become of utmost importance. The demand for auto-safety features and crash rating systems has gone up and this has led to the development of sophisticated technologies. The idea behind the development of RFID (radio frequency identification) based vehicle identification is that vehicle details can be exchanged during a collision and this makes it easier to track down the transgressor. This is a microcontroller based system and uses an RFID reader, tag and collision detector. The RFID (radio recurrence recognizable proof) based crash discovery essentially an impact between two vehicles. Once a crash is recognized, RFID per users on both vehicles are enacted from RFID labels. This framework makes it less demanding for vehicle proprietors to extricate can likewise be utilized for protection claims, as court. This project goes one step ahead by using this identification technology to track vehicles in cases of motor vehicle accidents. By using a collision sensor, an id system has been designed that is activated only during a collision. Radio frequency identification (RFID) has been used in a number of practical applications, such as improving supply chain management, tracking household pets, accessing office buildings, and speeding up toll collection on roadways. RFID is used to automatically identify people, objects, and animals using short range radio technology to communicate digital information between a stationary location (reader) and a movable object.

The reminder of this paper is organized as follows. Section 2 comprises Literature Survey. Section 3 consists of system description and explains function of each part of the system. Section 4 states applications . Section 5 gives us the result of the system. Section 6 and 7 comprises acknowledgement and conclusion of the system.

## 2.LTTERATRUE SURVEY

Shubham Swaraj el.at [1] Designed system for “*RFID Based Automatic Vehicle Identification for Access Control*. RFID (Radio Frequency Identification)” is one of the solid and fast strategy for perceive the material article. In the long-earlier the institutionalized labels are best when diverged from RFID because of their cost however now a day's

RFID are easily open and are more useful to use.. Paper is based upon security get to and Control structure using RFID and with GSM module.

R.Aishvaryalel.at [2] proposed “*Automatic and Effective Tracking of Hit & Run Misbehavior Driver with Emergency Ambulance Support*”. The Instantaneous development of innovation has made our lives simpler. On the off chance that a mishap has happened at a specific area and it is expected that two vehicles are included, then the vibration sensor set before these vehicles detects the vibration furthermore, gives the caution to the activity police control.

Sumit S. Dukare el.at [3] Explained about “*Vehicle Tracking, Monitoring and Alerting System*”. There are different difficulties experience in vehicle following, checking and cautioning because of insufficiency in appropriate ongoing vehicle area and issue of alarming framework. GPS (Global Positioning System) is most broadly utilized innovation for vehicle following and keep standard checking of vehicle. The goal of following framework is to oversee and control the vehicle utilizing GPS trans receiver to know the present area of vehicle.

Prathamesh Jagtap el.at [4] Designed system for *Toll Collection and Stolen Vehicle Detection Using RFID*. This paper proposed an RFID-based vehicle positioning approach to facilitate connected vehicles applications. When a vehicle passes over an RFID tag.

H. Khali, el.at [5]. Explain about “*Suitability of Passive RFID Technology for Fast Moving Vehicle Identification*”. It has been propelled by the accessibility of long-range uninvolved RFID labels that can be procured at a separation up to 35 meters. The investigation performed in this examination work highlights the principle qualities and shortcomings of existing hostile to impact calculations which accept a static RFID label populace and are not by any stretch of the imagination Three fundamental setups were investigated: one RFID per user per activity path, two RFID per users for every two movement paths and one RFID per user per numerous movement paths.

Jianqiang Wang el.at [6] Proposed for “*RFID-Based Vehicle Positioning and Its Applications in Connected Vehicles*”. This paper proposed a RFID-based vehicle situating way to deal with encourage associated vehicles applications. At the point when a vehicle ignores a RFID tag, the vehicle position is given by the precise position put away in the tag. The precision of RFID situating is checked experimentally in two autonomous courses with one utilizing radar and the other a photoelectric switch.

Saeed Samadi[7] proposed “*Application & opportunities for radio frequency identification (RFID) technology intelligent transportation*”. The technology can be applied in many fields. However, this paper focuses on the application of the technology in the transportation industry The use of RFID in Intelligent Transport Frameworks (ITS) is picking up prominence with its across the board use in the field of toll administration and the administration of the general transport segment

In above survey RFID Tags are used in transportation industry as Intelligent Transport System (ITS), automation of vehicle parking in malls/buildings, tracking laptops using Nox- TM4 etc. In our system we are using RFID Tags in vehicles during accidents which will extract all the information of colliding vehicle. This will help us in a hit and run case or tracking the other vehicle. We are using GPS for tracking location of the accident. GSM is used to send SMS about the accident with the location and vehicle details to the police, hospital and family/relatives of the concerned vehicle owner. Our system will help to investigate the accidents happens, so that no guilty person should walk away freely and everyone should get justice.

### 3. SYSTEM DESCRIPTION

In the following subsections, we will describe the system architecture, hardware components and software architecture.

#### 3.1 System Architecture

Above fig show the block diagram of RFID based vehicle identification during collision. It consist of various block the main block of this system is ARM-7 (LPC2148) this block is heart of this system though which controlling and monitoring of system is carried out. Various different blocks are connected to ARM-7 which is as follows:-

- a. Collision sensor.
- b. Global System for Mobile (GSM)
- c. RFID reader & tag.

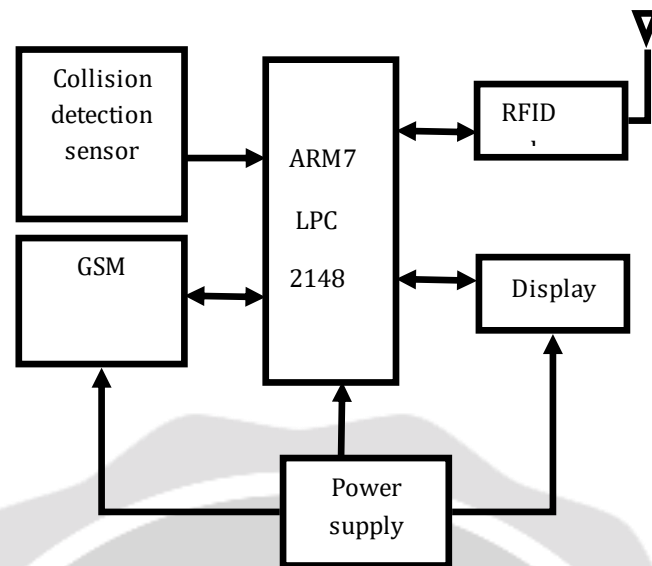


Fig.1 Block diagram of the whole system

### 3.2 Hardware Components

1. Arm 7 (LPC2148): The LPC2141/42/44/46/48 microcontrollers with real-time emulation and embedded trace support are based on a 16-bit/32-bit ARM7TDMI-SCPU, that combine the microcontroller with embedded high-speed flash memory ranging from 32 kB to 512 kB. A 128-bit wide memory interface and unique accelerator architecture enable 32-bit code execution at the maximum clock rate. For critical code size applications, the alternative 16-bit Thumb mode reduces code by more than 30 % with minimal performance penalty. Due to their tiny size and low power consumption, LPC2141/42/44/46/48 are ideal for applications where miniaturization is a key requirement, such as access control and point-of-sale.

2. MAX232: RS232 (Recommended standard-232) is a standard interface approved by the Electronics Industries Association (EIA) for connecting serial devices. In other words, RS-232 is a long established standard that describes the physical interface and protocol for relatively low speed serial data communication between computers and related devices.

3. GSM (Global System for Mobile): This module will send the coordinates received from GPS to the prefer number of a relative of visually impaired person. The GSM/GPRS Modem accompanies a serial interface through which the modem can be controlled utilizing AT commands. A radio wire and a force connector are given.

SMS: SMS is a region where the modem can be utilized to give highlights like:

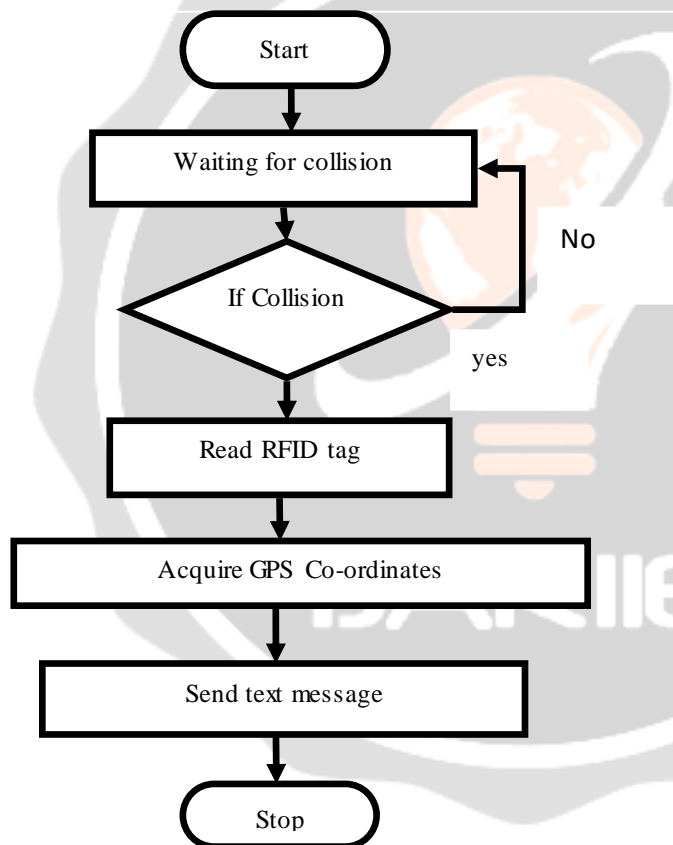
- Pre-stored SMS transmission.
- These SMS can be transmitted on certain trigger events in a mechanization framework.
- SMS can likewise be utilized as a part of territories where little content data must be sent. The transmitter can be a mechanization framework or machines like vending machines, gathering machines or applications like situating frameworks where the pilot continues sending SMS at specific time interims.
- SMS can be an answer where GSM information calls or GPRS administrations are not accessible.

4. RFID Module: RFID tags come in a wide variety of shapes and sizes. Animal tracking tags, inserted beneath the skin, can be as small as a pencil lead in diameter and one-half inch in length. The RFID modules are of different kinds. But 3 RFID passive tags are used which are placed in the three different speed limit zones. These tags get detected by the RFID reader when the vehicle enters into the zone as the RFID reader is fixed in the vehicle. So, when the vehicle enters the speed limit zone the RFID tag placed in that particular zone gets detected and displayed on the LCD like SCHOOL ZONE SPEED LIMIT 20KM/hr.etc

5. Collision Sensor: This project uses the piezo sensor chip, which converts applied pressure to voltage based on the intensity of pressure. The sensor is a thin strip of piezoelectric material on a circular metal plate. When stressed, it produces a voltage spike of up to 3V.

### 3.3 Software Overview

#### 4 A. FLOW CHART:



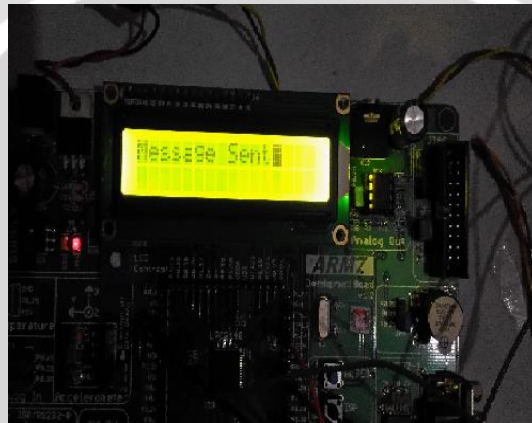
#### 4.APPLICATION:

- The RFID based vehicle identification system can be used to track down rash drivers in hit and run cases.

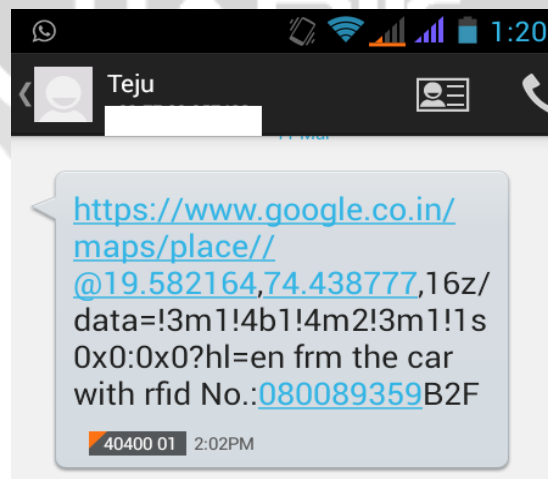
- It can be used for insurance claims when a vehicle has been damaged. The microcontroller of the system can also tap into the ECU (Electronic Control Unit) of the car to record the vehicle speed at the time of collision.
- This can serve as evidence in accident cases.
- This data can also provide driving patterns to a traffic police officer in case of any violation. Ultimately, this motivates people to drive safe.

## 5.RESULT

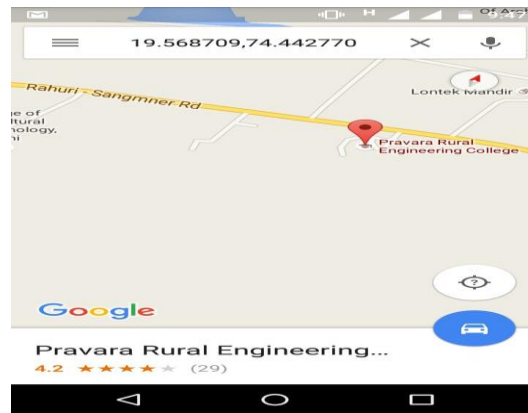
When the accident occur at any time any place. The information of RFID tag exchange between two vehicles. And message containing the location will be send to their relatives & care units.



**Fig. 1** Hardware indication



**Fig. 2** Shows that message send after collision.



**Fig. 3.** Shows the location of accident on Google map.

## 6.CONCLUSION:

It is helpful to be used track down rash drivers in hit and run cases .It also useful in traffic control.The use of RFID for vehicle identification has already been implemented worldwide. Moreover at the time of manufacturing of vehicles by insertion of RFID tag and readers it helps in exchanging the information of vehicles which get in collision. With the help of exchanged information police can track the criminals who lead to collision and a lso hospital, family of injured person get informed through the message and through this treatment served to the injured person as early as possible..

## 7.ACKNOLEGMENT

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