

# Detecting Accident using Smartphone and Get vehicle information using IoT Technique

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## ABSTRACT

Now day, road accident is widely happen during lots of problems like, rush driving, pothole, drunk driving etc. The existing system lots of issues and problem totally hardware based application with high cost. So this system propose new system that provides the widely used and utilizes smartphone sensing of vehicle dynamics to determine driver phone use. The given system design which can facilitate many traffic safety applications for quickly get help to the accident person as well as traffic. Our system uses embedded sensors in smartphones, i.e., accelerometers and gyroscopes, to capture differences in centripetal acceleration due to vehicle dynamics. Once any driver car accident is happen then this system smartphone application will activate and generate alert. If no any respond to the application then automatically send the notification to the nearest police station, nearest hospital and parent using the Knn algorithm. This project based on IoT Concept using RFID technique to detect the vehicle number plate information for verifying the police station to further process.

**Keywords:** Smartphone, Accelerometer and Gyroscopes, Camera, RFID Tag, Reader, ESP8266.

## ARTICLE INFO

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## I. INTRODUCTION

Now day's road safety as an important area for research. Action programmed has received a great deal of scientific attention in recent years. Progress has been made on several different fronts but in one area there would appear to be a serious lack of interest or, at the very least, a paucity of published information and informed debate. This area concerns the degree to which our thinking and hence our solutions are locked into a particular view of technology and society and thereby condemned to produce incremental improvements but no radical alteration in the magnitude or structure of the problem itself. In the case of road safety it can be argued that solutions which build on the acceptance of life motor car as a major and immutable technology will reinforce that position and generate a primary paradox: solutions designed to reduce a major negative effect of motorized transport contribute to the perpetuation of the circumstances which lead to road traffic accidents.

Traffic accidents are a major public issue worldwide. The huge number of injuries and death as a result of road traffic accident uncovers the story of global crisis of road safety. Road collisions are the second leading cause of death for people between the ages of 5 and 29 and third leading cause for people between 30 and 44. According to statistical projection of traffic fatalities, the two-year comparison of total driver participation in mortal crashes presented a three percent increases.

### Problem Statement:

Whenever accident being met, the nearby people call the ambulance. The problem associated with this is that the victims depend on the mercy of nearby people. There is a chance that there are no people nearby the accident spot or people who are around neglects the accident. This is the flaw in the manual system.

**II. LITERATURE SURVEY**

[1] Nagarjuna R Vatti, PrasannaLakshmi Vatti, Rambabu Vatti, Chandrashekhar Garde, "Smart Road Accident Detection and communication System", in this paper, the authors made an attempt to develop a car accident detection and communication system which will inform the relatives, nearest hospitals and police along with the location of the accident.

[2] Naji Taaib Said Al Wadhahi, Shaik Mazhar Hussain, Kamaluddin Mohammad Yosof; Shaik Ashfaq Hussain, Ajay Vikram Singh, "Accidents Detection and Prevention System to reduce Traffic Hazards using IR Sensors", The detection phase is carried out using IR sensors that could detect and alert the people by sending SMS using GSM module that contains predefined numbers and accident location using GPS module. Second Phase, Accident prevention is carried out using IR sensors by warning the driver about the neighboring vehicles when the distance between them is beyond the threshold value.

[3] Usman Khalil, Adnan Nasir, S.M. Khan, T. Javid, S.A. Raza, A. Siddiqui, "Automatic Road Accident Detection using Ultrasonic Sensor", Accident detection using ultrasonic sensor provides the facility to detect an accident not only in various street situations but also it might perform well under various natural conditions like rains.

[4] Yasitha Warahena Liyanage, Daphney-Stavroula Zois, Charalampos Chelmis, "QUICKEST FREEWAY ACCIDENT DETECTION UNDER UNKNOWN POST-ACCIDENT CONDITIONS", In this paper, the problem of accurate, near-real-time free-way accident detection under unknown post-accident conditions was addressed. A Bayesian quickest change detection formulation was proposed to optimize the trade-off between average detection delay and false alarm rate.

**A. Module Description:**

User:

In this module user register into the system. All information of user stored into database. User places the mobile in car.

Accident detection:

In this module accident is detected with the help of accelerometer sensor. After detecting accident, system will alert to user and take the response if user doesn't response to system then system take as accident.

Take photo:

If accident is detected then system takes photo from front camera.

Inform Nearest Hospital and police station:

System at the background searching the nearest location of police and hospital. After searching done system request successfully send to that police station. In this model user current location used to find nearest hospital and police station.

Inform to relatives and other user:

After detecting accident system inform to nearest user to avoid the traffic. System also inform to relatives by sending SMS. Relative's mobile number is store at user registration.

**B. Objective:**

- Automatically infirm to nearest police station and hospital.
- Required time is reduced.
- Reduction of paper work.
- Detect the Vehicle information.
- Detect vehicle information using RFID tag based on IoT.

**C. Algorithm:**

K-nearest neighbors KNN algorithm:

1. Determine parameter K = number of nearest neighbors.
2. Calculate the distance between the query-instance and all the training samples.
3. Sort the distance and determine nearest neighbors based on the K-th minimum distance.
4. Gather the category y of the nearest neighbors.
5. Use simple majority of the category of nearest neighbors as the prediction value of the query instance.

**IV. MATHEMATICAL MODEL**

• Let 'S' be the system

Where

$$S = \{I, O, P\}$$

Where,

- I = Set of input (information of user and accelerometer data)
- O = Set of output (detect accident and inform to nearest police station, hospital, user and relatives)
- P = Set of technical processes

Let 'S' is the system

$$S = \{.....\}$$

- Identify the input data S1, S2, ..., Sn

**III. PROPOSED SYSTEM**

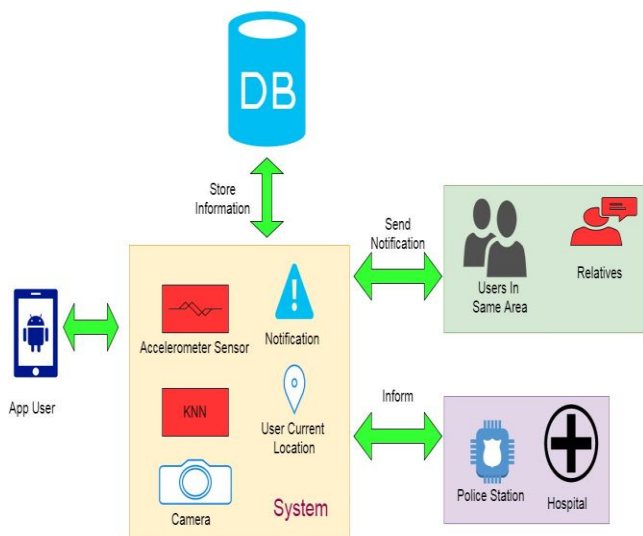


Fig 1. System architecture

I = { ( current location, accident photo, accelerometer data ) }

- Identify the output applications as O

O = { detect accident and inform to nearest police station, hospital, user and relatives }

- Identify the Process as P

Knn for inform to nearest police station, hospital and other user in same area

## V. CONCLUSION

Finally we conclude our proposed results show that the minimizing the overall cost of the project with better output. total time required to perform all the tasks, including the delivery of an SMS with the accident details, followed by providing the nearby police station and hospital details, also vehicle details from sensors and sending them an alert message of the user accident with exact location of user, is taking short time period.

## VI. FUTURE SCOPE

In future this module is extended using the IoT for health analysis. If any accident is happen then using GSM module SMS sent includes the current location using GPS module and current heart beat sensor.

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