

# Accident Avoidance and Device Control using Various Intermediate Devices in Wireless Technology

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## Abstract

This paper will show the importance of wireless technology in signal processing. This paper will mainly be developed to avoid the frequent accident between the vehicles and to control the home devices automatically by processing some signals. The wireless technology is to transfer the information from more than two points. In signal processing we extract some new information by processing the signals in various forms. Due to the advancement of technology we should try to control the home devices automatically using the NFC tag. Also in this paper we should try to trap the vehicles which tend to accident.

**Key Terms :** NFC, Bluetooth, GSM, zigbee.

## I. INTRODUCTION

The NFC tag is the wireless communication device which is used to communicate from the two end points. All the vehicles are fixed with the NFC card. When the vehicles are trap nearer to each other with in the limit it will send an alert to the driver so that it will prevent the vehicle from an accident. Also the GPS is attached with the vehicle and the vehicle will be embedded with the GSM system. If any of the vehicle met with an accident. Suddenly the GSM will send an SMS alert to the nearest hospital and the police station. And GPS is used to track the location of the accidental vehicle. This paper will also provide the immediate access mechanism to control the home devices automatically.

## II. EXISTING SYSTEM

In the existing system there is no proper detection to identify the accidental vehicles. Because no technology were implemented properly to identify the position of the vehicle. Although there is a chance to detect the accidental vehicle. There is no previous process to avoid the accident before it can be done. And there is no existing system to control the house hold electronic devices automatically. Either it will be controlled automatically or by circuit switching technology. And in this system lot of power sources will be degraded due the manual control mechanism. This will be leads to the wastage of time and money. It will also cause the various disorders like shortage

of circuits due to heavy voltage or long time consumption of electric charges.

## III. PROPOSED METHODOLOGY

In this proposed methodology the system will processed to control the number of accident. The proposed system is supposed to use the NFC tag, GPS and GSM system to avoid the accident in the roads. Also this system will focus on automatic control of home appliances using the various devices in wireless technology.

## DETECTION OF THE ACCIDENT

To detect the accident the accelerometer sensor will send a signal to the FPGA. The FPGA process the input signal and sends the appropriate output as it can be done in the programming.



Fig 1: Vehicle with GPS Attachment.

The GSM modem is a wireless modem which behaves like a dial up modem. The GSM modem will send and receive the data through radio waves. The GSM modem can process a number of SMS at a time. The global positioning system is used to track the corresponding location. The GPS will provide the latitude and longitude informations which will calculate the value of the altitude.

The FPGA contains the programmable logics that contain the circuit switching. The FPGA is used to implement the logic functions which will have the ability to update the function.

## Implementation Of NFC Reader In Vehicles

In this implementation process the NFC reader will attached to each vehicle. If the vehicle

will get nearer to each other within 10 meters it will send an alert message to the driver. So that the driver may get a caution about the accident. Even if the vehicle will be met with an accident. The GSM will suddenly send a request to the server. The server will send a SMS alert to the nearest hospital so that they can able to come for immediate recovery. And it will send an alert to the police station for the compliances. And it will send a SMS alert to the pre-configured mobile numbers stored in the server.

**Implementation of Device Control**

The NFC reader will be attached to the home and when the user will show the NFC tag to the NFC reader. The devices will be turn on automatically. It will be controlled based on the request of the user.

The home devices can be controlled in many ways Bluetooth, wifi, zigbee and GSM connections. Each connectivity has some different specifications.

**Bluetooth Transmission**

The Bluetooth uses the frequency hopping spread spectrum to transmit the radio waves in omni direction which provides more security and reliability. The Bluetooth is used to transmit the data between the two fixed devices. Also Bluetooth is capable of sending only the serial data. The possible applications will specify the general Bluetooth device will communicate with the other devices only if the device will consist of the blue tooth connectivity.

**Wifi Transmission**

The Wi-Fi uses radio waves to transmit the data through the electronic devices. The initial speed of Wi-Fi is upto 1mbps to 2mbps. In the Wi-Fi it will have the access point. Using that access point we can connect the internet. It will provide the interoperability between the devices.

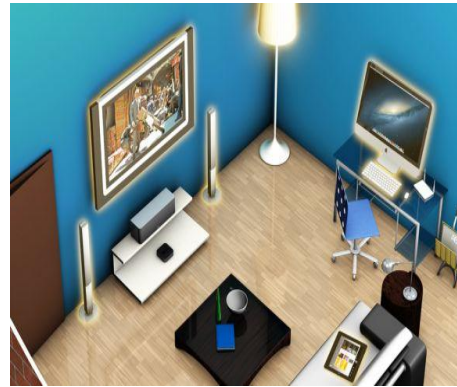
**Zigbee Transmission**

The zigbee is used to transmit the data to the longer distance. In zigbee technology it will transmit the data through the intermediate devices. Which will be provided to the high level communication protocol. The zigbee devices can transmit the data over the long distance by passing a data through the mesh network.

**GSM TRANSMISSION**

In the GSM system it will send an SMS alert for the home security for the pre-configured number. The GSM system will provide the two subsystems for the security protection. The first aspect is the system will be capable to provide the SMS alert to the home security. It will send an alert to the corresponding person when the condition of the home appliance will be changed from its normal condition. The second aspect it will allow the security that will detect the intrusion and it will allow the GSM system to

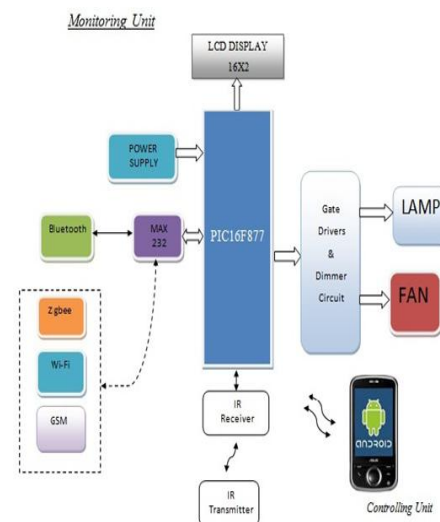
generate the SMS automatically that will helps to create an alert to the user. So that they may intended to provide the security for the devices.



**Fig 2: Automatic Control of Home Devices.**

Using these wireless technology this paper will take the GSM system to control the home devices. For transmission rate refer annexure 1

This paper were introduces the home automation using the different wireless technology. All the wireless devices will be connected to the power supply and it will be connected to the transmitter. The components are connected through the wireless devices. The technology is used to monitor the devices according to the programming criteria. In this the user can interact with the android phone it will send a signal to the ADK from there it will control the home devices.



**Fig 3: Controlling Mechanism of Home Devices**

**IV. CONCLUSION**

This paper provides a solution to avoid accident which have done frequently in the busy world. And the vehicle will be prevented from the Accident using the GSM system and NFC card

reader. It will also provide a solution to control the home devices automatically.

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**ANNEXURE -1**

**Table 1: Comparison of Wireless Devices**

Specifica-tion	Wi-Fi	Zigbee	GSM
Standard	802.11b	802.15.4	ETSI (cell phone)
Frequency	2.4 GHZ	2.4 GHZ	900 MHZ Or 1800MHZ bands
speed	11-50 mbps	20-250 kbps	10-35 kbps
Range	100-1km	10- 100 m	10-35 km
Advantage	Low cost & more security	Low cost & moderate security	Moderate cost & more security
Disadvantage	It is more complex	Lower data rate	Low competence
Power	medium	Low	high