

# Smart Phone Accidents Prevention System

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**Abstract-** In the past few years, Smart Phones have become very popular all over the world. Almost each and every person from any corner of the world have smart phone with them. They have become essential part of lives. However with beauty of technology these smart phones have also become a reason for lots of road accidents (sometimes eventual death) In this paper I am presenting a system which will prevent the dangerous and life threatening accidents due to smart phones. This system will help in reducing the number of accidents every year due to smart phones.

**Keywords –** Accelerometer, Sleep Mode, Timer, Set Point, GSM Module, Proximity Sensor

## I. INTRODUCTION

The accidents and addiction due to mobile phones is increasing day by day. About the past few years the accidents due to smart phones have increased by 10 percent. About every year around 1.4 million people have been killed due to overbearing cell phones.[5] Very few researches are carried out to find the number of people who are victims of accidents due to it. Nowadays most common cause of accidents is due to using phones while walking.

Especially this is affecting young children, who play games and speak on phone while walking. Addiction on the other hand is also on the rise due to it. Especially today's youth are just stuck on phone the whole day. The smart phone accidents prevention system aims to reduce and prevent these problems. This system will sense the motion of the person walking or is standing and will react accordingly. If the person is standing and using phone, no action will be taken against the person.

However If the person is using phone while walking the system will send notifications to person first on the phone and if the person ignores it, the phone will go to sleep mode automatically after 10 secs. Phone will turn on again once the person stops walking. This will ensure the safety of the person and will prevent accidents.

## II. DESIGN REQUIREMENTS

**1. Accelerometer ADXL335-**The accelerometer will sense the motion of the user. A predefined set point will be used to check the motion of the user. If the user goes beyond this point it will be sensed as motion while using and the notification will be sent to user to not use while moving.

**2. Arduino uno-** This prototype makes use of Arduino uno to perform this operation. All the data from accelerometer and timer will be sent to Arduino and Arduino will send commands accordingly.[2]

**3. Lcd screen -**LCD screen will be used to emulate mobile phone in this case. The Arduino will send commands to the LCD and LCD will react accordingly. If the motion is detected it will turn off.

**4. Timer -**Timer plays an important role in this project. When a notification is sent to user and the user ignores it, timer is activated and depending on the value of timer (10s) the LCD will be turned off automatically (after 10 secs).

**5. Proximity sensor-** This sensor will be used to detect whether a person is speaking on the phone while walking or driving.[4]

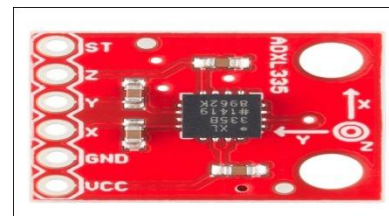


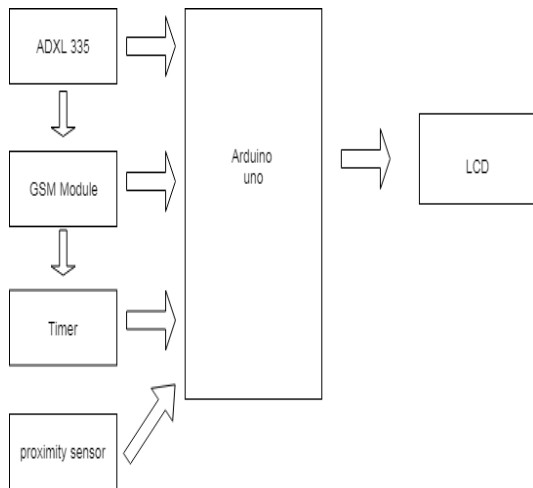
Fig. 1 ADXL335



Fig. 2 Arduino UNO

**6. GSM module-**The GSM module is responsible for sending notifications on the phone.[3] The notification will only be sent if the user is using phone while walking or driving.

### III. BLOCK DIAGRAM



Block diagram of phone accident prevention system

Fig. 3 Block diagram of System

The above is the block diagram of smart phone accidents prevention system project. Here I have used Arduino uno for controlling the process and all the necessary design components. Here the data from the components is given input to the Arduino and the output is the status of the LCD display. The accelerometer will if detects motion above threshold (set point ) it will cause GSM to send notification. If the notification gets ignored it will activate the timer and then eventually if user doesn't stop walking or driving the phone will go in sleep mode. The proximity sensor will come into action if the user starts speaking on phone while walking or driving. If the proximity sensor detects user holding phone near to his ear while driving it will again activate the timer and mobile will go in sleep mode .

### IV. WORKING OF THE SYSTEM

There are 3 scenarios in this system. Lets check one by one

**1. Person using phone while walking or running-** A 'set point' of motion will be set in the accelerometer (ADXL 335).when the person starts walking the set point will be reached and the person will get notification to warn him from using mobile phone while walking. If he ignores it the timer will set to 10 secs and after 10 secs the phone will be put sleep mode( also called auto lock) unless the user stops. if he speaks on the phone while walking proximity sensor will send sense it and appropriate action will be taken.

**2. Person using phone while driving -** There will be another set point as well to detect whether user is sitting in the car. Usually speed of car is very high as compared to walking. so a set point corresponding to speed of car will be set . if that set point is reached all the functions will remain same as above except here phone will not go in sleep mode. only notifications will be sent. This will allow user to speak on the phone by putting it on speaker and also allow passengers to use their phones However if the person is speaking on the phone without using speaker mode the phone will go in sleep mode.

**3. Exception for Google Maps and other emergency apps (usually while walking)-** There are times when there is a need to use google maps on the phone. There will also be set point for using google maps. Obviously this set point will be smaller than the set point for walking speed. This speed will be 2 times slower than normal walking speed which will make using google maps or emergency apps safe to use and prevent accidents.

### V. FLOWCHART

Below is the flowchart of this system. The flowchart describes the overall process that takes place in this system. The overall first step here is the monitoring of the process. While monitoring the system tries for any of motion detection taking place while using the phone. Due to this 3 conditions arise :

- No motion detected .
- Motion detected while walking .
- Motion detected while driving .

The answer to the first condition is obvious that no notification will be sent and mobile will keep on working. When the second condition arises a notification will be sent by Gsm module. here again 2 conditions arise whether notification is ignored by the user? If no then the flow goes into first condition and phone keeps on working. If yes then timer is activated and if user doesn't stop walking in this time span the phone will automatically go in sleep mode after that time.

When the third condition arises a notification is sent to user to warn about using phone. but here user can ignore the notification as there are times when user needs to speak on the phone and cannot stop the at that instant of time. So here user is allowed to use phone only in speaker mode . however if he speaks while not putting in speaker mode the timer will activate and the phone will automatically go in sleep mode after that time. (almost no one uses apps except google map while driving so anomaly of user using apps on phone while driving is ignored ).

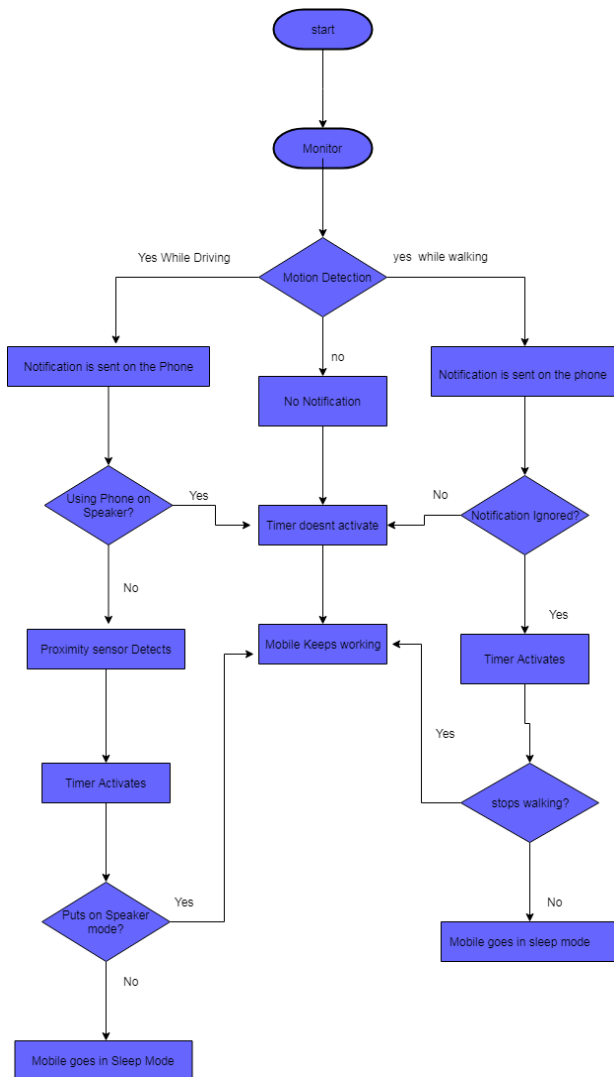


Fig. 4 Proposed Flowchart of the System

## VI. FUTURE IMPROVEMENT AND CONCLUSION

This system effectively prevents dangerous accidents due to smart phones. In the future this project can be modified into real life system by replacing LCD by smart phone. the main controller similar to functioning of arduino will be included inside the phone and will operate internally. All the sensors used in this project will be included inside the phone .This system can be made even more accurate by adding more sensors like RFID to it which will increase its overall capability.[1]This system in future will save lots of lives that are lost due to mistakenly using mobile phones at wrong time and wrong place . it will not only save lives but also make people more aware and cautious around their surroundings. So we can conclude that this system will play a pivotal role in saving people lives .

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