

SMART VEHICLE USING EMBEDDED SYSTEM

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Abstract - Safety is an important thing in the modern world, especially during driving. In day-to-day life we hear about a lot of deaths because of the accident. Nearly three persons died in every 10 minutes in road accidents across India last year. Totally there are 4,64,910 road accidents were reported during the year of 2017. There are a lot of accidents during driving. Drunk and driving is the major cause of the accident in present days. There are a lot of technologies are introduced to avoid accidents happened due to the drunk and drive. It is our responsibility for caring for the people around us. Major accident occurs by using mobile phones while driving. Jammer is used to overcome these kinds of accident. Whenever the mobile rings are detected by ring detector jammer is turned on during running condition. Hence, the mobile and base station not able to transfer the signal with each other. So the drivers not able to use the mobile-phone while driving. An ultrasonic sensor will use to prevent the accident. It will sense the object, which is coming in front of the vehicle to avoid the accident. If any object is sensed then it will automatically slow down the speed. Fingerprint sensor is fixed to avoid the theft. Whenever the registered person turn on the key and fingerprint is sensed then it will automatically start the vehicle as self start.

Key Words: Jammer, Arduino, Fingerprint sensor, ring detector, Interference, Ultrasonic sensor.

1. INTRODUCTION

In India there are at least one accident is occurred in every five minute and it cause many death in road accident. Road accident prevention is achieved by improving the design of Roads, sharing the information about use of the seat belts, wearing helmets, avoiding drunk and driving, using mobile phone while driving and by reducing the speed. Everyone should be aware of the road safety also spread the awareness about the road safety measures. It is our responsibility for caring for the people around us. Introduction of modern technology can reduce the number of accidents compared to the past decades. There is a lot of technologies are introduced in the automobile. But still there is a challenge for mobile phones using while driving. Cell phone use while driving has become a leading cause of vehicle accidents over the last decades. Usage of mobile phones while driving increases the risk of drivers to causing an accident. To avoid accidents because of drinking and drive by check whether the driver uses alcohol or not using alcohol sensor. Jammer is used to avoid the mobile-phone usage of mobile-phone while driving. Motor vehicle theft is a major problem in day to day life. In order to avoid these

problem securities is provided by biometrics access to the vehicle in terms of the fingerprint.

1.1 Literature Survey

In today's world there is a lot of road accidents we are heard. To overcome these kinds of problems, a lot of projects are done. Speech recognition technique is the best embedded solution, but the noisy environment is the biggest challenge in the speech recognition. The proposal of multiple authentication systems may decrease the above problem. Hence robust speaker verification system is installed on a server which is more accurate and small footprints embedded speaker verification system installed in a vehicle. Then the output from both of the speaker is connected to verify the user robustly. In day to day life the number of mobile users increasing. There is a need to disable the mobile phone in some places where it is disruptive for that specific area. The design and development of the GSM Mobile jammer with a solution for the problems of complexity and cost, based on jammer designs. A fingerprint sensor which is integrated with fraud detection and fingerprint sensing to avoid spoofing with an artificial (fake) finger is presented. Fingerprint identification with the help of capacitive fingerprints sensing gives the low-level user-authentication systems. Combining a capacitive sensor with the fraud detection capability is important in order to provide security and capture the fingerprint of the unauthorized person.

1.2 Proposed System

Automated verification or identification of individuals depends on their unique physiological characteristics such as fingerprint, iris and face recognition are the biometric authentication. In this system Fingerprint sensor is used for authentication. Initially, owner's fingerprint should be preprogrammed. The registered people can easily access the vehicle. Through this unauthorized person not able to start the vehicle without the knowledge of an owner. Ultrasonic sensors are measure the distance by using sound waves. The sensor head emits the ultrasonic wave and receives the wave reflected back from the speed breaker. An ultrasonic sensor measures the distance to the speed breaker by measuring the time between emission and reception. Whenever the speed breaker is detected then the buzzer will indicate to alert the driver. Using mobile phones during driving is the biggest problem in day to day life. It is danger to their life as well as the neighbor. It is necessary to avoid the usage of mobile-phone while driving. Jammer plays a major role to

block the signal between base station and mobile. Ring detector will detect the ring and send the information to the controller. Then controller [12] turns on the jammer. Hence, whenever the ring is detecting during running then the jammer is turn on for one minute. By this way driver cannot use mobile phone during driving.



Fig -1: Block Diagram

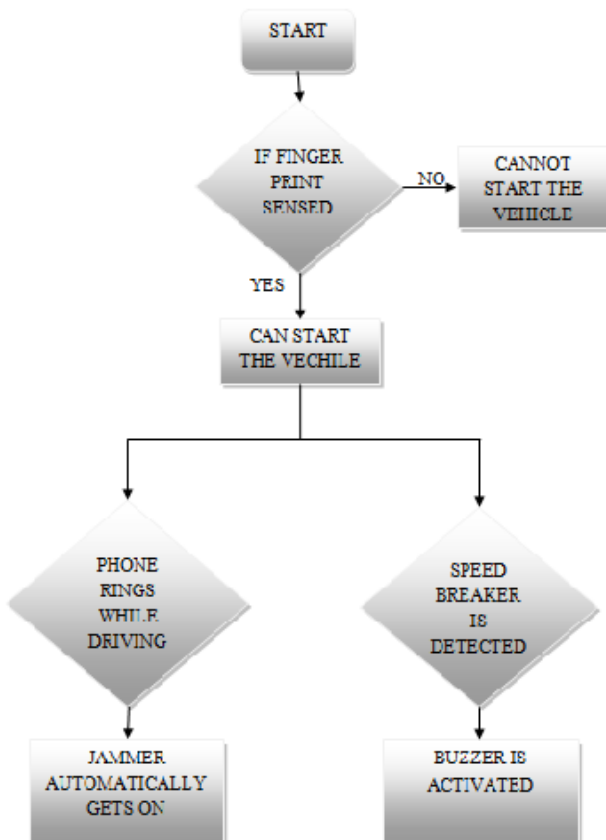


Fig - 2 : Flow Chart

2. System Implementation

ARDUINO:



Fig - 3 : Arduino uno

Arduino is open-source hardware. Arduino[12] [13][14] is a microcontroller which are pre-programmed with a boot loader that it simplifies the way of uploading of programs to the on-chip flash memory. The default boot loader of the arduino Uno is the optiboot bootloader. Program codes are loaded to the board via serial connection to another computer.

ULTRASONIC SENSOR:

An ultrasonic sensor uses sound waves to determine the distance to the object from the sensor. It can measure the range from one inch to 13 feet (or) 2 cm to 400 cm. It contains the transmitter and receiver module. By measuring the time between the transmission and reception we can find the distance of an object.

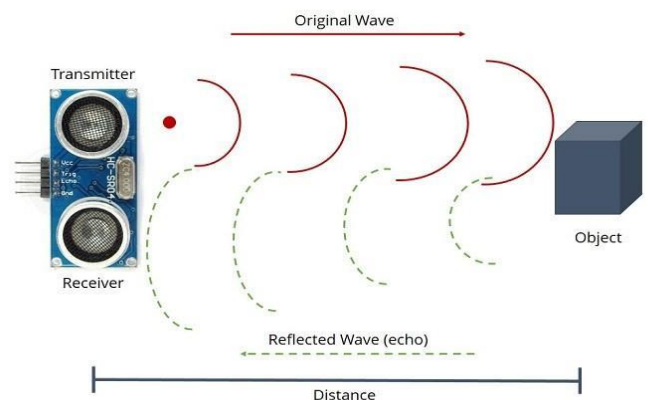


Fig - 4: Ultrasonic Distance Measurement

FINGERPRINT SENSOR:

Different technologies are available to capture the fingerprint of the person which is unique. There are two types of fingerprint sensors are available 1) optical scanners & 2) capacitive scanners. Optical scanners use the lenses which reflect light onto CMOS sensors then it convert the light into an electronic signal.

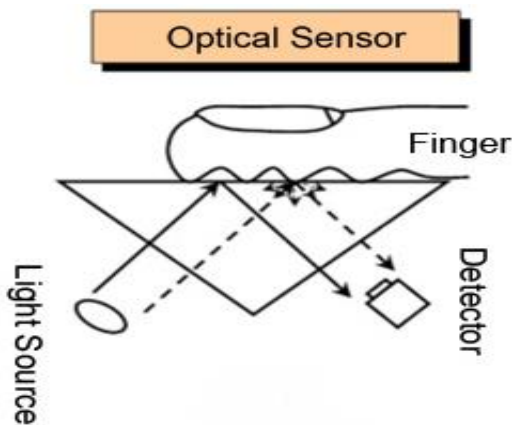


Fig - 5 : Fingerprint Scanning

RING DETECTOR:

Ring detector is a device used to detect the presence of activated mobile phones even in the silent mode. Whenever the circuit detects the incoming and outgoing calls then it will send the information to the arduino [12] [13].

JAMMER:

Jammer is a device which will block the signal between a mobile and base station. It will create the interference between the base station and the user by using the same frequency as the mobile frequency.

CIRCUIT DIAGRAM OF JAMMER:

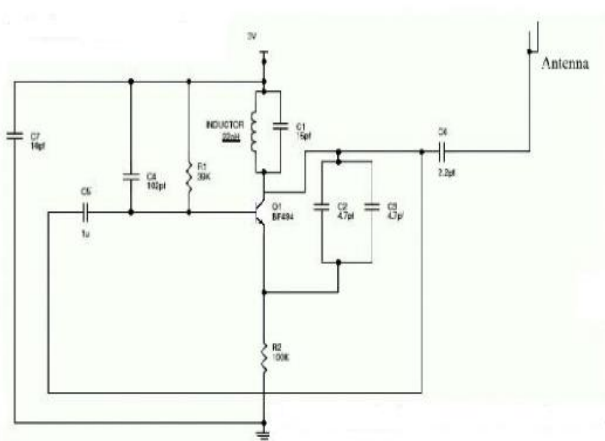


Fig - 6: Jammer Circuit

3. CONCLUSIONS AND FUTURE WORK

In this paper we proposed Smart vehicle in order to avoid accident because of distracting driving by mobile phone use. In India talking on the mobile phone, while driving is illegal. According to section 177 of the Motor Vehicle Act, 1988 distracted driving is considered as crime in many countries.

Even though

there is a lot of laws proposed to avoid talking on the mobile phone while riding no one is ready to follow. So that we proposed a modern technology in the vehicle for human safety by using Jammer

and ring detector with arduino controller. Speed breaker indication is the necessary one especially travelling at night. In the absence of bright white strips on the Speed Breaker cannot be identified by the vehicle users during night travelling that leads to accident. It can avoid by using Speed Breaker alarm with Ultrasonic detector. Fingerprint authentication is a necessary one to avoid theft. It can avoid by using Speed Breaker alarm with Ultrasonic

detector. Registration of new person's detail is little difficult. This difficulty can

be reduced by introducing the app to register fingerprint and mobile number of the new person.

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