

Design and Functional Verification of Car Locking Alcohol Detection Model

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Abstract—Currently almost of the public having an own vehicle, theft is happening on parking and sometimes driving insecurity places. The safe of vehicles is extremely essential for public vehicles. Vehicle tracking and locking system installed in the vehicle, to track the place and locking engine motor. The place of the vehicle identified using Global Positioning system (GPS) and Global system mobile communication (GSM). These systems constantly watch a moving Vehicle and report the status on demand. When the theft identified, the responsible person send SMS to the microcontroller, then microcontroller issue the control signals to stop the engine motor. Authorized person need to send the password to controller to restart the vehicle and open the door. This is more secured, reliable and low cost

Index Terms—Vehicle Tracking, Locking, Microcontroller, GPS, GSM

I. INTRODUCTION

Drunk driving is one of the worst scenario now a days occurring on a massive scale leading to biggest destructions in many families and also is a big problem for government to establish a good traffic system.

Due to drunk driving only about 11,000,00 people lost there life in Delhi and Uttar Pradesh last year which is a large number and will increase if no actions have been taken.

Government is taking several steps introducing several rules and restrictions in managing the traffic system, but cannot play with the mindset of drivers and is unable to reach on a particular goal.

To reduce this problem I myself take the initiative and tried my best to solve this what I am introducing is car locking system by alcohol detection.

Car locking system is basically embedded in car

system and is connected to engine of car directly.

This technology also sends message of your location by gps calculation to your relatives when it detect alcohol.

II. LITERATURE STUDY

Previously Nissan a reputed company having a good market had tried to place a system in there newly designed cars. A system which is using alcohol detector manually. It was like when a person sits in a car then he or she has to take the alcohol detector in his hand after rotating the keys and take that device in his mouth and breath with a good pressure for three times then it use to check the value of ethanol level on the breath and gave the readings.

If the reading is above the set point then the car will not start.

If the reading is below then its ok and car will start quickly and you can drive.

Now from here the main problem starts or we can say the drawback of the system comes into existence the problem is that if one of my friend is travelling with me and I am drunk then at the time of ignition what if my friend pass out the alcohol detection process and then after starting the car I sit on the driver's seat and drive the car.

So in this manner there is no use of this particular project and the system fails completely.

The biggest problem was that we are using the system manually due to which car system can be fooled. And one more problem was that if the alcohol detected then the car will not start so there is no way for that person to reach his way.

III. RELATED WORK

Several research efforts have been carried out to improve the efficiency, security, and usability of car locking systems, especially with the transition from traditional mechanical locks to electronic and smart systems.

A study by researchers on an Arduino-based keyless entry system proposed a Wi-Fi-enabled locking mechanism that allows users to control door access remotely via the internet. The system demonstrated ease of use and low-cost implementation, making it suitable for smart vehicle applications.

Modern vehicles widely use Remote Keyless Entry (RKE) and Passive Keyless Entry and Start (PKES) systems, which rely on radio frequency (RF) communication between the key fob and the vehicle. These systems enhance user convenience by enabling automatic locking/unlocking and push-button ignition. However, they introduce significant security concerns.

Research has shown that PKES systems are vulnerable to relay attacks, where attackers extend the communication range between the car and the key fob to gain unauthorized access. A study demonstrated that such systems can be exploited using low-cost hardware to track or unlock vehicles, raising serious privacy and security issues.

To address these vulnerabilities, several solutions have been proposed. One approach involves two-way authentication mechanisms to prevent replay and relay attacks in keyless entry systems. This improves security by ensuring mutual verification between the vehicle and the key.

Another research direction focuses on context-aware systems, where smartphone sensors such as accelerometers and barometers are used to detect user proximity and activity. This helps ensure that unlocking occurs only when the legitimate user is physically near the vehicle, thereby mitigating relay attacks.

In addition, cryptographic enhancements have been explored to strengthen system security. Lightweight encryption algorithms and adaptive communication protocols have been proposed to protect against replay, impersonation, and signal interception attacks while maintaining low computational cost.

Recent studies also investigate advanced technologies

such as Ultra-Wideband (UWB) and machine learning for precise key localization, further improving security by accurately determining the position of the key relative to the vehicle.

Overall, the literature indicates that while modern car locking systems provide convenience and automation, they require continuous improvements in security, authentication, and communication protocols to counter evolving cyber threats locking systems provide convenience and automation, they require continuous improvements in security, authentication, and communication protocols to counter evolving cyber threats.

IV. SOLUTION

The solution is that what if we place an initializer near to our steering wheel in car which covers only about driver area and it basically starts when the engine start and stops when the engine stops directly connected to engine system.

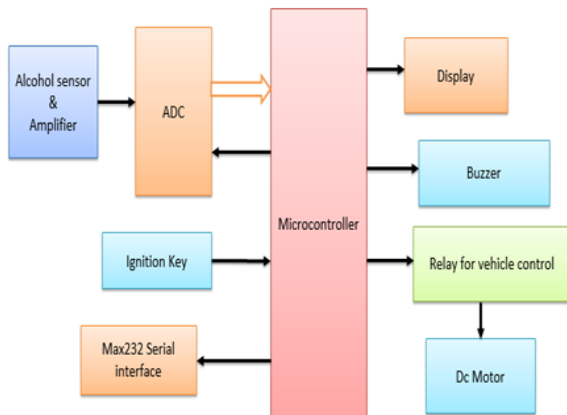
and for drunk person to reach to his destination the solution is that we going to use GPS system system and GSM model in this project connected to this alcohol model then whenever the system detects the alcohol intensity higher than the GPS model will calculate the latitude and longitude and then using GSM model it send message to that number which we had saved in our GSM sim so in this way the drivers problem to reach to his destination got solved and the relative will be also aware of his or her person.

V. DESIGN OF PROJECT

For designing this project we need various devices and by connecting them logically and by programming well we can only be able to run this system.

The various devices to be used in this system are-
Power supply (transformer)

- gsm -sim model
- gps vk-16e 66 channel gps model
- alcohol sensor
- buzzer
- two driver ic
- at89552 microcontroller
- reset button
- crystal
- mcp3201adc



ALCOHOL DETECTION WITH VEHICLE CONTROLLING

The design of the project will work accordingly to programming that we going to burn in the microcontroller. The microcontroller is in between which basically gives the instruction to various devices to work and stop and perform at the time of there need arise.

VI. FUNCTIONALITY OF PROJECT

First we have to give supply to gsm model because to have network signals from the tower and to activate the sim, then just check the signals by calling on that particular number. Now give power supply to the transformer or to the main project now after giving power supply to the lc will display that gsm model detected so when the power is on so-

- If there is no alcohol detection in the alcohol sensor then “no alcohol detected” is displayed on the LCD and the engine starts and process goes on.
- If the alcohol is detected then using gsm GPS it will calculate the latitude and longitude and using gsm model it send SMS to the predefined number that “alcohol detected at this latitude and longitude” but before sending the SMS the engine will stop down and the buzzer will on and then the gps model comes into action.

VII. CONCLUSION

Conclusion made out from this project is that it is effective in many ways-

- Helps tp built a safe traffic system

- Make us aware before having a drink that you cannot drive Saving many lives
 - Keeping your family aware of your location and the state in which you are
 - Booning technology to a greater extent
- Basically Nissan had tried to implement this idea before but got failed due to various reasons. so by keeping the emerge of transport system and rush on the roads in mind we have to try this and previously when air bags got introduced who knows that one day they will be mandatory in all the cars for safety.

VIII. FUTURE SCOPE

As every year the number of cars increases to double so there is a great demand of this transport system in future like in bus, school van, trains and in various means so to avoid the accidents we have to try this technology so to have a good and safe life.

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