International Journal of Future Generation Communication and Networking
Vol. 13, No. 3s, (2020), pp. 1519–1523

Anti-Theft Car Security System

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Abstract

Recently, in the last few years, it has been noticed that the theft of cars and the use of stolen cars in suspicious acts by robbers has been increased. So, systems plan is to reduce the ever-committed crime of stealing cars. Requirements are Fingerprint sensor ,8051 Microcontroller, Buzzer, Keyboard, LCD display, Capacitors, Resistors, Transistors. These will thus help us in creating a steal proof vehicle with the help of card key systems and authentication systems. When the car owner comes near the car with the card key, it will sense owner's presence within 10 feet of car sensor and that will be the first step of authenticity. The second step will be the card key system being activated by sensing the card by the sensors on the door of the car. It will thus help in showing the car that the car is being opened and the car will make a beeping sound. The third and final step will be the fingerprint authentication which will confirm that the person driving the car is the owner himself.

Keywords- *Intelligent car security system, RFID, Microcontroller, Fingerprint sensor.*

I. INTRODUCTION

In today's world, People have advanced to an extent that, everything is based on convenience. In this era of technology, curses come as a price to pay for these boons in order to keep balance. One of the curses this technology offers is in the form of security regarding technological devices. One of this technological aspect is transportation and mobility. In simpler words, vehicles play an important role in our day to day life. So, while systems are able to keep gadgets and other marvels of technology with us all time, Vehicles are an exception. It is the reason why vehicle thievery is a great threat to the society. It happens very often and still, are unable to find ways to stop it and cannot even react to what has just happened because people find ways to steal things the very second, they are released, so to prevent this, preventive measures need to be taken. users often say that vehicle protection should be at its peak but what measures should be taken? So, to find out, first find the ways of our car being stolen and as our research says, biggest of them is user identification. With the usual key, anyone can open anyone's vehicle without the owner knowing. So, user identification is the main problem here, which can be resolved by using the proper internet used methods so that the car recognizes its driver. For that system can use the concept of IoT and fingerprint sensors so the car can recognize its driver. user will have to put the fingerprint sensors inside the car's door, so when anyone other than owner or the person with fingerprint registered tries to open the gate, the buzzer will start and the car will turn its emergency mode on which is, alarms, sirens and a security text to the driver's mobile phone.

ISSN: 2233-7857 IJFGCN

2. LITERATURE SURVEY

Nowadays, car thievery has become a major challenge for the society as the security systems installed in the cars nowadays are way old. User can see many a times, that the lost cars are never retrieved back. So, to stop this, introducing a new security mechanism with the help of RFID sensors, card system and fingerprint readers. The technique going to be used here is a mixture of traditional technologies like key cards and advanced technologies like motion sensors. It will work in the following way:

Lei Lin, Wu Xinghao, Zhao Yongshin, Qui Jifan [1] developed the security system starts with a motion sensor which will activate other security systems in order to be ready for authentication. This will be done when a person will come inside the ten feet range of the car. It will let the car know that someone is about to open the car. Abu Taher Noman, Samzad Hossain, MD. Shariful Islam, Mohammad Emdadul Islam, Nawasher Ahmed, M A Mahmud Chowdary [3] developed the system which will be using the card reader strip installed on the car door and the card with RFID sensor which when touched by the card will know that it is correct key. But what if the person using key card isn't the owner? Here comes the third part of our security system which will be fingerprint system mounted inside the car handle. It will convince the car that the person opening the car is someone who has registered the fingerprint meaning, he/she is a trusted person. Anyone other than the person authorized to open the door will lead to the car beeping sirens and an alert will be sent to the owner.

3. SYSTEM ARCHITECTURE DESIGN

A. Hardware and system design

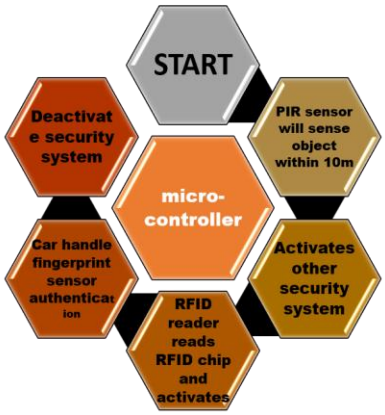

Fig.1 system design for car antitheft

Mithileysh Sathiyanarayanan, Santosh Mahendra, Rajesh Babu Vasu [4] developed the hardware and software design consist of many small components ranging from microcontrollers to GSM Modules and GPS to RFID sensors. Here there are many security systems that are about to see that will help us get the security systems users want. Starting with the first step of security, recognition of object will be known within the first ten feet of the car with the help of the motion sensors installed beneath the cars.

Here, it uses PIR sensor like DSN-FIR800 and 8051 microcontrollers because of the output voltage stages it has i.e. (3.3) V and (0) V. It can be directly interfaced with 8051 which makes them easy to use. From

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here, the car can recognize that the person or any living being is inside the sight of motion sensors. The motion sensors will send the information to the 8051 which will thus process the activity inside the range given and hence by being convinced it will activate the other security systems inside the range.

The second part after the security systems are activated after the motion sensing part. User can see that the RFID readers put inside the car doors are activated to read the key card enabled with RFID chip. The concept of RFID is associated with a chip which

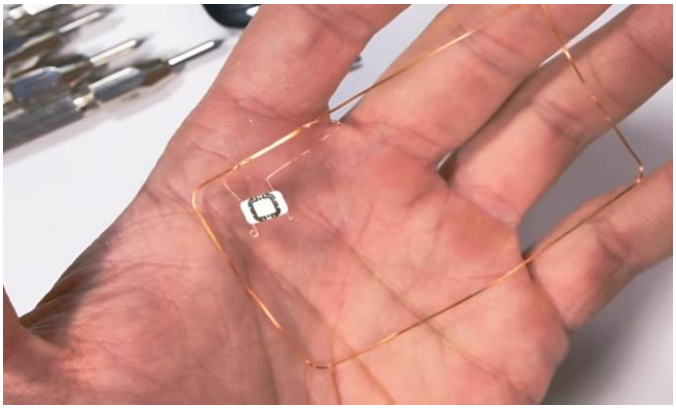

Fig.2 RFID chip connected with copper wire.

helps as a storage unit for the information of the user. It has an antenna inside the card which is used to transfer the data via a weak signal to the RFID reader embedded inside the car door. It helps in unlocking the car with the direct contact of the chip inside the car which further authenticates the owner of the car which will thus lead to the third step of design.

After the second part is over, the third part comes into action., Here after the two steps of authentication, user can see that the car is yet to be convinced that the person opening the car is the owner himself. So, in the third part, Abu Taher Noman, Samzad Hossain, MD. Shariful Islam, Mohammad Emdadul Islam [3] developed system where system can use the fingerprint sensors to identify that the person is owner himself. What here can do is, place the fingerprint sensor inside the car handle which will help the car to identify that the person authenticating is the owner. In case some other person wants to drive, then the car will have a security lock process which will be accessible by the owner's phone only.

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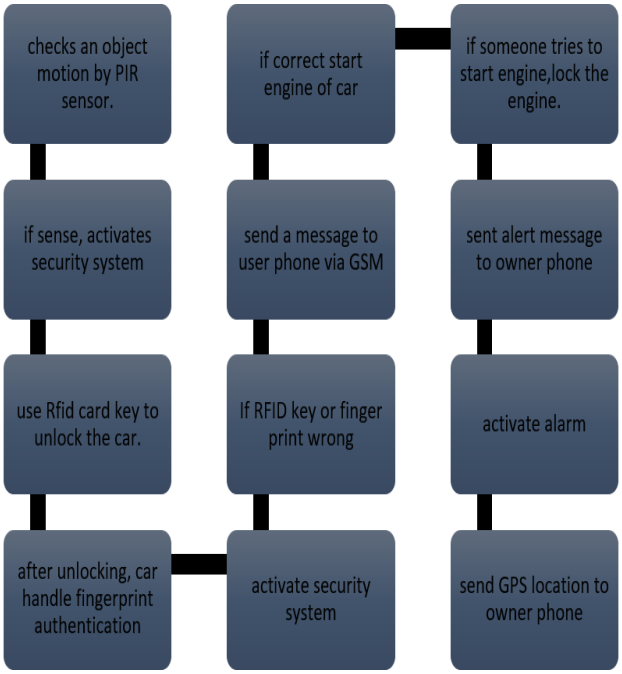

Fig.3 block diagram for antitheft security system using key card.

B. Expected Result

The mechanism of the safety in today's world is a lot more unsafe than it can be by using modern technology. Ashwini Dilip Lahire [6] developed system by using the technology can secure our cars by including the GSM module, and RFID chips and also be aware of our car's situation 24×7 with the help of GPS. This method will help in the revolution of vehicle safety and due to it being first generation, it will be a lot better and will gradually be modified by time. The most important thing in this technology proposed is the ability of the car to check thrice that the person coming around is its owner or not.

Fig.4 Car handle with fingerprint sensor.[8]

Now as spoken of the security systems of the car, users are aware of the problems that are unheard and the working of these security systems will be upon the conditions are about to give below.

Case 1: Someone tries to open the car with a crowbar:

What if someone tries to steal the car with a crowbar? The thing is, first he/she will have to put the crowbar inside the gap between window and the glass. While doing this, the car will be aware of the activity and will use the GSM module to send information to the person’s mobile phone thus preventing the car. This system was developed by Ma Yunlin [5].

Case 2: What if the card key is not working? When the card key of the car isn’t working, and can see that it is unable to open them and there.so in this case, we should directly contact a car services and due to the

ISSN: 2233-7857 IJFGCN

RFID chip and technologies used inside the car, the company can open the car, by using another chip and hence we can take help from the car company.

Fig.5 RFID chip read by RFID reader installed in car.

4. CONCLUSION & FUTURE SCOPE

The car safe is the future of unlocking a car without key and with more protection. The technology used in it safe and even if it fails, system have created the fail-safe protocol where the GSM module and GPS module comes into play. The motion sensor technique is big way to make car convinced about someone being around the car and it can be used to activate further systems. Then the key card comes into action which helps in opening the lock with just the touch of card key to the RFID reader inside the car door. The car is going towards the third step i.e. the fingerprint part and in this, the fingerprint of the only authorized will be accepted and others will make the car start beeping and a text message to the owner will be sent. So, this can be a great way of convenience and more security than ever. By this, the owner will be aware of the location of vehicle 24*7 and will be aware of the situation of vehicle. The advantages of this security system are that, the thievery of the cars will be a lot less in the mere future. The technologies used in this also cost less and at low cost, and will get more security, better connectivity and higher satisfaction.

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ISSN: 2233-7857 IJFGCN