

# Design and Implementation of Automatic Theft Control Using Smart Security System

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**ABSTRACT---** *The contemporary available technology for Automobile Access Control, safety features and Communication has its inalienable restrictions due to various factors & keeping pace with the necessities of the market, an attempt has been made to enhance its performance in the areas of safety, timely user communication & feedback regarding change in location, unauthorized access & the like. Safety features include detection against Alcohol consumption, unauthorized access, internal wiring tampering, position change followed by communication to the user by an application and further engine disable feature to avoid any further misadventure.*

**Index Terms—** Sensors, Security System, Biometric

## I. INTRODUCTION

Embedded frameworks are computer frameworks that are a part of bigger frameworks and they play out a portion of the prerequisites of these frameworks. A few examples of such frameworks are auto versatile control frameworks; mechanical procedures control frameworks, cell phones, or little sensor controllers. Embedded frameworks cover a vast scope of computer frameworks from ultra-little computer based devices to huge frameworks checking and controlling complex procedures. An embedded framework is a combination of programming and hardware to perform a particular task. Some of the main hardware used in embedded products is Microprocessors and Microcontrollers. Microprocessors are normally referred to as broadly useful processors as they essentially acknowledge the sources of info, process it and give the yield. Microcontroller acknowledges the information as contributions as well as controls it, interfaces the information with different hardware devices and controls the information and subsequently at finally gives the output. An integrated use of Alcohol detectors, Bio metric sensors, MEMS sensors, combined with the use of embedded systems, controllers & mobile network service to communications can make the whole system more safe, user friendly & also accessible. Embedded systems typically make use of electronics, computer hardware combined with the relevant software program to perform a specific intended use or purpose. Implementation of embedded framework range from industrial automation, automobiles, automation, automobiles etc. are practically made use in any industry and rather very efficiently. In this case an coordinated utilization of electronic hardware like cortexm3 (arm7) micro controller, programming through suitable software is incorporated in existing automobiles to enhance the safety, accessibility & tracking of the automobile combined with the communication capabilities of the mobile service provider.

## II. BLOCK DIAGRAM

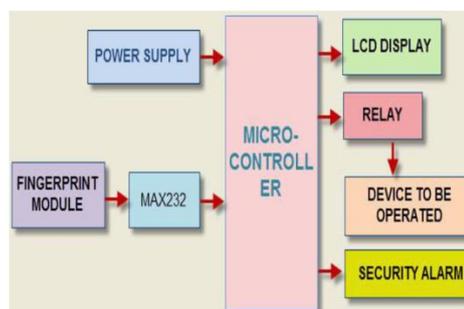


Fig.1 Block Diagram

The existing automobiles are retro fit with this device, which interfaces with the Engine Management system, to have additional features. The user of the automobile, after opening of the doors, need to first blow through the Alcohol meter to check for the consumption of alcohol to ensure permissible limits as per the local statutory levels. If the same are within permissible levels, the user could go ahead with the authorization through the Biometric sensor to verify the fingerprint credentials of the approved users of the automobile. The enlisting of authorized users, with the family or friends etc. could be done offline. The effective section of the alcohol test & the authorization of the owner and user only could further permit the engine management system to get operational & start. Any breach in any of the conditions would render the system of the automobile to be dysfunctional. These are enabled by use of alcohol sensors, biometric sensors & use of the cortexm3 (arm7) micro controller which is interfaced with the sensors. Any movement of the automobile with respect to stability or geographical position would trigger the MEMS sensor, again prompting the system to make it dysfunctional- thus protecting against theft etc. Geographical dislocation, either by unauthorized persons in a theft attempt or by the law enforcing authorities, due to unlawful parking, would again prompt the system to get into action. Further any attempt by unauthorized persons to ingress into the automobile wiring arrangements through tampering of the harness, connectors etc. with an attempt to bypass these sensors etc. by directly enabling the engine to start, would also be detected by the temperature sensors, vibration sensors to prompt the system into operation.

Further integration by the use of custom design application provider could be enabled to telecast live updates to the mobile. This could also be further used to remotely disable the engine in case of any of unauthorized switching on by miscreants.

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### III. COMPONENTS REQUIRED

- A. *ARM7 Micro Controller (CORTEXM3)*: It is the leading controller convenient for beginners and project justification as it has Mother Board and Daughter Board. No outer power supply is required as it takes power from the USB itself. It has a continues clock with battery housing, bidirectional buffer, On/Off switch with power sign.
- B. *Alcohol Sensor - MQ3*: This sensor is fit for identifying alcohol center around your breath, just like your normal breathalyzer. It has an expand affectability and snappy reaction time. Sensor supply an simple resistive output based on alcohol concentration.
- C. *GSM-Module (SIM300)*: It is an extraordinary kind of modem which receives a SIM card and run over a membership to a cellphone operator, same as mobile phone. It uses a phenomenal quality GSM Modem SIM300 which contains an on board SMA connector with a 3db antenna. It is exponentially perfect, adaptable and estimated in little. This module has an installed TCP/IP convention stack.
- D. *Finger Print Module (R305)*: It is joined with TTL UART connecting for organize associations with microcontroller UART or to PC through MAX232/USB-Serial connector. The client can store the unique mark information in the module and can design it in 1:1 or 1: N mode for recognizing the individual. This module can explicitly interface with 3V or 5V microcontroller. In like manner a dimension converter is required for interfacing with PC sequential port
- E. *Thermal Sensor (LM35)*: It is an coordinated circuit sensor that can be utilize to gauge temperature with an electrical yield corresponding to the temperature (in degrees Celsius). The LM35 produce a higher yield voltage than the thermocouples and may not necessitate that the yield voltage that can be intensified. It possesses a low self-scalding capacity.
- F. *Vibration Sensor*: It is utilized for extensive variety of vibration discovery and no immediate restriction is present. It is low misfortune, sensitivity adjustment can be made. It is mainly applied in security and electronic lock.
- G. *MEMS Sensor (GX-61ADXLS35)*: It is a small, thin, low power, complete 3 axis accelerometer with signal conditioned voltage outputs. The product measure acceleration within a minimum full-scale range of +/- 3g.

### IV. DESCRIPTION OF COMPONENTS

- ARM7 Microcontroller
- Alcohol Sensor - MQ3
- GSM Module
- Thermal Sensor
- Vibration Sensor
- Fingerprint Sensor
- MEMS Sensor

#### A. ARM7 Microcontroller



**Fig.2 ARM7 Microcontroller**

#### Features of Cortex-M3

- Architecture is Harvard –separate instruction bus and data bus.
- Pipeline is 3-stage with branch speculation.
- The instruction set is thumb2.
- Switching will not occur between the ARM state and THUMB state.
- It contains ALU with hardware partition and single cycle multiply.
- It contains furtherance debug components.

#### B. Alcohol Sensor - MQ3



**Fig.3 Alcohol Sensor General features**

- It requires 5v to operate
- The cost is low in price
- Responding is fast
- It is easy to use

It is stable in nature.

#### C. GSM-Module (SIM300)



**Fig.4 GSM-Module**

#### General features

- Spectrum efficiency is improved
- Compatibility with integrated services digital network (ISDN).
- It has international roaming.
- It also supports the new services.
- It has the SIM phone book management
- It has fixed dialing number (FDN).
- It also has real time clock with alarm management
- It has short message service(SMS)
- Augment quality speech
- To secure phone calls it uses encryption

D. Thermal Sensor (LM35)



Fig.5 Thermal Sensor

Features

- The scaling factor required is .01V/°C.
- Remote applications are Suitable for this
- It cost is low due to wafer-level trimming
- It Operates from 4 to 30 volts and also Less than 60 μA current drain

E. Vibration sensors (801s)



Fig.6 Vibration Sensor

- Vibration sensors can measure and analyze displacement, linear velocity, and acceleration.
- It is also called vibration transducer, or vibration pickup.
- Now a days synthetic piezoelectric ceramics and quartz are the two basic piezoelectric materials used in vibration sensors
- The signal value is relative to the force imposed. It is used for wide range of vibration detection and no direct limitation is omnipresent.
- It is low loss, sensitivity adjustment can be made.
- It is mainly applied in security and electronic lock.

F. FINGERPRINT SENSORS (R305)



Fig.7 Fingerprint Sensors

Features:

- It requires Low power consumption, the cost is low, Its size is small, Its performance is excellent. .

Specifications:

- The baud rate of RS232 is 4800BPS~115200BPS changeable
- The Dimension of the sensor is 55\*32\*21.5mm
- The Image Capture Surface is 15—18(mm)
- The Verification Speed is 0.3 sec
- The Scanning Speed of sensor is 0.5 sec
- Character file size of the sensor is 256 bytes
- Template size of the sensor is 512 bytes

G.MEMS SENSOR (GX-61ADX1335)

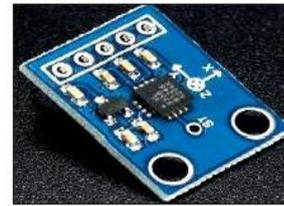


Fig.8 MEMS SENSOR

Micro-Electro-Mechanical Systems, or MEMS, is an innovation that in its most broad shape can be characterized as scaled down mechanical and electro-mechanical components (i.e., gadgets and structures) that are made utilizing the procedures of miniaturized scale creation.

V. WORKFLOW & RESULTS

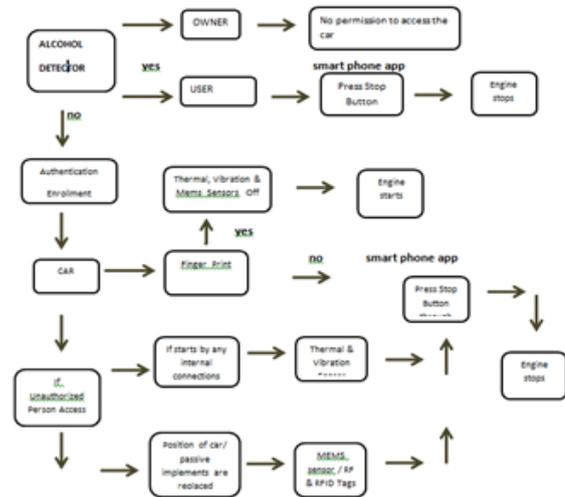


Fig.9 Workflow

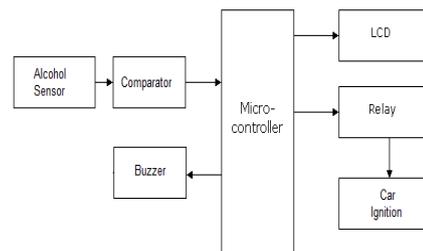


Fig.10 Block diagram with alcohol sensor

METHOD-2

[ Biometric System ]

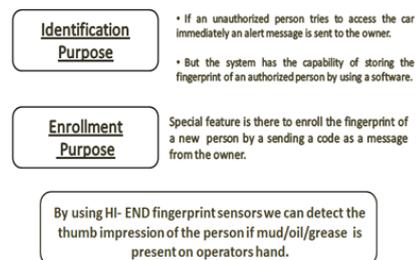


Fig.11 Biometric System



# DESIGN AND IMPLEMENTATION OF AUTOMATIC THEFT CONTROL USING SMART SECURITY SYSTEM

## METHOD-3

### [ Detection Through Thermal Sensor & Vibration Sensor ]

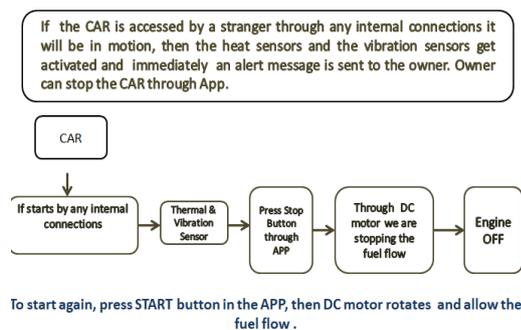


Fig.12 Detection through thermal sensor and vibration sensor

## METHOD-4

### [ Detection Through MEMS Sensor , RF & RFID Tags ]

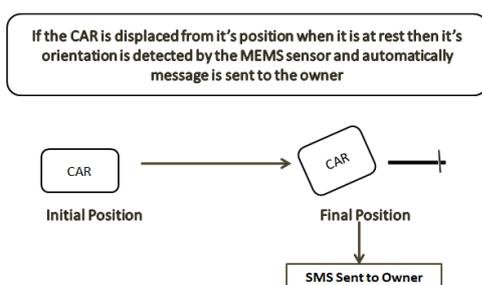


Fig.13 Detection Through MEMS Sensor

## VI. CONCLUSION

For the security of passive components we will be using RFID technology. When the Car is been theft, we can locate the position of the car through GPS technology. Also we can include cameras to the car so that it can capture the image of the unknown person and it will be sent to the owner.

## VII. REFERENCES

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