Modern Vehicle Safety System And Fuel Level
Intimation using ARM processor

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Abstract
Due to the insecure environment the ratio of vehicle theft increases rapidly. Because of this is
manufacturers of luxury automobiles has the responsibility for taking steps to ensure the
authorization for the owners and also in built the anti theft system to prevent the vehicle from
theft.ARM processor performs the real time user authentication algorithm. According to
the comparison result, ARM processor trigger certain actions. If the result is not authentic
means ARM produces the signal to block the car access and inform the car owner about the
unauthorized access via Multimedia Message Services with help of GSM GPRS modem, it
can be send the current location of the vehicle using the GPS modem as a Short Message
Service. It also gives the level indication of the fuel, when engine starts automatically it gives
the fuel level indication to authorized person through SMS, if the fuel level is reduce then it
gives the intimation to authorized person through SMS and displays fuel level on LCD
display.

Keywords: ARM processor, GSM Module, GPS Module, Fuel Intimation Sensor, LCD, Face
Recognition.

1 Introduction
From olden days theft of the vehicles is a common crime. When the owner of the vehicle is
physically absent then mostly these types of crimes will occur. To prevent this type of crimes
we have the methodology that is an anti-theft system. In our project we propose a modern
emergency response system to prevent the vehicle theft using ARM processor. The face
detection system aims to detect face who tried to access the car. From PCA algorithm we can
get the common Eigen values of the person and it compares with authorized person Eigen
values, if it matches the vehicle will starts otherwise it sends the SMS and MMS to an
authorized person and also sends the current location of the vehicle
The second one is fuel level indication. If any business infrastructure relies on backup
generators, the chances are also relying on fuel to power those. By using Ultrasonic Fuel
Level sensor we can ensure that our fuel tanks are filled and ready for the most critical moments. The Ultrasonic Fuel Level Sensor is a liquid level detector that will monitor the level of liquid in a tank and displays this level on LCD and it sends SMS to the authorized person.

2 Methodology

In this paper we have two methodologies. The first one is vehicle safety system, in this section when any one starts the vehicle, the power supply will activate all the functional units in the vehicle. When power supply is activated then ARM processor will activates all the interfaces. The ARM is a 32-bit Reduced Instruction Set Computer (RISC), these ARM processors made them suitable for low power applications. If the person starts vehicle the USB camera capture that person’s face, by using PCA algorithm we can get the Eigen values of that person’s face, these Eigen value are compared with authorized person’s Eigen values which has been stored in the system. If those values are matched, the vehicle will start or else the system will sends the MMS and SMS to authorized person through GSM Module. A GSM module is wireless modem that works with a wireless network. Mainly GSM is used for the Short Message Service (SMS) in our system A wireless modem behaves like a dial-up modem. A GSM modem can be an external device and these GSM modem is connected.

Figure 1: Block Diagram
GPS stands for Global Positioning System, it is used to find the exact location. If unauthorized person starts the vehicle then GPS find the location of the vehicle and sends the exact location to the authorized person mobile using GSM. GPS is used to support a broad range of military, commercial, and consumer application.

The second methodology is Fuel Level Indicator. To indicate the Fuel level of the vehicle here we are using the Ultrasonic sensor. This Ultrasonic sensor is designed for monitoring liquid levels in fuel tanks.

### 3 Conclusion and Future Scope

This paper is used to prevent the vehicle theft by using face recognition. In this system when the person starts the vehicle camera captures that person and checks on database using PCA algorithm if that person was unauthorized the vehicle will not start and send SMS, MMS to the authorized person. The future scope of the system is extended to send the information to police control room for taking the immediate action.

### 4 References