

ANTI-THEFT VEHICLE CONTROL SYSTEM BASED ON ARM

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ABSTRACT

Now a day as population increases, usage of vehicle and vehicle theft also increased. So that the manufacturers of automobiles should take some measures to avoid loss of vehicle by establishing a security system in the vehicle. We propose Real Time Vehicle Theft Identity and Control System Based on Advanced RISC Machine (ARM). In this system ARM controls every operation like block or access to the vehicle. When unauthorized users try to access vehicle, it will send message to the vehicle owner. That Message contains information about the current location and image of unauthorized user by using Principle Component Analysis (PCA) algorithm. This Multimedia Message Services (MMS) achieved with the help of GSM Modem.

Keywords: ARM Microcontroller, Sensors, Actuators, GSM.

I. INTRODUCTION

In order to reduce the high-level theft, we need a better security system. By using this system which communicates and monitor the vehicle, safety of vehicle is increased. This enables the utilization of GSM network mobile and electronics circuit to achieve an automated system which is programmed to work as a thinking device to achieve this purpose. It prevents the theft of vehicle by installing anti-theft system in the vehicle.

Features of ARM:

1. It has operating frequency of 150 MHz.
2. Power Consumption is 0.19 mW/MHz.
3. Architecture used: Harvard.
4. MMU/MPU: Present.
5. It supports both ARM and Thumb Instruction.
6. 31 (32-Bit size) Registers.
7. 32-bit Arithmetic logic unit and Barrel Shifter.
8. Enhanced 32-bit MAC block.

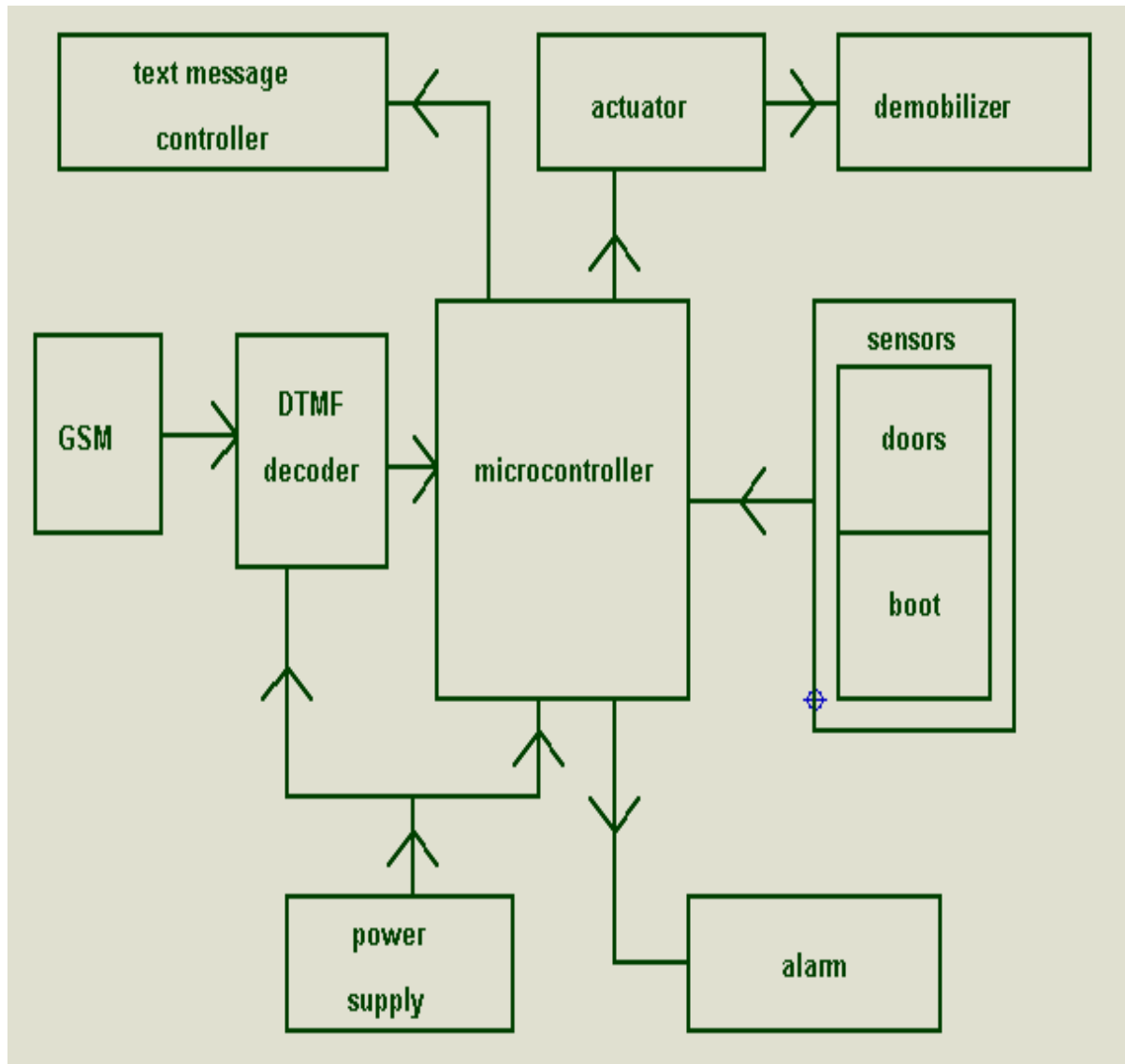


Fig-1: Block Diagram

II. REAL TIME ANTI-THEFT SYSTEM

Anti-theft mechanism will also be implemented in this paper. GSM is interfaced with controller. GSM Modem works similar to mobile phone by using sim-card. When an unauthorized person starts the vehicle, the system sends a warning message to the authorized person, and if he sends a stop message to that number then the vehicle will lock. When an unknown person tries to start the vehicle, then the system sends the SMS through GSM to the owner of the vehicle. Vehicle owner receives the message where he can send the message to the vehicle to stop it vehicle and vehicle stops.

Face detection system (FDS)

Face recognition is one of the most frequently used biometric systems to find one another. The facial recognition ranges from a static, controlled verification to dynamic, uncontrolled face identification in a jumbled background. It is used to compare face of the driver with the predefined image. This security system can identify the image of the owner and the family members.

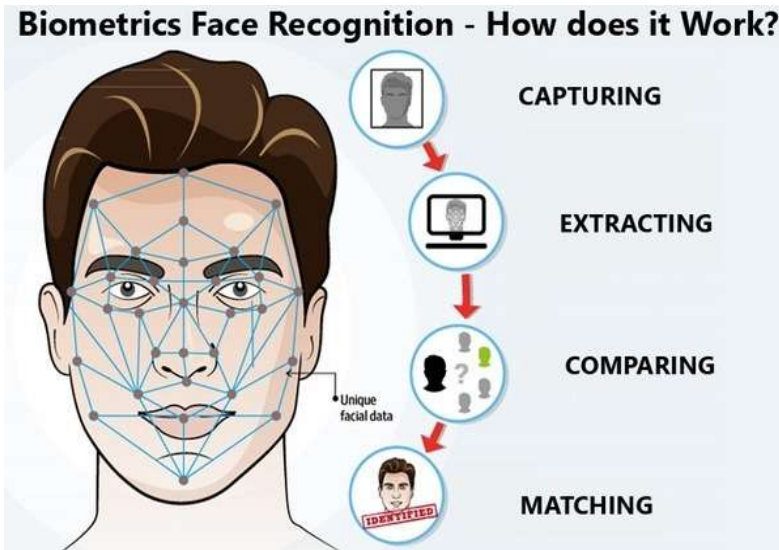


Fig-2: Face Recognition

III. PRINCIPLE COMPONENT ANALYSIS (PCA)

The usage of PCA is to minimize the dimensional size of the image. PCA is known as a new co-ordinate system which defines the orthogonal linear transformation used for transforming the data. PCA is mainly concerned with identifying co-relations in the data. PCA reduces the dimensions of the data containing many different variables related to each other.

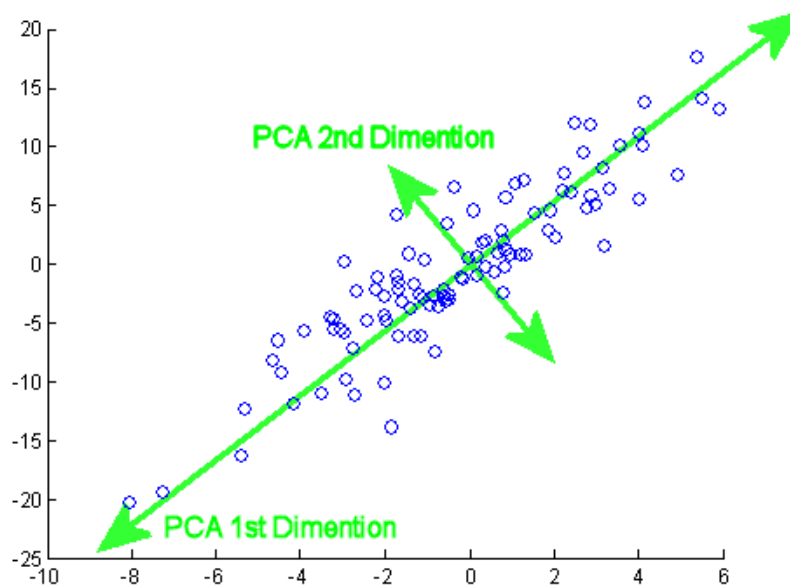


Fig-3: PCA Algorithm

IV. EMBEDDED CONTROL SYSTEM

Embedded systems are controllers which are programmed to achieve certain operations like security. Power consumption for this security system because of its small size, their cost is also low.

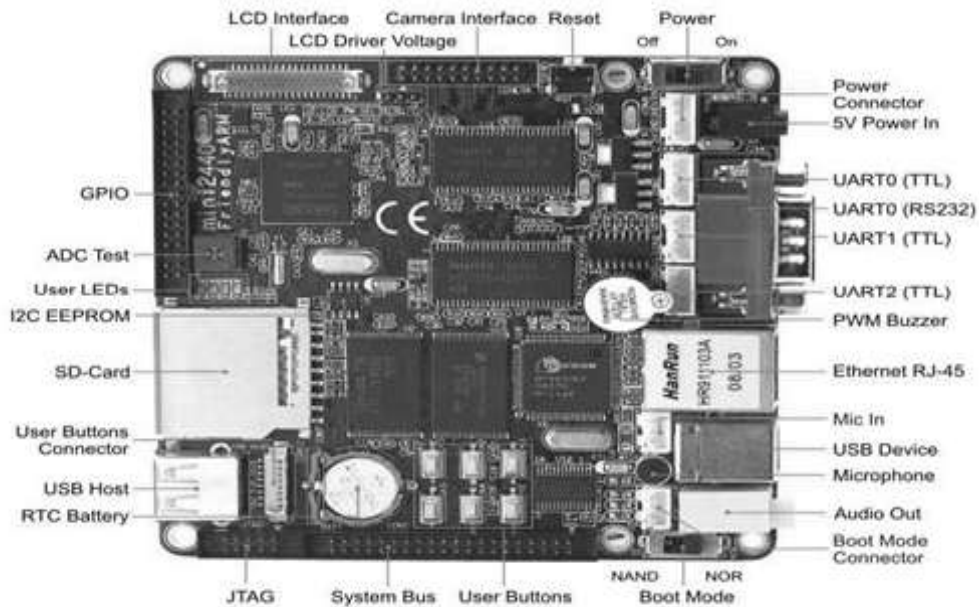


Fig-4

V. GPS MODULE

The main use of global positioning system (GPS) is to find the ground position of an object. It contains three segments

- Space segment (GPS Satellites)
- Control segment (ground control stations)
- User segment (GPS receivers)

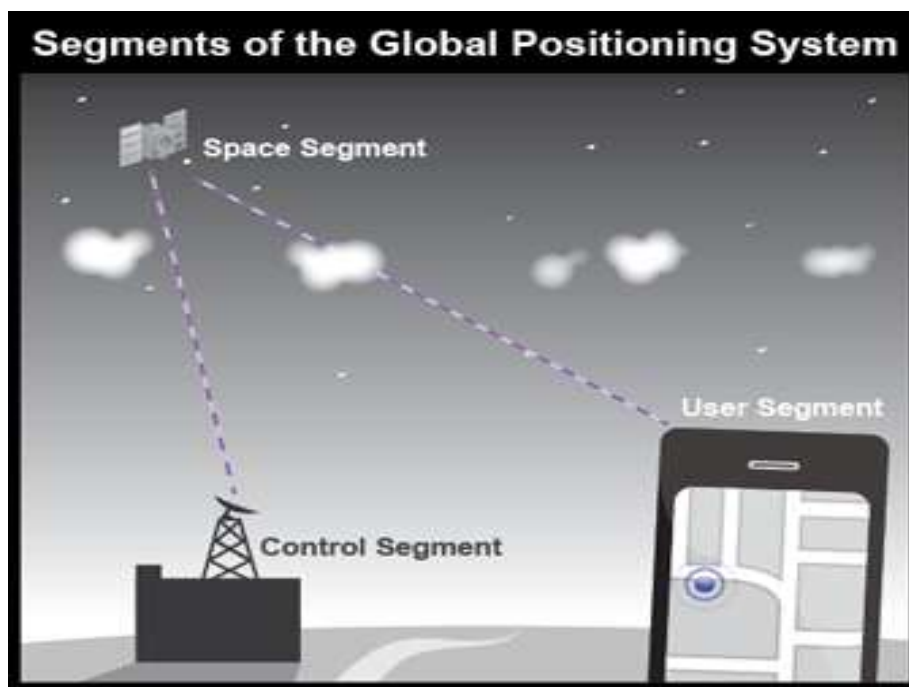


Fig-5

It is used for mapping and surveying the earth and for military purposes.

I. Flow chart

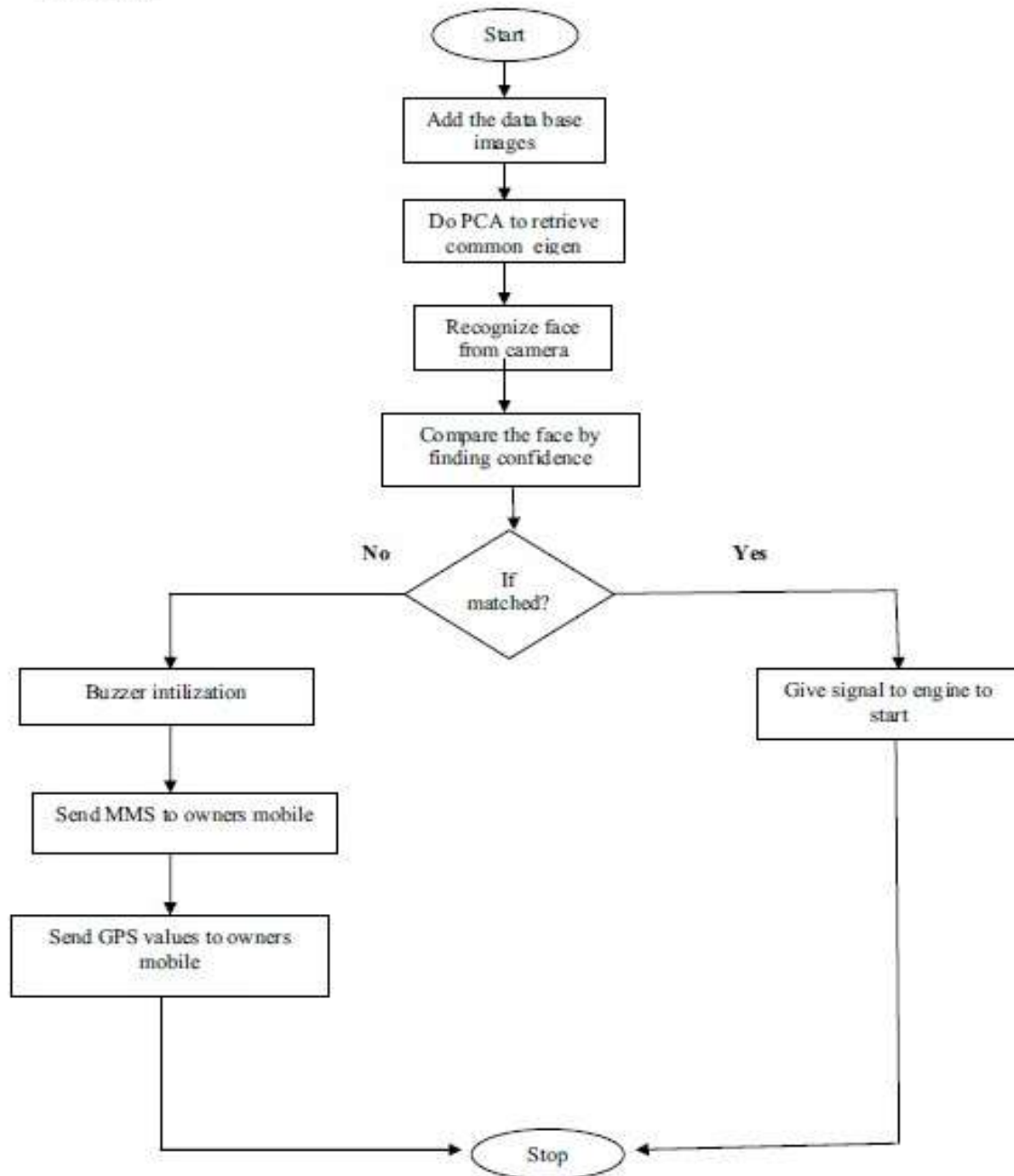


Fig-6: Flow Chart

VI. ALGORITHM

Working of Anti-theft System as follows:

1. First switch on the power supply for boards ARM9, GPRS and GPS.
2. Capture the image from the camera.
3. Then save the image of the person multiple times for verification.
4. Compare the image of the person with the images in the memory.
5. If the image matched, start the motor (or) vehicle.

6. If not matched send the face of the person through MMS.

Finally send GPS location as SMS.

VII. CONCLUSION

When we compare this system with the existing system, we can prevent the vehicles theft by utilizing this face recognition system

In order to overcome the method of capturing owners' image only we can store the multiple faces into the memory like owners' relatives or friends to start or use the vehicle. If the unknown persons image doesn't match with the images in the memory it will send the image of unknown person to the owner's mobile so that we can send this information to police control room for immediate action on the thief.

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VIII. REFERENCES

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