Home Security Systems Using Camera and Android Application

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Abstract – *Nowadays Security is most essential issue in the world, today people are facing more problems about security in the world; so getting security is more important in recent years. In this paper we are trying to reproduce the literature study related to various home security systems. We came across an idea where the door will always have a watch over all the passenger who ever crosses the door or standing near by the door. Each system has its own advantages as well as disadvantages .In most of systems Multimedia Message is used for communication which is cost effective. Our system is cheap and can be installed by all. It uses less amount of electricity and wife. In most of the papers authors have presented door lock system protected.*

1. INTRODUCTION

Ensuring safety of people and their important things is most important thing. It represents the safety and security of our life and assets. Hence, it is most important thing to provide security to our home to avoid further problems.

Home security system project consist of two basic modules. First module is camera module and android application which works for the safety of doors in case we are out of home. The camera is installed on peephole of the main door of the home. The system along with it will have an image of the owner and the allowed peoples stored in it. Whenever the attempts will be made to open the door, the camera in the peephole will capture the image of the person. If the image of an authorized person then the door will get opened. Now, if the image captured does not match the stored images then the message is sent to user through message. The user can then the send the command through the android application whether to open the door or not. The goal of our project is to design a user friendly homes security system which can be easily integrated into existing homes and businesses. This home security system prevents the unauthorized person from entering into the house when user is not present.

1.1 Literature Survey

The conventional design of home security system typically monitors only the property and lacks of physical control aspects of house itself. Also, the term security is not well defined because there is a time delay between the alarm system going on and actual arrival of the security personnel. Our project solves the development of a home security and monitoring system that works where the traditional security systems that are mainly concerned about curbing burglary and gathering evidence against trespassing fail. Home security system project consist of two basic modules .First is camera module and android application which works for the safety of doors in case we are out of home. The camera is installed in the peephole of the main door of the home. The system along with it will have an image of owner and the allowed people stored in it. Whenever the ultrasonic sensor will detect an object it will turn on the camera, the camera in the peephole will capture the image of the person.

The system will image process the image captured with the data base, if the image is captured matches with of the authorized person then the door will open. Now, if the image captured does not match the stored images then the image is send to the user on application. The user can then send the command through the android application whether to open the door or not.

Our project uses Arduino Nano circuit which is not expensive and after production it can be purchased by every needed person. The project runs on low power supply that it can also run on portable charger. The Android app that we are going to make will be user-friendly.

1.2 Design

A design is rather simple. It consist of Arduino Nano, Bluetooth HC05, ultra-sonic sensor, Servo motor. The system is very easy to explain and easy to make. As the flow of the program goes like this. The ultrasonic sensor will detect an object and that will turn on the camera. The camera will capture the image and will proceed for the image processing. If the image is matched to the database or the images stored in the data base of the Authenticated person or the owner or any other family member then the servo motor will open the hatch. If the person in the image doesn't matches the person in the database then it will store the captured image in the database. The system will send captured image to the user's Application, notifying him about the situation. The user will decide whether to open the door or no. If user will say YES then the servo motor will turn on. If user says NO then the system will stay still and operation begins again from sensor.
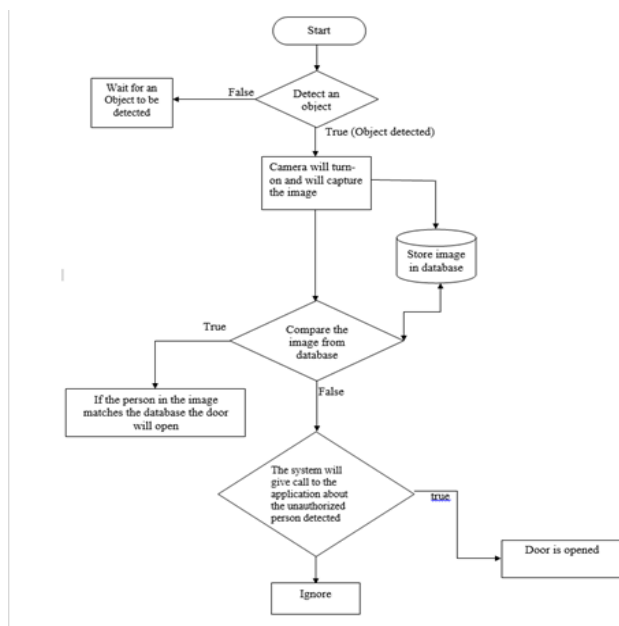
2. Technology Used

- ➤ Hardware

    - ○ Arduino Nano
    - ○ Servo motor
    - ○ Bluetooth HC05
    - ○ Ultrasonic sensor

- ➢ Software

  - o Java
  - o Embedded c
  - o NetBeans
  - o Android Studio
  - o Wamp server

2.1 Architectural Diagram

2.2 Module

1) Theft detection system: - The ultra-sonic system will be on when the user is not is not home. The main purpose of ultra-sonic sensor is to save the electricity. When the ultrasonic system will detect an object or any human, the camera will be turned on.

2) Image capture: - As soon as the camera will be tuned on, the image will be captured. When the image is captured the stored image will be saved in database or storage. The image is then sent to the system for image processing.

3) Image store :- Image store
   After image is captured from camera this will be stored in folder which is already created in database. This image then send to authorized user.

4) Android application: - The android application works on the internet so our system will work on internet. As the system finds out about the person in the captured system is not authenticated the system will pop up the window in the application with the captured image and asking the question "do you want to open the door?" if the user selects the option yes the then the servo motor will be open and if the user selects the option No then

the system will ignore the process, and camera will be turned off till the next detection.

2.3 Algorithm

1) start
2) The camera is off.
3) The ultrasonic sensor is on.
4) The system is in hibernate mode.
5) Ultrasonic sensor detects the object.
6) Camera turns on.
7) Image gets captured.
8) The image is stored.
9) The image is sent for image processing.
10) If the person In the image is authenticated then the door is opened and system will be turned off
11) If the person is not authenticated then the pop up menu will be displayed on cellphone.
12) The pop up window will display, with the image captured and the options "YES" and "NO".
13) If the user selects YUS then the servo motor will open and the door will be opened.
14) Else if the user selects NO then then go to step 2.

3. CONCLUSIONS

Home is the place where the most of the important place where the most of important data is stored. In this project we are tried to provide security to our home. Our product is very easy to implement and it is very user friendly. We are kindly trying to provide the best Home Security System which very cost effective that a common man can also easily afford. Since everyone is using is smart android phones that`s the reason we are also providing a user interface through android application where can get information about passengers who passes by the door.

ACKNOWLEDGEMENT

REFERENCES

- ➢ L. Yang, S. -H. Yang, and F. Yao, "Safety and security of remote Ack monitoring and control of intelligent home environments", Proceedings of IEEE International Conference on Systems, Man and Cybernetics, pp. 1149–1153, 2007.

- ➢ E. S. Kim and M. S. Kim, "Design and fabrication of security and home automation system", Proceedings of International Conference on Computational Science and Its Applications, Part III, pp. 31–37, 2.