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Intelligent Controlled Residence and Face Recognition Technology

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ABSTRACT

The main objective of this project is to develop a secured home automation. Now a day's science is developing as much as possible. Even though there are various security systems but consuming large power. Now a day's robbery rate is very high. We are proposing a novel system to prevent robbery in highly secured area with lesser power consumption. This system has face recognition technology which grants access to only authorized people to enter that area. If others enter that place without access using some other means then the system alerts the security personnel and streams the video captured by the security camera. The security camera used in our proposed system is IP camera through which we could able to watch who are entering in our area through our android mobiles. PIR sensors are used in this to sense the person in front of the door. The Arduino which is used to send message alert by GSM through interfacing the RS 232 cable and with relay to drive the Dc motor. This technology is being remotely controlled by android smart phones. Similar to that we are also using automatic control of electrical appliances using the android mobiles. Instead of using conventional switches we are using android Bluetooth technology. This is achieved by using the Atmel micro controller as well as Bluetooth module which acts as the interface between the appliances and the user .The power supply to the project is supplied with the help of solar panel which is also a conventional energy and saves electricity.

Keywords: IP camera, Bluetooth module, Android, GSM and PIR Sensor.

1. INTRODUCTION

Nowadays, automatic personal identification became popular by using biometrics data instead of using cards, passwords or pattern. Most of the biometrics data have to be controlled by using fingerprint scanner, palm print scanner, DNA analyzer they have to touch with the required hardware in the stage of data collection. The face is the primary attention of the researchers. This became an important security purpose in the biometric technologies. The benefit of our proposed system is that face recognition does not require to be touched with any hardware.

In the existing system of face recognition technology we have to save the database of our required faces. This is a major drawback because if the same people with different facial expressions are there which couldn't match with the database then the door wouldn't open. This leads to major trouble thus we would access the image directly in our mobiles through IP Camera. If a person comes near by the door then the PIR Sensor senses and sends a notification to the user through GSM.

The GSM gets input from the Arduino and drives the Dc motor through the relay interfaced with it. The home appliances could be automatically controlled without using remote controls by our android which passes the signal to the Bluetooth module.

The Bluetooth module passes the information to the Atmel microcontroller. This controller controls the action of the electrical appliances. This get the power source from the solar panel the charge would be stored in the batteries.

2. PROPOSED SYSTEM

In our proposed system we are going to control the home appliances using android mobiles using the Bluetooth technology. Here the Bluetooth of the mobile is interfaced with the Bluetooth module HC-05 through which we are going to control the appliances by just sitting at one place in our home.

The signal from the android is given to the Bluetooth module through the Bluetooth it's a wireless technology in which Blue control application is used to pass the commands. Then the signal would be transmitted to the Atmel microcontroller. Atmel microcontroller controls the electrical appliances. The controller passes the signal to the relay this operates the electrical appliances. This setup gets power supply from the conventional solar energy.

In addition to this automation we are also going to attach secured door access system here we are going to use IP camera this is nothing but Internet Protocol camera. This IP camera is fixed at the door step of the house and when a person standing at the door step his/her image will be captured and this raw image will be directly sent to our android mobiles and it is the wish of the user to allow the person or not if the person is an authorized person we are going to allow them else we can reject their entry.

When the person comes nearby the door PIR sensor senses and sends a notification to the user through GSM and SMS notification is sent to the user and the user has to open the app in order to visualize the person. The app passes the signal to the Arduino microcontroller this would control the driver

circuit. The driver circuit drives the DC Motor. The DC Motor which is used to open/close the door.

3. METHODOLOGY

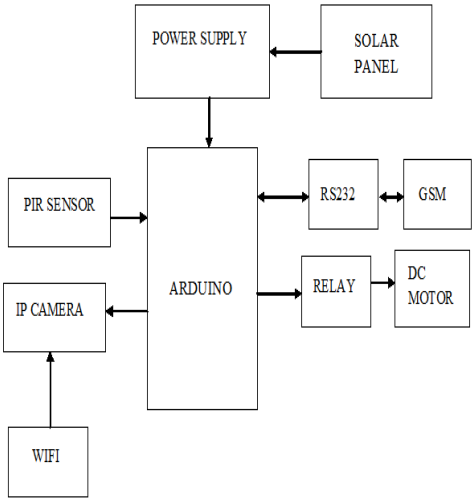

Fig.1. Block Diagram of Face Recognition Technology

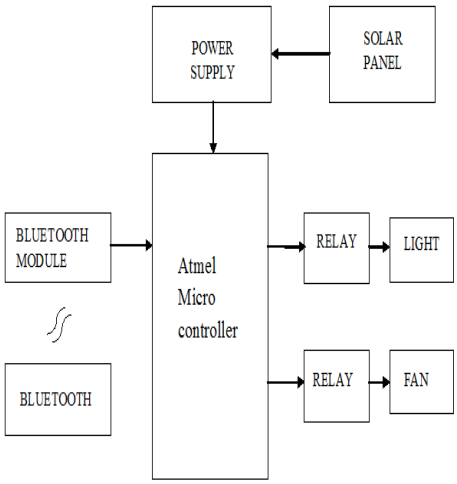

Fig.2. Block Diagram of Intelligent Controlled Residence

4. WORKING

The above figure 1&2 shows the block diagram of the intelligent controlled residence and face recognition technology. Our proposed system can be operated in two different sections, one for operating our home appliances through our androids by passing the signals to Bluetooth module and another for capturing the image and passes it to the user by the GSM alert.

IP Camera: IP Camera which is used to capture the photo of the person who stands nearby the door step. The image would be passed to the user mobile through the Wi-Fi. In the user mobile the user must have IP address of the IP camera.

GSM Module: GSM module is used to send the message to the authorities after the PIR sensor senses the movement before the door step. This alerts the user to somebody is before the door step.

Atmel Microcontroller: The controller which is used to control the home appliances this would be connected with the relay to get 12v supply and switch on/off the electrical appliances. The controller gets the input from the Bluetooth module.

Arduino: The Arduino which is interfaced with GSM, RS232, PIR Sensor, Relay. The relay gets the input from the Arduino and drives the DC Motor. The Arduino microcontroller is programmed with embedded C and which gets power supply from the solar panel.

Bluetooth Module: The Bluetooth module used in our proposed system with the specification of HC-05. This gets the input from the android through the Bluetooth. The Bluetooth module gives the input to the Atmel microcontroller.

Solar Panel: The solar panel gives the power supply to the entire setup. The solar energy is converted into electrical energy through the photovoltaic cells.

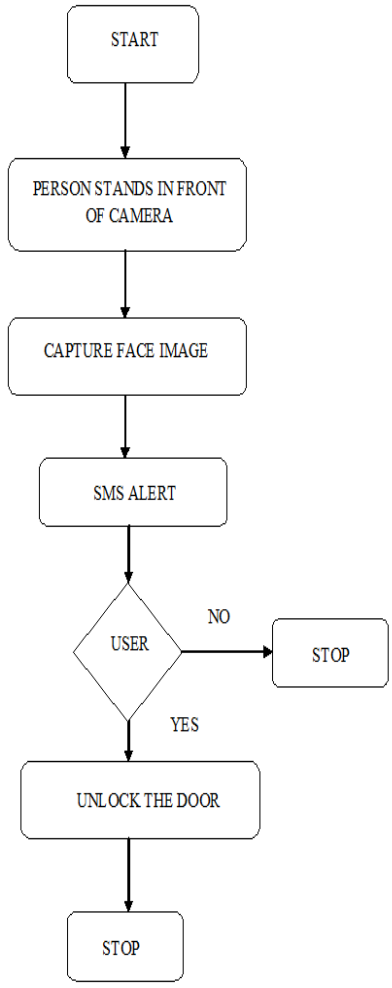

Fig.3. Flowchart for Face Recognition Technology

5. FLOWCHART

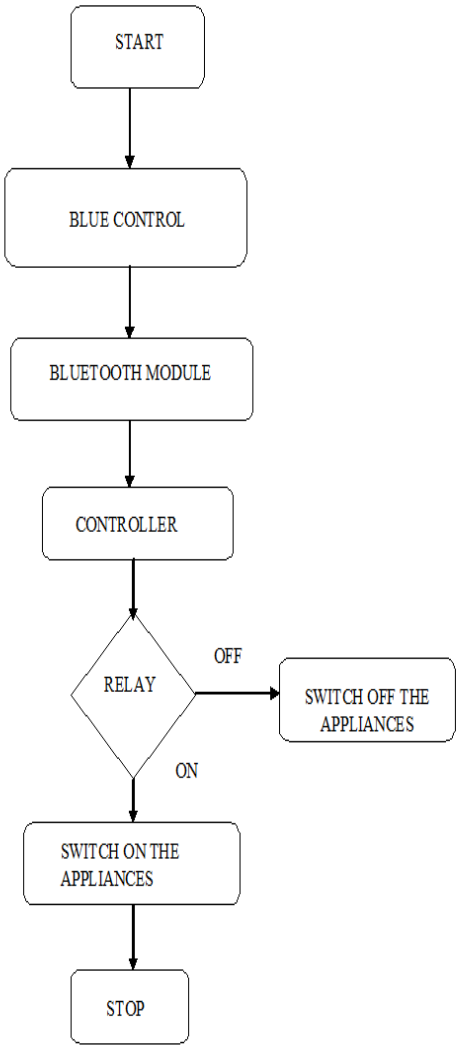

Fig.4. Flowchart for Intelligent Controlled Residence

6. CONCLUSION

In this paper, home automation has been developed by using our android mobiles. The Bluetooth of the android mobile is interfaced with the Bluetooth module through which we are indirectly going to control the appliances. In this paper, the face recognition technology has been developed in order to study the potential application for automated door access control. Among the other bio-metrics techniques, face recognition approach possess one great advantage which is user friendliness. The technique used here is nothing but a IP camera fixed at the door step through which the image is captured and a SMS alert is sent to the mobile through the GSM module and then through the PIR sensor we are going to sense the person and whether he/she is a authorized person opens the door or not.

7. FUTURE SCOPE

In our future scope we are going to control all the household appliances and the door access system using Li-fi technology. Since Li-Fi technology travels at faster rate and hence covers maximum distance. In our existing project we are interfacing Bluetooth module and the Bluetooth of our mobile to control the household appliances but in future using the Li-Fi technology we can access the appliances from anywhere. Similar with the door access system we can use the Li-Fi technology.

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