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SMART HOME MONITORING AND SECURITY SYSTEM

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Abstract: - *With the advancement of technology, the use of electronic devices in our daily life has increased to make life easier. Therefore, there is a need to create a reliable remote system that will control all these devices at a distant place, which will reduce the complexity of handling the number of devices at the same time, but the power will also be saved. This is an IOT based project. This report presents the overall composition of Home Automation and Security Systems. People using the Internet can maintain room temperature, kitchen gas clock, user-friendly web application (page) in the room.*

This paper is intended for the preparation of Basic Acceptance Apps by reading the subject of email on Raspberry Pi and has been developed in the Algorithm Python Environment, which is the default programming environment provided by Raspberry Pi 3.

Key Words: - Raspberry Pi 3, Home Automation, web application, email.

1. INTRODUCTION

21st Century is the era of science and technology. Modern modernization has been done by improving home-based technology. Now most household appliances are automatic. The idea of Home Automation was first introduced in 1898 in a water heater. After that, the use of home automation increases daily. More than 15 million home automation systems have been installed in the United States, according to the 2012 APSI Research. Nowadays home automation is more popular and it quickly gets a better place in the market and gives more space for engineers to work and research. Within 2020, domestic automation has predicted market value of more than $ 10 billion.

2. Literature Review

Mr. Sayadas Saft, Abdullah Al Mamun Khan, Mu Shahjahanan [2014] has proposed an intelligent security system that provides visual supervision in this paper and provides high level of home security using the exchange. This will be very useful in the home and company's automation process.

The processing unit is a Cortex ARM processor with the Linux operating system, and the board we use is Beagle Bone Black (BBB). The monitoring system is achieved using OpenCV (Open Source Computer Vision) and the communication system has been created by the GSM (Global System for Mobile Communication) module. The number of people in the room is measured using OpenCV. While leaving the premises, the user can issue voice commands to activate the system. When a user leaves home or office, the system keeps up with automatic monitoring. It can be modified to turn on automatic monitoring for a particular time of day. If the user leaves the premises and recognizes the presence of a person in the system, an SMS will be sent to the user's cell phone and the alarm will be turned on. After the alarm is turned on, the system will start recording video on the SD card so that the user can then check back. The image can count the number of people using the image processing algorithm, and automatically closes all loads in the room when no one is present. This will also help in reducing unnecessary waste

3. Block Diagram

The concept of "Smart Home" and Home Automation System (HAS) has existed for many years. The word "Intelligent Home" is used and used to present the concept of networking equipment and equipment in the home. The housing system (HAS) shows an excellent research opportunity to create new areas for engineering, architecture and computing. Now days are becoming popular and quickly enter this emerging market.

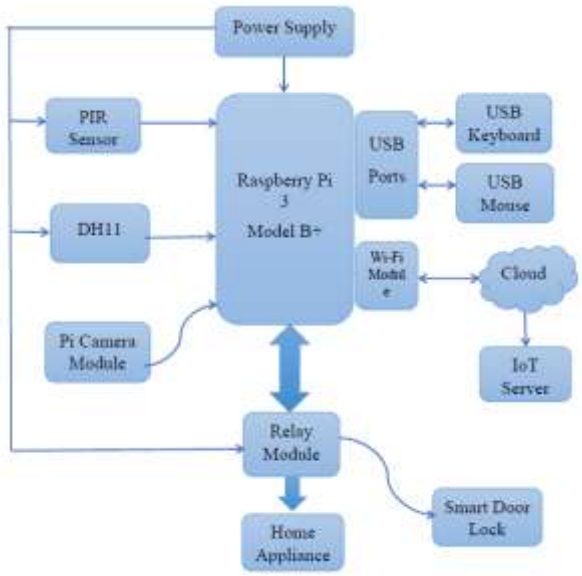

Fig.1 Block diagram of smart home monitoring and security system.

4. POWER SUPPLY

You always need a basic thing when working with electronics: Power. Electricity supply is required in every electronic circuit. The right things for each and each component, must be given to the voltage and to the exact extent. If the power limit crosses, it may be harmful. Below is the circuit diagram of the electrical supply that gives the output of 5V, because it is only necessary for the microcontroller.

5. HARDWARE REQUIREMENT

- Raspberry pi 3B+.
- PIR Sensors
- Pi Camera
- Relay Module

6. ADVANTAGES

- Managing all of your home devices from one place.
- Maximizing home security
- Increased energy efficiency.
- Convenience to user.

7. APPLICATION

- Home automation.
- Security & Monitoring Systems.
- Industrial Automation.

8. RESULT

- In this project, up till we have designed the home monitoring & security system hardware.
- The below fig. which shows connections between sensors and raspberry pi kit
- It consists of sensors like PIR, DHT11, etc

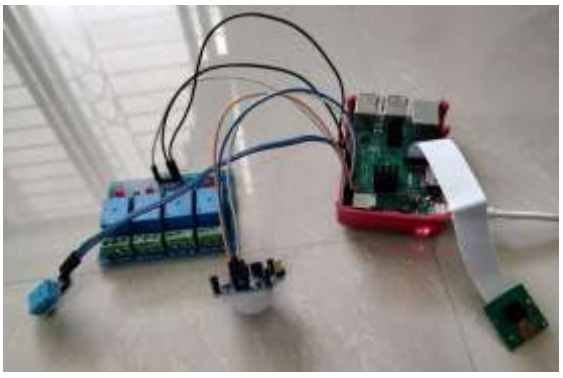

Fig. 2 Home monitoring & security system.

- By using algorithms and programs it can detect human faces captured by pi camera in which data gets collected first and then by this face can detected.
- The result of face detection by pi camera is shown in below Fig3.
- There are total three faces shown in picture and all these three gets captured by using pi camera.

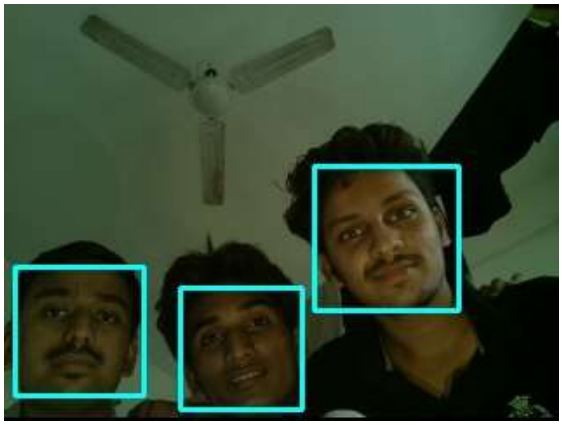

Fig. 3 Face detection result.

3. CONCLUSIONS

This system helped users to accurately identify human existence around the home. The use of wireless connectivity based on the microcontroller facilitates the installation process in the home and prevents hacking in any security system.

This project can be used for automatic inauguration of the house such as opening of doors and door locks, P-camera and all other sensors (e.g. temperature sensor, smoke sensor, motion sensor etc.).

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