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Smart Home Automation System Using IOT

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ABSTRACT

The project focuses on controlling the Electronic Devices with Remote or a Smartphone. The system will base on few Sensors, Detector which will be embedded with a Raspberry Pi. There will be a Server where the updates will be stored in Database. We are using Python, Android application. Firstly we have planned to implement it on a live room so that if one enters in the room motion detectors will send the signals to raspberry Pi to turn on the light. Secondly we also detect the Gas in home using gas detection sensor and finally we use machine learning concept to detect the person face emotion for play the songs according the person emotion using camera.

Keywords: Raspberry Pi, Relays, Sensor, Detectors, Python; Android.

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I. INTRODUCTION

Our Future is in our Hand so let's make it better and proper. In this world of technology, we all have a very busy life and one can think of living in a comfort zone rather than getting it stressed. So why cannot we use technology to make things better. Home Automation is the first approach to this, which has become and will become a trend in 21st and the upcoming century. Home Automation is a term which is used to describe the working of all household amenities and appliances together and we are making it control from our daily use or thing especially smartphones and tablets or a computer having Internet connectivity. According to the statistics report, it has been recorded that from 2005 to 2015 the increase in Internet users is been increased from 1,024 to 3,207 million and will increase more in the future. Mobile's smartphones and laptops are the means from which one can use the Internet at any time and from anywhere. So that if we will open a door that connects you to your various daily home appliances then we can control our home.

Internet of Things is a concept where each device is assign to an IP address and through that IP address anyone makes that device identifiable on internet. The Internet is an evolving entity. It is started as the "Internet of Computers". Research studies have forecast an explosive growth in number of 'things' or devices that will be connected to the Internet. The resulting network is called as the "Internet of Things" (IoT). IoT is having the potential to change the lifestyle of peoples. In a day today's life, people prefer more of automatic systems rather than any manual systems. The major elements of IoT based smart home automation system are Raspberry pi and the Relay along with their driving circuitry. Smart home

automation can be defined as the technique removing as much human interaction as technically possible and desirable in various domestic processes. Ultimately it is a system that aims to heighten quality of life with the automation of household appliances that may be controlled over the Internet or Telephone.

Motivation:

- Continuous Communication are able to be done: Soldiers can communicate anywhere using GPS system that will be help soldier to communicate among their squad member whenever in needs.
- Less complex circuit and power consumption.
- Use of ARM processor and low power requiring peripherals minimize overall power usage of system.
- Modules used are in smaller size and also lightweight so that they can be carried around.

II. PROBLEM DEFINITION

In the existing system, the works on Home Automation System focuses on addressing the problems or power consumption range of operation and cost of the whole system. To automate the devices, various methods are used like SMS and Email. The hard work presented here is focused on quick and simply accessible of a wireless smart home automation system to reduce the manual work and everyone accesses this system. It is having low cost, secure, and access fast as compared to the previous systems.

III. LITERATURE SURVEY

Piyare&Tazil [1] et al. proposed the work on this by using the Bluetooth technology for Home Automation System using an Arduino board as well as the wireless system. Through a Bluetooth connection, a cell phone or mobile device is used to send commands to the Bluetooth antenna of the Arduino board but the disadvantage in this is that it is applicable only for the short distance.

D. Pavithra et al. [2] proposed a work on IoT based Monitoring and Control System for Home Automation and it used the portable devices for the user interface. They can communicate with Internet gateway, by using low power communication protocols like ZigBee, WI-Fi, etc. It makes web portal to interact with the devices at home and web portal is accessed via Smartphone. It doesn't provide security to their system and limited no. of devices are used in their work.

B. Pandya et al. [3] proposed a work on Android Based Home Automation System using Bluetooth & voice command. It used an Arduino microcontroller for connecting the appliances, a Bluetooth module for transferring the signal which is running on Smartphone an Android application. The limitation of this work is that it uses a microcontroller which converts the byte signal into string format so there must be a delay in the system.

Rajeev Piyare and Seong Ro Lee [4] present a low cost and flexible home control as well as monitoring system. In this system an embedded micro-web server is used for accessing and controlling devices and appliances remotely, using Android based Smart phone app. The proposed system architecture is divided into three layers: home environment, home gateway and remote environment. The proposed home automation system two types of software; one for server application (it is a library implementation of a micro Web-server running on Arduino Uno using the Ethernet shield to communicate between remote user and the Home Gateway) and other is for microcontroller firmware.

IV. PROPOSED SYSTEM

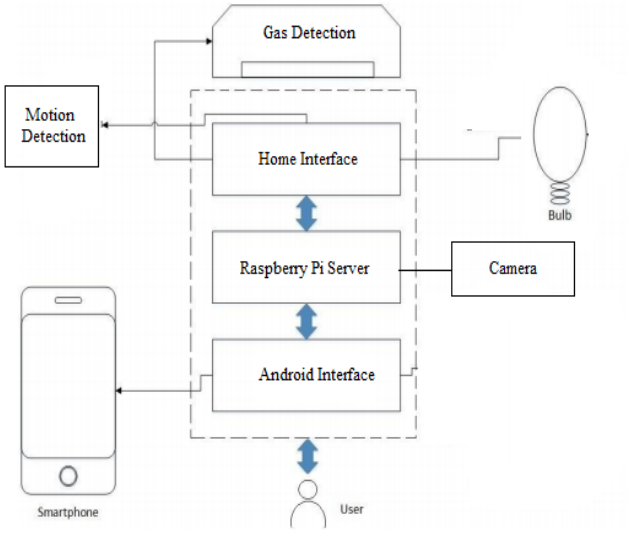

Fig 1. System architecture

- Gas Detection:

Here sensor checks and analysis the gas in the home from the gas sensor sensors. In this module we check the gas and values continuous update on the server.

- Motion Detection:

Here we detect the motion if any person enter to the home once detect then light will be ON.

- Emotion Detection:

Here we detect the face when enter in the home and play the songs.

V. CONCLUSION

The work for IoT based home automation is design using internet source and Raspberry pi. It is trusted and scalable home automation system with low cost and easy to implement. It makes human life easy and comfortable. It is possible to run home appliances from any part of the globe.

VI. FUTURE SCOPE

A call on user's smart-phone when someone rings the doorbell. NFC based room waking or NFC tags based profiles. Based on NFC we just need to tap our phone on smart NFC tags according to which the desire function will be done like opening the garage door or some user customized functionality.

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