Controlling Smart Home Appliances using Raspberry pi

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Abstract: Technology has become an integral part of human life continuously making daily tasks easier. marketing has been under the influence of the Internet of Things in more ways than we expected. IoT technology or Internet of Things can be a network of objects that can transmit data to audiences without human connections, such as smart devices, electronics, and devices. Various IoT applications can be made using open hardware-related hardware. During this study Anomaly prevention is done by creating the only BOT of authorized users in the telegram app. In the event of any abnormal behavior it is usually observed using a camera.

Keywords: Smart home appliances, Telegram app, camera, BOT, Raspberry Pi, IOT

1.   Introduction

The home is often referred to as smart when it comes to a variety of smart devices that you can simply control remotely by setting yourself the way you want to make housekeeping mechanical. It can also be integrated into a single network.It provides all devices with internet access which increases the chances of such a home network. For example, you can now see what's going on in your house and watch security cameras on your smartphone or computer. IoT applications allow you to connect devices to each other and allow them to communicate without your participation. Think of it this way: as soon as your car leaves the parking lot near the office, the conditioner starts to cool down your house so that after a hot day you can get into a cool house. provide energy saving and safety. Home automation also helps the elderly and disabled people as they do not have to move from one place to another to turn on or off electrical appliances.

Thispaper explains how household items can be controlled via a smart phone remotely from anywhere and also prevents unauthorized users from controlling household items. The Raspberry Pi is connected to a web connection to invite chat messages from the Telegram so the items we need to control should be connected to the GPIO Raspberry Pi pins via a transmitted circuit. The Raspberry Pi is designed to receive conversations from the Telegram app, whenever we send messages to a number set to change the bulbs as the chat lights are turned on by the same electronic device it can be turned off by sending CLOSED conversations. The Raspberry pi serves a large amount of space.3 The Raspberry pi has various communication media such as Ethernet port, HDMI port, USB port and built-in Wi-Fi. We can provide network connectivity via Ethernet or Wi-Fi. Load management from a remote location with great reliability.

Bots with Silent Telegram accounts are controlled by software and not people and that often have AI options. They can do anything to teach, play, search, broadcast, remind, connect, integrate with other services, or perhaps forward commands to the Internet of Things.

2.   Related Work

Telegram is also a free cloud-based communication service. Telegram customers are available on each mobile and desktop application Users will send messages and exchange photos, videos, stickers, audio, and files of any kind. Telegram also offers encrypted end-to-end communication. It also provides a bot service by making a new bot using a telegram app that one can manage existing items at home or office by simply chatting with the bot. we will release GPIO raspberry pi pins to control completely different devices at home or in the workplace. It is very easy to control devices at home because of their flexibility and easy to install on them. This app is used for communication between people but also, we are able to control devices that learn and state from sensors and login to twitter and email..

In 2013 the wide-ranging Standards Initiative on the Internet of Things described the IoT as "a global infrastructure for the information society, enabling advanced services by connecting objects that support existing and innovative communication technology" and in these activities "object" is the physical world or information world, which can be known and integrated into social networks ".

TheIoT allows objects to be seen or controlled remotely from existing network infrastructure, creating opportunities for direct global integration with computer systems, and resulting in improved performance,

accuracy and economic benefits in addition to reduced human intervention. Once the IoT is upgraded with sensors and actuators, the technology becomes a parallel model of an additional phase of cyber-physical systems, which integrates technologies such as sensible grids, virtual power plants, intelligent homes, intelligent transport and intelligent homes. Everything is inconsistently different with its automated data processing system however during the interaction between existing web infrastructure. Eliminates cable problems limitations and the range of voice commands can be heard using wireless routes and LOT. In the future, the use of Aurdino may allow it to be controlled by., A single server through smart phones. Home Automation Systems has gained worldwide popularity these days. It ensures safety, scrutiny and comfort for the user and makes their life more comfortable. In developed countries, many households have automated home automation systems that are located and work on data to start household items such as fan, air conditioners etc.

3.   System Overview

Typically, the Raspberry Pi Home based automation system works using Raspberry Pi 3, internet connection, lighting, Webcam, and Android Smartphone as a data communication tool between user and Raspberry Pi to monitor and manage lights and webcam.

Raspberry Pi:

Raspberry Pi 3B + board used for this purpose. Launched in March 2018 running 1.4GHz Compatibility, upgrade Bluetooth to 4.2 LSBLE via
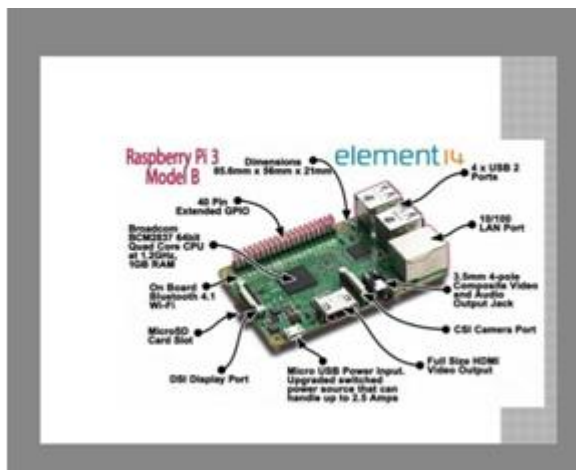
Broadcom BCM2837B0 quad-core A53 64-bit revised SoC design with 1GB of SDRAM.

This board is protected under a steel plate for rapid power dissipation that allows high-frequency clocks. New dual band 802.11ac Wi-fi. The RPi3 delivers a board with the same size as the RPi2 and RPi1 B + models, but in RPi3 the SoC is hired (10x faster than RPi1). Additionally it is integrated with 802.11n wireless module with low Bluetooth power.

Telegram Bot:

Telegram Messenger can be a messaging app with a focus on speed and security. Telegram is probably a cloud-based messenger with unlimited synchronization. Therefore, it can access messages from many devices directly, including tablets and computers and share photos, videos and files also if you do not want to save data. your device, you can still store it in the cloud. It has an open API so developers can create their own Telegram programs with API Bot, a developer platform that allows one to easily create special tools with Telegram. The Bot API from telegram allows users to create interactions with bots using phone messages or instructions sent by users. Telepot is embedded in the Raspberry Pi to chat with the Telegram bot using a bot login token, an access token that unique ID is provided during the design of the bot on Telegram.

Camera:

The camera consists of three parts. They are part of the Mechanical or camera body Optical part or lens section Part of the chemical or film. A camera is a visual device that captures images that can be collected directly, transferred, or both. These images can be photos or moving images such as videos or movies.

Relay:

The transmission is an electric switch that opensand

Closesunder the influence of an additionalelectrical circuit.

In the first method, the button is driven by an electromagnet to turn on or off one or more contacts. The transfer is able to manage the outputa higher power circuit than an input circuit, can be considered, in the broadest sense, the form of an amplifier.

Python:

Todevelop this project using Raspberry Pi and Python, we need to install two key libraries. One library is used for Telegram and the other is for GPIO Raspberry Pi pins. To set up libraries open end and type commands. Upgrade Raspberry Pi before installing libraries. Python is a widely used, powerful and easy-to-learn language Raspberry Pi allows application in python. Python is portable and compatible with all platforms including Unix, Windows and Mac application.

Raspberry Pi fully supports python editing and installation of python packages. The Python Library suggests a standard library that comes with a python thatallows available modules to use python codes. Python also has many third-party libraries that allow the user to perform a variety of actions directly instead of coding. libraries that allow them to perform all the necessary steps.
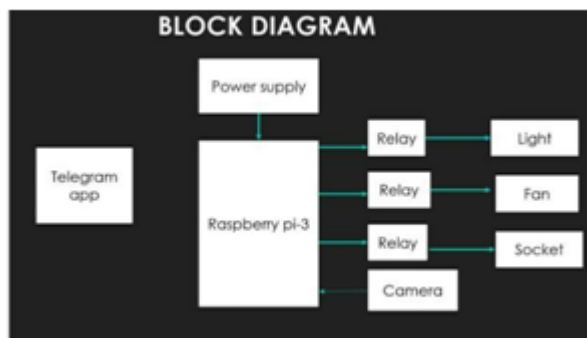
4.   Existing System

For home automation we use the GSM module, in which we will manage loads via SMS. Load loads from remotely using a web page.This paper detects user behavior behaviors.

5.   Proposed System

The Raspberry Pi is connected to the Internet to receive chat messages from the Telegram and the tools we need to control should be connected to the GPIO Raspberry Pi anchors via a transfer accessory. Messages to the default number to turn on the lights as the chat lights turn on automatically the electronic items can be turned off by sending CLOSED chats.The telegram provides high security due to its default settings outside web pages. so that the one entering may not have control over the household. The camera is connected to improve safety and monitor movement in the house..

6.   .Implementation

In the initial three-way transmission is used. One transmission is connected to the socket the second transmission is connected to the bulb and the third transmission is connected to the fan.After connecting the transmission to the power supply appliances these relays are connected to the raspberry pi pins.To send and receive commands the telebot and raspberry pi

must be connected to wifi. Raspberry pi fully supports the program in python and install packages To do this work using Raspberry Pi 3 and Python, we need to install the two required libraries. One library is used for Telegram and the other is for GPIO Raspberry Pi pins. Installing libraries opens the terminal and type the following commands., So python is used in raspberry pi to understand the commands given by the user and perform the action according to it.

7.   Result

Test results for home automation system compatible with phone bot. We use a mobile app to unlock the phone, fan and Camera. Device status can also be checked on the bot using the appropriate instructions. It can be seen that the light and the condition of the followers if the command is true the light must be otherwise otherwise the light is turned off and it is the same as the condition of the follower.

8.   Conclusion

The home automation system enabled for this function can be used to remotely control household items via a mobile phone connected to any network and also prevents unauthorized users from controlling home appliances. The connection between the Telegram bot and the Raspberry Pi has been created and we will send a command to the telegram bot to turn on or off the light. For added security purposes we use a camera to monitor.

We can determine the status of devices by providing appropriate text commands to the phone board. Home security is provided to the system through the telegram application. A link is made to the bot to turn on the camera and monitor the movement in the house and alert the user.

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