

Voice Controlled Home Automation

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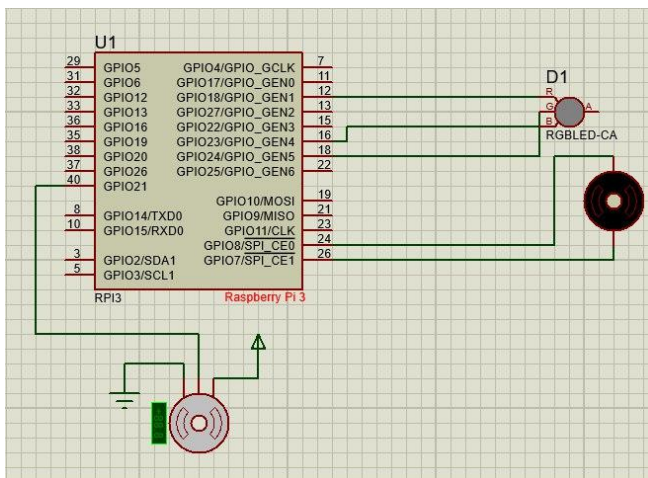
Abstract—This project aims to develop a Telegram-controlled Home Automation system using Raspberry Pi. The system allows users to remotely control their home automation tasks through the Telegram messaging app. The system is configured to work with Telegram, allowing users to send commands and receive feedback. The circuit design and working of the system involve connecting devices to the Raspberry Pi, programming it to interact with them, and using Telegram as a messaging interface to control and monitor the system. Overall, this project provides a simple and convenient solution for home automation that can be easily controlled from a mobile device.

Keywords—Telegram, Home Automation, Raspberry Pi, Remote Control, Voice controlled, Python, Messaging, Mobile.

I. INTRODUCTION

Home automation now becomes an essential part of IoT applications and people use their smartphone to control home appliances from anywhere over internet. There are various ways to control AC appliances with smartphone. We will use Raspberry Pi in to control appliance through our smart phone. In this project we will control an RGB LED, Servo motor and DC motor with a voice detecting mobile application.

II. CIRCUIT DIAGRAM



III. COMPONENTS

- Raspberry Pi 3
- RGB Led

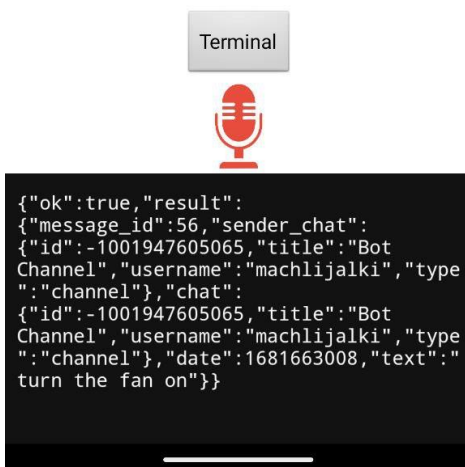
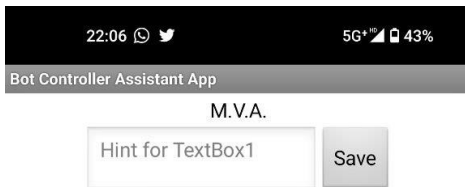
- DC Motor
- Servo Motor
- Computer interface (for coding)
- Connecting wires
- Power Supply
- Bread-board

IV. PRINCIPLE OF OPERATION

The principle of operation for this Home Automation project is utilizing the telegram network to send messages from our mobile application to Raspberry Pi 3 connected to loads such as LEDs, DC Motors and Servo motors. This creates a system that allows the user to remotely control their home automation tasks through a voice detecting mobile application interface. The Raspberry Pi uses a library called “telepot” to parse data received through our mobile application. To achieve this we first create a telegram bot and store its bot key and chat ID. These parameters are used by both our mobile application and Raspberry Pi to communicate with each other. The Raspberry Pi is connected to the internet and uses the bot key to access messages received by our bot. Whereas our custom mobile application converts voice to text using google translate API and then sends the message to our bot which forwards it to Raspberry Pi.

V. WORKING

The working of the system involves a user sending voice or text commands through our mobile application, which is uses telegram as a channel to communicate with Raspberry Pi 3 at home. The device will then produce appropriate action according to give command. We have shown a screenshot of our custom app below. This app was made using MIT Application Inventor.



VI. APPLICATIONS

- Remote control of home appliances: Users can remotely control their home appliances, such as lights, fans, and air conditioners, using Telegram commands from their smartphone or computer.

- Home security: Telegram Controlled Home Automation can also be used to monitor home security systems. Users can receive notifications on their Telegram app when a sensor detects motion, and they can remotely control the alarm and security cameras.
- Energy efficiency: The technology can be used to monitor and control energy usage in the home. For example, users can turn off lights and other devices when they are not in use to save energy.

VII. ADVANTAGES

- Cost-effective: Raspberry Pi is an affordable and widely available microcomputer, making it a cost-effective solution for home automation. Additionally, Telegram is a free messaging app, so there are no subscription fees or additional costs associated with using it as a control interface.
- Customizable: Raspberry Pi is a highly customizable platform that allows users to program and configure their own automation systems. This makes it easy to adapt the system to meet the specific needs of the user.
- Remote access: Telegram Controlled Home Automation using Raspberry Pi allows users to control their devices remotely from anywhere with an internet connection. This makes it convenient for users who want to control their devices while away from home.

VIII. REFERENCES

- [1] <http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=7443538&queryText=voice%20home%20automation&newsearch=true>.
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