SMART HOME REMOTE AND VOICE ASSISTANCE

PROBLEM STATEMENT

Smart home systems can be costly and hard to set up. This project will create a Smart Home Remote and Voice Assistant using Raspberry Pi 4 to control lights and fans with voice commands and a web interface. Users can turn appliances on and off using a microphone for voice control or a web platform for remote access. This system is a simple, affordable, and easy-to-use smart home solution.

PROJECT OVERVIEW

This project aims to develop a Smart Home Remote and Voice Assistant using Raspberry Pi 4. It will allow users to control home appliances like lights and fans using voice commands and a web interface. The system will use a microphone for voice control and a web platform for remote operation. This eliminates the need for expensive smart home devices, making home automation affordable, easy to use, and accessible. With this setup, users can turn appliances on and off from anywhere, improving convenience and energy efficiency. The project provides a simple yet effective solution for smart home automation.

SOLUTION OFFERED

The user gives input via voice commands or the web interface. The Raspberry Pi processes the command and determines the required action. Signals are sent to the LEDs (via GPIO pins) or the DC motor fan (via a relay/transistor circuit) to turn them ON/OFF. The web interface updates device status in real-time, and an optional voice response confirms the action.

WHO ARE THE END USERS?

Anyone who interested to use Smart Home.

TECHNOLOGY USED TO SOLVE THE PROBLEM

1. Hardware Components

- Raspberry Pi 4 – Acts as the central controller for processing voice commands.
- LED Modules – Turns ON/OFF based on voice input.
- DC Motor – Runs or stops based on commands.

2. Software & Libraries

- Python – The main programming language for handling voice commands and device control.
- Flask – Creates a web interface to remotely control the devices.
- Speech Recognition Library – Converts spoken words into text to interpret commands..

3.Deployment:

- **Flask and ngrok**: The Plant diseases detection deep learning model was deployed on the laptop using Flask and ngrok.