VOICE RECOGNITION AND EMAIL BASED HOME AUTOMATION SYSTEM USING RASPBERRY PI

ABSTRACT

Home automation refers to the application of computer and information technology for control of home appliances and domestic features. Its application varies from simple remote control of lighting to complex computer/micro-controller based networks involving varying degrees of intelligence and automation. Home automation results in convenience, energy efficiency, and safety benefits leading to improved quality of life.

Home automation is becoming more and more popular day by day due to its numerous advantages. This can be achieved by local networking or by remote control. This project aims at designing a basic home automation application on Raspberry Pi through recognising the voice. We can also design it on Raspberry Pi through reading the subject of E-mail and the algorithm for the same will be developed in python environment which is the default programming environment provided by Raspberry Pi. Results will show the efficient implementation of proposed algorithm for home automation. LEDs will be used to indicate the switching action.

The project aims in designing a system which is capable of switching ON/OFF the electrical devices based on the speech (command). This system creates a new era in the automation system. This system integrates human-machine interface. This project consists of voice recognition based light control system that transmits the wireless signals according to the input being selected based on speech commands given by the user through Raspberry Pi using microphone. This will be more useful when the user is present at home.

When the user is not present at his home, he/she can control the lights or fans by just sending an email. This project presents a basic application of Raspberry Pi in home automation control through internet (E-mail) where subject of the received e-mail is read by the developed algorithm fed into Raspberry Pi and the system responds to the corresponding instructions. The presented system is interactive, efficient and flexible according to the consumer needs. It immediately replies the status of work done by Raspberry Pi to the consumer. The proposed system can be tested practically using LEDs as switching signal indicators, which can be seen in the presented results. The project can be extended for more applications apart from switching of home devices like surveillance, power monitoring, fault monitoring, power control, security etc.

For implementing the project, we would have to learn the Python IDE (Integrated Development Environment) and also narrow down on the best voice recognition software available. There are three

different voice recognition softwares available for Raspberry Pi. Two of these softwares are dependent on the internet and are online; however the third one is offline. The three softwares are:

1. Jasper – Voice Recognition Software.
2. Raspberry Pi Voice Recognition by Oscar Liang.
3. Raspberry Pi Voice Control by Steven Hickson.

After learning the Python programming language and activating the voice control software, all the required components can be assembled and the hardware implementation can be started. The implementation can be done in the Linear Integrated Circuits Laboratory in our college as there will be a requirement of breadboard and dc power supply.

Thus, in our project we are concentrating on two modules:

1. When the user is present at home itself and automation can be performed by Raspberry Pi using voice control.

2. When the user is present at some other location other than home, then he/she has to use email for interaction with the Raspberry Pi in order to use it for home automation.

PROJECT GUIDE

MR B. SAMMUNAYAK

BY

APURVA PANIDHAR 2210411204

DN GAURAV RAJ 1210411114

PATLURI SRI CHAITANYA 2210411246

SAHITHI MANAM 2210411252