Voice and Location Based Appliance Automation System Using Mobile Cloud

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Abstract— We are in the information technology age. Mobile technology is getting a fast pace in this older population has more ratio than other age group. Smart phones are a great enhancing the use of technology and its advancement. In this paper we are going to present the modular based home automation system environment and the technologies required to achieve the goal of automation. This concept uses voice commands to act as commands to control the appliances in context to home office or car. Cloud platform is used for processing of commands on the air and dispatched from cloud server to controlling modules at home, office or car respectively. As cloud computing is the future of information sharing and shared resource utilization with optimization. This also brief the challenges involved in implementing voice based appliance automation using cloud platform. As it is evident that home automation is in its immature state so other technological challenges should be considered which can affect the system.

Index Terms— Android, Cloud, Home automation, Speech recognition, Voice based,

I. INTRODUCTION

Home automation is not a new concept it has been developed through lots of work in past in this field. Some has used wired as well as wireless technologies to communicate and control. But recently it is gaining more pace advancement due to new efficient technologies in the field of communication, mobile technology and processing. Many in corporate organizations have started working and researching in this regard. Big organizations are planning to expand this industry in near future. Cloud computing also helps in leveraging easy access with optimized resources utilization.

II. SPEECH RECOGNITION MODULE

With the daily updated technology, there will be a growing need for more convenient and natural way in information exchange between human and machine. Speech is the most natural, effective and convenient communication method in information exchange. Traditional interface which is composed of keyboard and button cannot satisfy the need of human in service robots intelligent space at present. Now as the development of speech technology, it is necessary to develop an interaction system, which can use natural language communication.

A. Previous System Using Speech Interaction
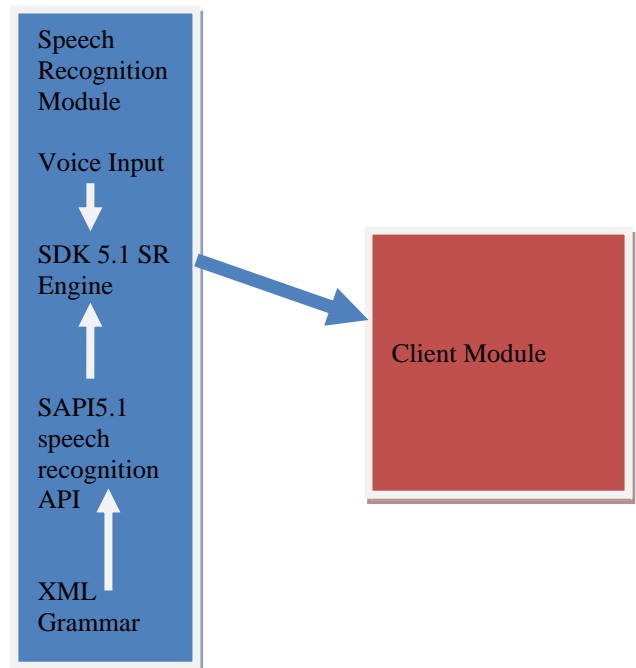
III. PROPOSED SYSTEM
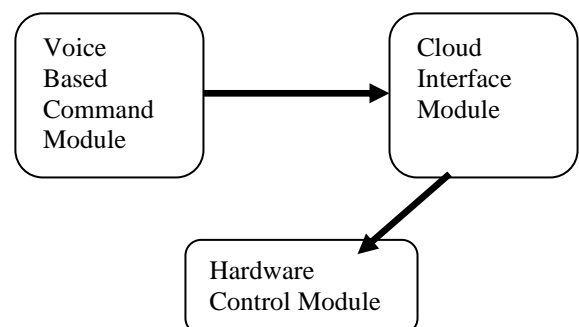
Step 1: Android based application on phone which uses voice input for control of appliances.
Step 2: Voice commands parsed from speech grammar helps in mapping from NLP to text commands.

Step 3: The text is retrieved from grammar format which must be known to user in prior context.

Step 4: Text is converted to commands to be processed efficiently and reliably to perform action.

Step 5: The command is sent to cloud module which uses google cloud messaging service to downstream and upstream light information.

Step6: Hardware module has the functionality to accept messaging and act accordingly to the appliance mentioned with respect to command.

IV. CHALLENGES

Not Ready For Broad Adoption Our participants have extensive personal experience living with home automation, so we felt they were well informed to comment on the potential value of home automation for others. Given the frequent mention of eldercare as one application for smart homes, we asked participants their opinion about home automation's value to their parents or older friends. Almost universally, participants thought this was a bad idea. D8_G felt "it is just too expensive; there is no payback for the benefit you receive," while D2_G felt there was potential benefit but "[home automation] is not robust enough, I think, to be stable for the average person." Participants" comments in response to this question, along with their responses throughout the interview illustrated four barriers to broader adoption: high cost of ownership, inflexibility, poor manageability, and difficulty achieving security. In describing these, drawing on our participants" experiences, we want to be explicit about two points. First, many of these issues we describe were not barriers to use for the households we spoke with because they were uniquely qualified (DIYers) or spent money to overcome them. Second, we explicitly do not address the question of whether home automation functionality appeals to a broader audience. The barriers we have identified would need to be overcome before the general population could even consider using it.

HIGH COST OF OWNERSHIP

The first barrier to wider adoption is the high cost of ownership of home automation, either money or time and sometimes both. We describe our participant's experience, and how little most were willing to spend on additional functionality.

SPEECH RECOGNITION BASED CHALLENGES

Currently in use speech recognition components like speech synthesizer and recognizer needs a lot of improvement to convey the correct message intended by user. Challenges of developing correct grammar for representation of context of spoken words for semantics is one of challenge in this field. Noise and acoustic problems in listening speech from user is controlled and mapped by speech recognizer with use of many complex algorithms.

V. FUTURE WORK

Efficient algorithm design for speech based system is a great topic of research for development of such systems. Application on mobile system should be able to utilize voice based interface for user. Processing of commands can be done on cloud platform to increase the speed of mapping accuracy. Networked appliances should be preconfigured and in build for support of mobile based controlling applications.

VI. CONCLUSION

The concept of this voice and location based automation system proposed as such has been referenced from many previous concepts and refined here to achieve goals. As nearly every person is holding phone so it will be complex for organizations to provide hustle free services to its customer. In this paper we have discussed new approach and challenges of home automation system by using speech as well as cloud platform for dispatch of messages.

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