Home Automation using Natural Language Interaction (NLI)

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Abstract— The purpose of this project is to automate current home appliances with the help of wireless com-mand through mobile phones. The system will use Natu-ral Language Interaction(NLI) to process the commands. This software will lead to faster and interactive system to operate home appliances easily. The system will save previously processed data to solve upcoming commands.

1. INTRODUCTION

Automation is the use of machines, control systems and information technologies to optimize productivity in the production of goods and deliv-ery of services. In the scope of industrialization, automation is a step beyond mechanization. The following key areas formed the main text of this paper.

Automation plays an increasingly important role in the world economy and in daily expe-rience.

Automating Home helps in saving electricity, reduces manual labor, increases reliability and efficiency, and also helps in tackling security. Home automation is a building automation system for a home, called as smart home or smart house. A home automation system will control climate, light, entertainment systems, and other home appliances. It may also in-clude home security such as access control and alarm systems.

Home automation for the elderly and disabled can provide increased quality of life for per-sons who might otherwise require caregivers or institutional care.

The concept of the Interactive Devices quot; has tied in closely with the popularization of home automation.

The Internet of Things(IoT) is a system of as-sociated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers(UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

Natural language processing, NLP is a branch of artificial intelligence that deals with analysing, understanding and generating the languages that humans use naturally to inter-face with computers in both written and voice contexts using natural human languages instead of computer languages.

2. LITERATURE SURVEY

Automation is key to the future so why not apply it to the devices we use in our homes not only using some controlling device but our voice itself to make life easier and interactive [2]. It also helps elderly and physically challenged people to use home appliances. Automation was initially used in Industries to reduce the human exposure to hazardous situations and to have work done more effectively and efficiently [3]. Its use reduced the man power required, and also helped in handling com-plex systems more effectively [1]. In this project we have tried to bring a model of Home Automation which is simple, reliable and cost-effective. By making use of the fact that mobile phones have become an inseparable part of our lives, in this model we have kept the mobile phone at the centre of our system i.e. we have tried to automate entire home with the help of a mobile phone [5]. This Home Automation model is hugely expandable and is capable to handle several complex tasks in parallel [7]. The idea behind making of this project is to get a feeling of how a home can be automated com-pletely with the help of a mobile phone [9]. The pur-pose of this project is to automate home appliances like light, fan, AC etc. Thus we looked into our home to automate appliances. Our home, As of now has good quality of appliances and in good condition but not automated [5].An individual have to switch it on or off manually by going to switchboard.so this process will be hard for injured people as well as handicapped people even it will be toxic for normal people too, to go near switch board again and again. While developing this application, we enquired about the step by step process from our mentor who helped us with the most appropriate modules to include in the application according to the above-mentioned processes [8].

3. EXISTING SYSTEM

Earlier the home automation using the voice control system takes input and gives output, but there was no interaction between the user and the machine. So, this was a simple command and action system.
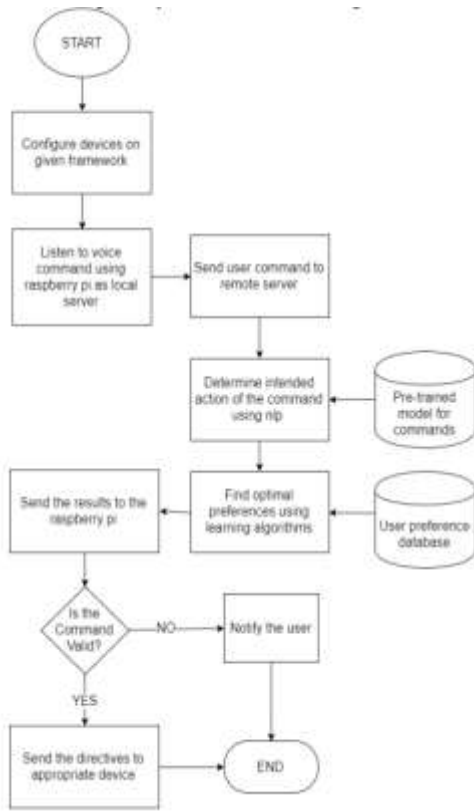
4. PROPOSED SYSTEM ARCHITECTURE

The proposed system uses NLI, which takes input from the user and will execute the command. After the execution of the command, the system will use its own intelligence and it will provide some suggestions to the user as an interaction between the user and the machine. For example, the proposed system uses the human voice to control the light bulb.
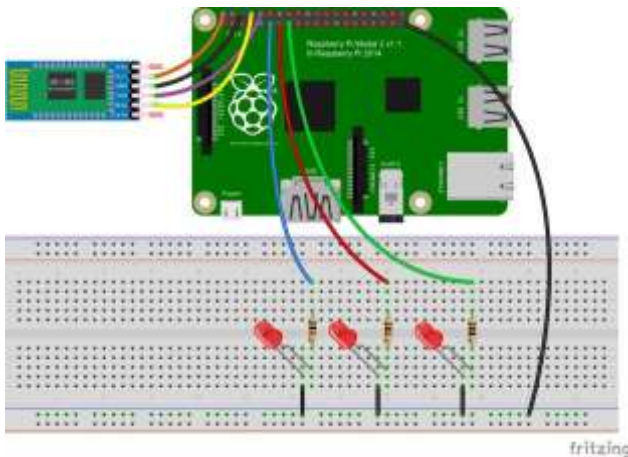
5. METHODOLOGY

NLIS can help those quires which is grammat-ically correct as well as in structure. Feedback and classification dialogue help in habitability. NLI improves effectiveness of the system. To reduce cognitive overhead query recognition can be inter-faced with ML.

The question whether this level of involvement is acceptable from end users point of view is a subject of future work

6. FUTURE SCOPES

Growth in Automation Market in India (2018-22) The next phase for the Home automation mar-ket will occur based on a few key improvements in the technology available in Automation, such as improvement in Wireless Automation solutions as well as lowering of price points as the mar-ket begins to accept Home automation usage in larger volumes. Some trends that we foresee for this phase of the industry are Big companies like Philips, Siemens amp; Schneider will eventually bring out fairly mass market automation products with appealing user interface but at a lower price point than today, and more people will be able to afford the products Solution offerings will slowly move to a more user friendly design, where aside from a few key components, users will be able to buy and use the Automation products themselves without the aid of any technical expert

7. CONCLUSION

This study has found that the existing automa-tion systems follow a specific set of commands or procedures in order to interact with their home appliances To overcome our project proposes voice commands to interact with home appliances using Natural language Interaction Our project proposes voice commands to interact with home appliances using At the end of Sem-1 we will have initial working models of the system. We will have con-figured Raspberry Pi with the devices and sensors and get it connected to the main server.

8. ACKNOWLEDGEMENT

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