Implementation of Chatbot using NLP and IOT

Siddhesh Khanvilkar, Shubham Patil, Paul Sambyal, Rahul Shinde

Abstract- In this paper we proposed that by using chatbot we can have access to the electrical appliances through the internet. The first important feature of chatbot is that by using chatbot alogorithm the user can text information to control the functioning of electrical appliance. The message that is sent using the chatbot is processed using Natural Language Processing technique. The Second important feature is that devices connected to the local area network within the house can be control using chabot. Another feature of chatbot is that it can be used to control the appliances based on programmed time-table, and can enable certain users to access the particular application.

.

————————————————————   ☐ ————————————————

1. Introduction

In this paper, we propose a chatbot using which the fans, lights and other electrical appliances can be controlled over the Internet. Basically there is an algorithm using which the user can text information to control the electrical appliances. Natural Language Proccessing Technique processes the message sent using chatbot.

In this system, we propose a web application using which the PC's, Fans and other appliances can be controlled over the Internet. Using this web application the user can have control over the connected electrical appliances. Natural Language Processing Technique is used to procees these messages on chatbot. Secondly, any device connected to the local area network of the College campus can control the devices and other appliances in the college.

2. Methodology

We live in a corporate world so it is not surprising to see that more and more consumers are getting inclined to use chatbot. Thus our system will provide an automation using IOT. As the need of Chatbot is increasing day by day. Due to which it has helped businesses and brands to develop a lot. Hence chatbot and AI is developing very vastly.

- **Need of a Chatbot:** It is evident from the research carried out in the literature review that modern organizational services are constantly seeking to expand their technologies, both to improve customer service and increase delivery of services through the advancements in technology as in the chatbot future. This is to gain a competitive edge over other organizational system and to expand its chatbot system by using various technologies. A domain specific chatbot using NLP and IOT will be implemented to assist users to gain control over the various electronic devices and to have a command based service to the chatbot. In order to overcome the user satisfaction issues associated with not interacting with the devices. The chatbot will provide personal and efficient communication between the user and college based online system in order to manage attendance and the timetable allotted in each slot such as answering any queries.

- **Relation to other chatbots:**
1. Selecting a smart home protocol which is similar to chatbot for college attendance system is itself considered a challenging task as a protocol that supports a large number of devices is need. Further, it must also provide the devices with the ability to talk to each other. Apart from this, there are also other factors that must be considered like power consumption, bandwidth, cost, etc. The average customer would be interested in the features that are provided by home automation.

Many new technologies are developed like Wi-Fi , Bluetooth-wave etc.

2. A well defined chatbot , for example can be used to facilitate the internal process of a business. A chabot, if successfully deployed as a subject matter expert can be deployed to any part of the business so that any employee or customer can retrieve important information from it at any time. However, in the current state, a clear majority of systems based on NLU are not well designed or accurate enough. High accuracy is necessary so that business managers can entrust them with mission-critical roles and tasks.

3. This works same in case for E-business, The idea is to simulate human conversations wherein one end is user and another end is a machine. These bots have found applications in various domains such as E-commerce services, medical assistance, recommender systems and educational purposes. They can be integrated into existing application platforms such as Skype, Slack, etc.

3 Proposed System

In this proposed system time table is integrated with the chatbot (Arduino).And on the basis of the time-table the chatbot will trigger whether to turn on/off the appliance connected to the system. It will follow the given steps in the above figure.

Step 1: User will provide an input that will received as an event in to the system.

Step 2: In this the event will enter into the event bus, simultaneously AI (Artificial Intelligence) will trigger the Arduino and will turn on/off the connected devices in the
system.

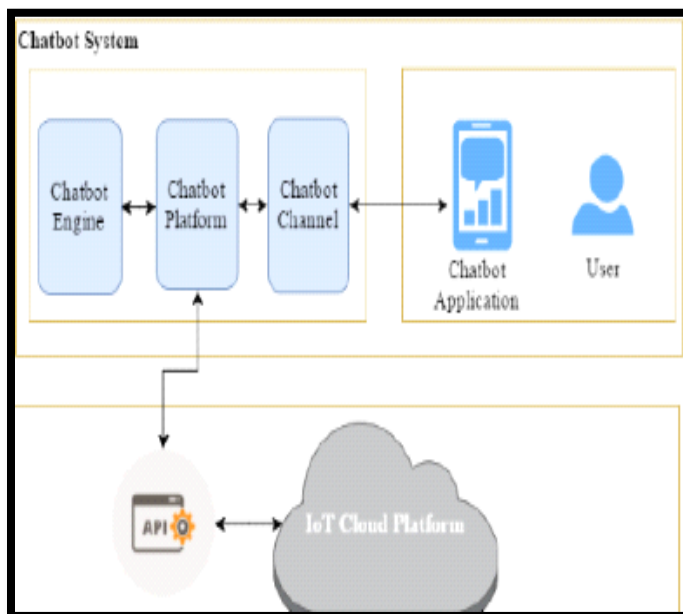**Step 3:** It will also perform a usual task that a regular chatbot performs.

Fig 1: Basic framework of Chatbot

In this system we are using a chatbot and various hardware components to control the PC's and other components in the lab. In our system the chatbot is interfaced with the hardware components and with the help of messenger user can give commands using chatbot. This system slots the practical to the respective labs according to the timetable which is integrated with arduino.

This system is using:

A. IOT System:

1)IOT Devices**:** In the presented system we consider a college timetable system consisting of my pc's , ac, fans, lights etc along with two staff rooms.

2) IOT Cloud Platform**:** They deal with various segmented technologies in embedded devices from access protocols

B. Chatbot System:

1) Chatbot Channel and Platform: Chatbot Channels are applications which run Chatbots on supported Mobile devices (Eg. Smartphones, Tablets) or Terminals (Eg. Desktop Application) . Chatbots are

integrated with the existing instant messaging platforms. Popular Chatbot channel consist Facebook Messenger, Slack, Telegram, Kik, Skype, Viber, Amazon Alexa.

2) Chatbot Engine: It is the most important aspect of a chatbot, Dialogflow is used in this system.

4. Requirement Gathering

A. *Hardware Requirement*
- Custom Board/ Nano
- Custom relay
- Eagle PCB Bard
- I/O control points
- Arduino Uno and node MCU
- Wifi shield
- Zebronic power supply

B. *Software Requirement*
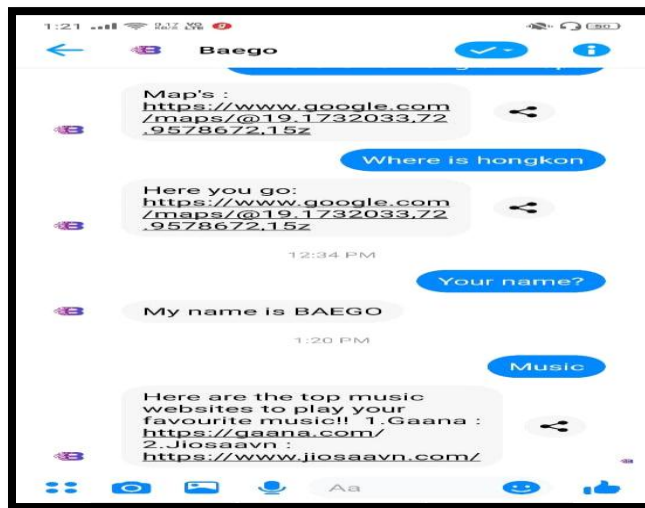- Arduino
- I/O checks
- Esp series board IOT
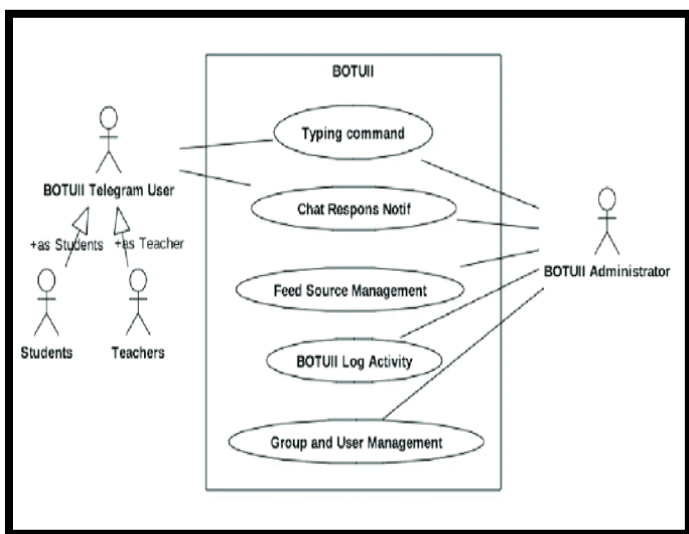
5. Result

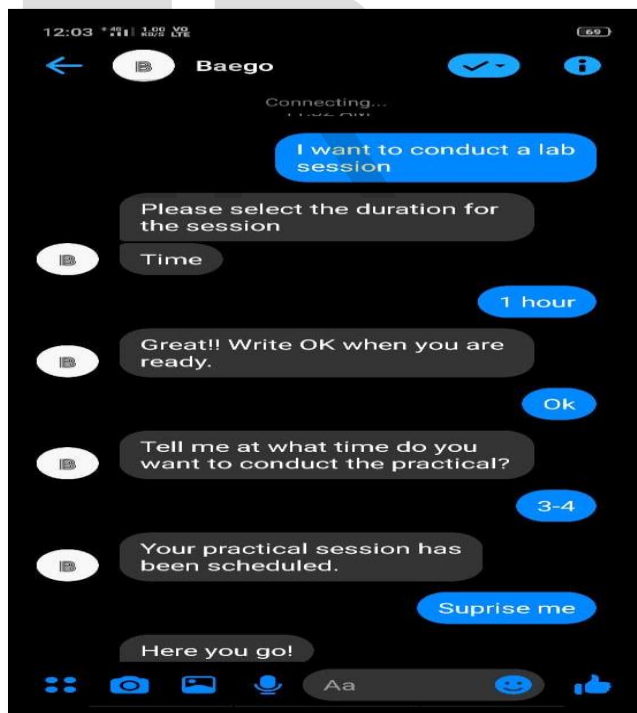**Fig 3:** General questions results

Fig 3: Scheduling a lab session

It shows how our system can give the input and can get an output through the third party engine like facebook messenger. The system is processed using natural language processing and has a n running

Fig 2: Use case diagram

engine which is a dialog flow through which we can give commands. The owner can input the questions and answers as desired for the chatbot. Through this whole system we can define the working and implementation of the chatbot. And how it can be interfaced with the surrounding, required it can work in any environment.

6. Conclusion

In this work we are developing a system, which controls the PC or other appliances in the computer labs. The user can interact with the system using either a web application or a chatbot through a computer or a handheld device and can have control over the PC in the computer labs. Hence using this system it is now more convenient to control the PC or other appliances in the labs. We are working on how to integrate the chatbot with various departments and to be used for the college admission system. We will be working on many more entities used in the college.

7. References

- Baby, C. J., Khan, F. A., &Swathi, J. N. (2017). Home automation using IoT and a chatbot using NLP. 2017 Innovations in Power and Advanced Computing Technologies (i-PACT). doi:10.1109/ipact.2017.8245185

- Tajane, K., Dave, S., Jahagirdar, P., Ghadge, A., &Musale, A. (2018). AI Based Chat-Bot Using Azure Cognitive Services. 2018 Fourth International Conference on Computing Communication Control and Automation (ICCUBEA). doi:10.1109/iccubea.2018.8697737

- Cognitive natural language Search Calibrated Quantum MeshRucha Kulkarni ; Harshad Kulkarni ; Kalpesh Balar ; Praful Krishna2018 IEEE 17th International Conference on Cognitive Informatics & Cognitive Computing (ICCI*CC)

IJSER