

Chatbot Using Natural Language Processing

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Abstract - The days of solely engaging with a service through a keyboard are over. Users interact with systems more and more through voice assistants and chatbots. A chatbot is a computer program that can converse with humans using Artificial Intelligence in messaging platforms. Every time the chatbot gets input from the user, it saves input and response which helps chatbot with little initial knowledge to evolve using gathered responses. With increased responses, precision of the chatbot also gets increases. The ultimate goal of this project is to add a chatbot feature and API for Matrusri Engineering College. This project will investigate how advancements in Artificial Intelligence and Machine Learning technology are being used to improve many services. Specifically it will look at development of chatbots as a channel for information distribution. The program selects the closest matching response from closest matching statement that matches input utilizing WordNet, it then chooses response from known selection of statements for that response. This project aimed to implement online chatbot system to assist users who access college website, using tools that expose Artificial Intelligence methods such as Natural Language Processing, allowing users to communicate with college chatbot using natural language input and to train chatbot using appropriate Machine Learning methods.

1. INTRODUCTION

Chatbot for Efficient utilization of college laboratories is a system that is being developed to minimize the workload on the staff that is responsible for generating or preparing the allotment of infrastructure taking into account the heterogeneous factors that are essential for the respective system. The chatbot acts as the agent designed to have an intelligent conversation in response to the user queries. Here the based chatbot will act as a mediator between the user and the system. The chatbot will receive queries from the user and will respond to the particular queries in return. This system will make the process of infrastructure allotment easier and thereby reduce the manual work.

1.1 SOFTWARE REQUIRED:

Python-

Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented, and functional programming.

Pycharm-

PyCharm is an integrated development environment (IDE) used in computer programming, specifically for the Python language.

Anaconda-

Anaconda is a free and open-source distribution of the Python and R programming languages for scientific computing (data science, machine learning applications, large-scale data processing, predictive analytics, etc.), that aims to simplify package management and deployment. The distribution includes data-science packages suitable for Windows, Linux, and macOS.

1.2 LITERATURE SURVEY:

In literature [1], author has implemented the chatbot who helps student. The project is about interaction between users and chatbot which can be accessed from anywhere anytime. The chatbot can be easily attached with any university or college website with few simple language conversions. Chatbot provides various information related to university or college and also students-related information.

In literature [2], author has implemented the Affective computing explores the development of systems and devices that can perceive, translate, process, and reproduce human emotion. It is an interdisciplinary field which includes computer science, psychology and cognitive science. An inspiration for the research is the ability to simulate empathy when communicating with computers or in the future robots. This paper explored the potential of facial expression tracking. The developed chatbot summarizes emotional state of the user during the survey through percentages of the tracked facial expressions throughout the conversation with the chatbot. Facial expression tracking for happy, neutral, and hurt had 66.7%. Moreover, the developed program was tested to track expressions simultaneously per second. It can track 17 expressions with stationary subject and 14 expressions with non-stationary subject in a span of 30 seconds.

In literature [3], Author has implemented the Machine learning based chatbots yields more practical results. Chatbot which gives responses based on the context of conversation tends to be more user friendly. The chatbot we are proposing demonstrates a method of developing chatbot which can follow the context of the conversation. This method uses TensorFlow for developing the neural network model of the chatbot and uses the nlp techniques to maintain the context of

the conversation. This chatbots can be used in small industries or business for automating customer care as user queries will be handled by chatbots thus reducing need of human labour and expenditure.

In literature [4], we have seen that, the jollity chatbot is implemented in Rasa, an open-source conversational AI framework and it is easy to customize. The proposed method has added 12 intents with each more than 8 text examples constituting a total of 100 input samples in nlu.md and their response in domain.yml. The flow of interactions is given in stories.md. The jollity chatbot is deployed in Telegram using ngrok and the server URL details and the access token are given in the credentials.yml. The system is experimented with various evaluation measures like accuracy of the intents, accuracy of the stories and the confusion matrix to show that the proposed jollity chatbot system is more robust and can identify the user intents appropriately.

2. PROBLEM STATEMENT:

Commencement of placement drives or any of the academic programs or work- shops without any prior notice results in the shortage or sometimes leads to the unavailability of the infrastructure resources. This heads towards a stressful situation and inculcates a hustle in the convection as well as the schedule as manual coordination and faculty coordination is involved for making any subtle changes. To overcome this quandary we will be providing a web-based application for efficient allotment of infrastructure. ‘Chatbot for Efficient Resource Allocation’ will be integrated with an AI chatbot for utilizer interaction. Our solution will provide comfort to the manpower and will evade hampering academics. The system will be implementing the given input queries and the data in the database will be processed and based on the processing the chatbot will display the output. As mentioned earlier, various factors will be taken into consideration. The data regarding the lab capacity, which lab contains will software and even the hardware specifications are given to the database in prior.

3. PROBLEM STATEMENT ARCHITECTURE:

Chatbot for Efficient utilization of college laboratories is a system that is being developed to minimize the workload on the staff that is responsible for generating or preparing the allotment of infrastructure taking into account the heterogeneous factors that are essential for the respective system. The chatbot acts as the agent designed to have an intelligent conversation in response to the user queries. Here the based chatbot will act as a mediator between the user and the system.

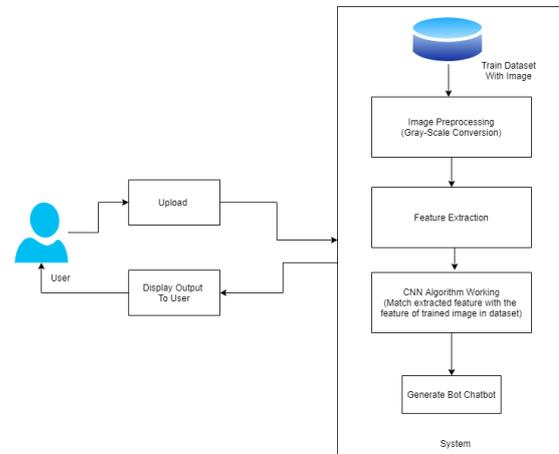


Fig -1: Architecture.

4. CONCLUSIONS:

The prime objective behind this system is to reduce the manual efforts and thereby implementing an effective architecture. Also, the proposed system will evade the hamper caused in academics due to any sudden or subtle changes. It will avoid the inconsistencies visually perceiving that no lab session is missed due to any reason by providing alternate infrastructure options. Additionally features provided like reservation and dynamic allocation due to any activities. The system will be far more effective than the existing system and has greater implementations. Rather the labs can also be used for the allotment of classrooms in schools and colleges.

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