

University Chat-bot using Artificial Neural Network

Ronak S. Baldha

Department of Computer Engineering

A. D. Patel Institute of Technology New Vidhya Nagar, Anand, Gujarat, India

Abstract— Chat-bot is a program which provides human conversation using Artificial Intelligence (AI). Chat-bots are designed to work as VIRTUAL ASSISTANTS (VA). They themselves provide a platform for the promotions of the Products and Services online. All Higher Educational Institutes provide the complete information through their internet sites for students, which admit the use of social nets such as Facebook, Whats-app, and Academic websites. Total-in-All, in any website, searching functionality is required to search for any information and it includes Social Media Applications like Facebook and Whats-app regular responses are utilized. Therefore, Chat-bot is an effective auto-response system, and also an instant messaging platform. The purpose of this paper is to develop an automated system which gives a reply to a user query on behalf of a human for the education system. It can give an answer to each and every query asked by the end user. Existing chat-bots such as Facebook chat bot, We Chat, Natasha from Hike, Operator, etc. were giving replies from its local database. Our main aim and focus is to make the system scalable, user-friendly, and highly interactive. Various techniques such as machine learning, NLP, pattern matching, data processing algorithms are used in this paper to enhance the performance of the system. The response principle is matching the input sentence from a user. The User can ask the question any college-related activities through the chat-bot without physically available to the college for inquiry. The System analyses the question and then answers to the user. With the help of artificial intelligence, the system answers the query asked by the students. The system replies using an effective Graphical User Interface as if a real person is talking to the user.

Keywords: chat-bot, Natural Language Processing, Response generation, lemmatization, Pattern Matching

I. INTRODUCTION

Nowadays, we see that Chat-bots are the main source of answers to the user's questions from wherever and whenever the domain is operating. Chat-bots are used in many service areas as an information provider in conversation mode. These chat-bots are adopted in government sectors as well as private sectors. One of the biggest railway transportation's in the world is Indian Railways, Indian Railways using the chat-bot named as "ask DISHA", which provides the information in a good conversational way. In the banking area also chat-bots are used as conversational banking, which provides the banking services provided by conversational chatting. Chat-bot for college management systems will be developed using Natural Language Processing (NLP) which is the essential part of artificial intelligence that will analyse the users' queries. This system will be a web application which will provide answers to the analysed queries of the user. Users will just have to select the category for queries and then ask the query to the bot that will be used for answering it.

Artificial Intelligence (AI) and Natural Language Processing will be used to answer the user's queries and hence proper and appropriate answers will be provided to the users and therefore they won't have to go personally to the college for any kind of inquiry related to that college.

A. Basics of chat bot

A chat-bot is an artificially intelligent creature which can converse with humans. Chat bots are basically used for information acquisition. It can run on the local PCs and mobile phones, though most of the time it is accessed through the internet. It can be compelling, captivating and spell-binding. It is a conversational agent which interacts with users in a certain domain or on a particular topic with input in natural language sentences. Mainly a chat-bot works by a user asking some question or initiating a new topic of discussion. Chat bots can be referred to as software agents that pretend as human entities. These are the agents with AI embedded and using NLP they can answer user questions. Predefined knowledge base helps develop a response to the query.

B. Chat-bot for College

When coming to the college level, students and staff always need a common platform, which provides all required information about the college, student information, examination section information, placement cell information, and cultural events. Actually, all such types of information are provided on college websites. Here the proper searching process is required. But this Engineering College chat-bot provides the information in an interactive way, it allows voice, text type of input and it provides the text, voice response to the user. It allows miss-spellings, different forms of questions. System trains, one question in many forms to give the proper response. With this type of service chat-bot of engineering, college chat-bot becomes very close to the staff and students.

The major features of the chat-bot are:

- College admission related queries could be answered through it.
- Viewing user profiles and retrieves attendance and grade/ pointers.
- College students can get information about examinations to be held.
- College students can fetch particulars about placement activities.

The College inquiry system will act as a fast, standard and informative widget to enhance the college website's user experience and bestow users with righteous information. The bot will analyse user's queries and understand users' and then reply accordingly. It uses Natural Language Processing (NLP) to build the systems for AI. This way users' time and efforts will be saved, and s/he will be equipped with effective answers. The objectives of this application are:

- To save the time of the user since s/he does not have to personally go to the college for inquiry.
- This system will help the student to be updated about the college activities.
- The system will reply using an effective GUI which implies that as if a real person is talking to the user.

II. RELATED WORKS

A. System Architecture

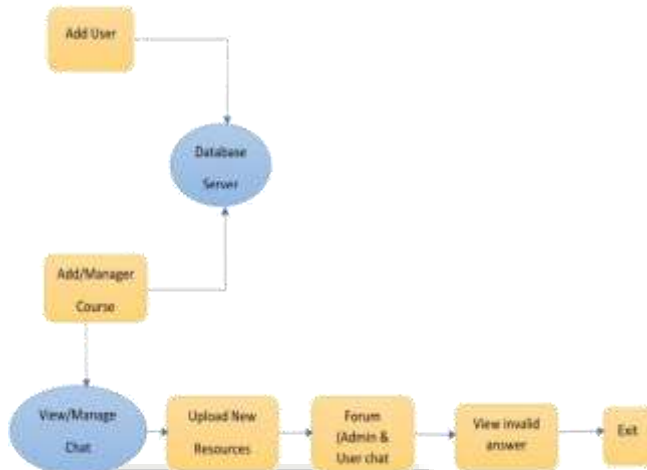


Fig. 1: System Architecture

According to the architectural diagram (figure-1) of University Chat-bot System, there are 7 modules which are explained as follows accordingly.

1) Add User

This module is liable for adding users to the system. Each user is assigned a singular id and password to urge access to the system for its utilization.

2) Database Server

It keeps a record of all the college data, user queries, user's login credentials, etc.

3) Manage Courses

In this module, the administrator performs the various tasks to fetch into the database various college information requirements like department info, placement sheet, general notices, timetable, etc. All this fetched information is then retrieved as a response to the user query accordingly. the administrator only has the authority to manage course details.

4) View/Edit Chat

In this, User types the query and therefore the bot replies to the user query accordingly. Actual Chatting occurs during this phase only.

5) Upload

In this section admin uploads the common general notices like time schedule, exam dates, fee structures, event and seminar notices, etc which users may query out during the chatting phase.

6) Forum

In this, if the user finds that the solution doesn't satisfy or make any sense to his query then he can mark that answer as invalid. This invalid answer is later viewed by the administrator. Admin then studies that invalid answer then decides whether to figure upon it or simply ignore it.

7) Exit

This is the phase where the user after finishing his work signs out from the system.

B. Implementation Process

To implement College Bot as Figure-2, processes divided into four parts, such as College Bot System Analysis, Bot Design, Bot Development, and Bot Testing, these are explained in the following.

1) Bot System Analysis

Generally, any chat-bot can be developed with varied options. In our College Bot system contains three major roles that are - Students, Staff and the principal. The role of the principal is that he provides some information to the College Bot like announcements, notices and instructions for the staff as well as the student regarding the holidays, results and placement. Queries related to the college, staff, and students. The role of the staff is to provide information about tasks, responsibilities, and common queries related to the department.

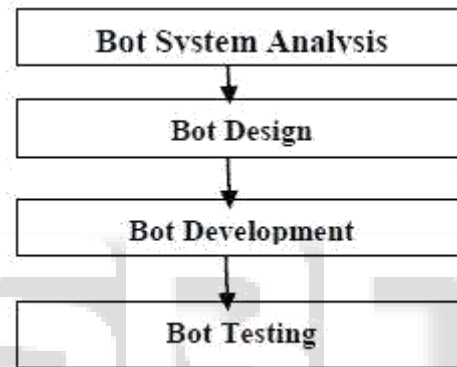


Fig. 2: Implementation Process

The role of the student is getting responses from the College Bot what he required from the college, about his class, time tables, subjects, staff, events, results, college-level programs, university-level programs, internships, project works, material, examination, cultural events. Altogether College Bot prepared for 150+ queries and responses. This information is used to train the College Bot.

2) Bot Design

College Bot Design is designed intents including more entities. Twenty intents of sub-details of college details such as college name, code, fee, address, seat allotments, branches, library details, canteen facilities. Ten intents of sub-details of the class details such as timetable, subjects, room locations, class in-charge, and department notices. Eight intents are defined about the placement information like dates, company, qualification, how many rounds, location of the company, packages.

III. METHODOLOGY

1) Admin section:

Provides an administrator with access to information (metrics, messaging history, unsolved Query etc.) Allows managing data (for example, adding new information, categories, updating old information).

2) User registration page:

Student can create account through this registration page to get personalized information like student marks etc. Helps

the institute to maintain record of students through User registration page. Unsolved query can directly report through their email.

3) User Login and Complaint:

User registers himself/herself on Chat-Bot application. Then submits his/her complaints and queries regarding the electronic and home appliances purchased.

4) Natural Language processing (NLP):

chat-bot finds a way to change over the student's text or speech into organized information that is utilized to choose the related answer.

Some of the Natural Language Processing steps are:

Step 1 : Sentiment Analysis:

Tries to find out if the user has an honest experience or if the after some point the chat should be forwarded to the human.

Step 2 : Tokenization:

The NLP partitions a series of words into pieces or tokens that are phonetically emblematic or are contrastingly helpful for the application.

Step 3 : Normalization:

The chat-bot program model processes the text in an attempt to seek out common spelling mistakes or typographical errors which may the user intent to convey. this provides more human like effect of the chat-bot to the users.

Step 4 : Named Entity Recognition:

The chat-bot program model searches for classes of words, similar to the name of the item, the student's name or address, whichever information is required.

Step 5 : Dependency Parsing:

The chat-bot looks for the objects and subjects- verbs, nouns and customary phrases within the user's text to seek out dependent and related phrases that student could be trying to convey.

Step 6 : Text Classification:

Minimal data to point out the inner workings of this algorithm, during a real use-case you would possibly have many intents (classes), each with several training sentences. The next step is to arrange our data in structures which will be worked algorithmic Notice the "corpus" (an NLP term) a set of all stemmed words. The stem of "make" is "mak" in order that it matches the stems for "making", as an easy example.

We've now organized our data into 2 dictionaries: corpus words (each stemmed word and therefore the reform the # of occurrences) class words each class and the list of stemmed words within it. we will significantly improve our algorithm by accounting for the commonality of every word

IV. RESULT OF WORKING CHAT-BOT

More than one user will access the larva at constant time. So that several users will create a spoken language with the chat-bot and it's ascendible. In order to be additional scalable for the usage of bot in colleges, it'll be greatly straightforward once it's integrated with the college internet portal. every student will access with the help of their own username and password.

We have created a bot to induce over one hundred books of the CSE departments. over one department book is retrieved simply while not creating any changes within the flow. In the close to future, there'll be additional

advancement so the library will exist with none man power and therefore the easier chat-bots are progressing to dominate with additional rule primarily based development. whereas we have a tendency to conclude, it's imperative to notice that the chat-bots can inherit existence within the field of marketing, huge hospitals, establishments and can even replace the BPO business in future. the mix of chat-bots and robots can modify the method in numerous fields with terribly less man power and in specific fields without even single.



Fig. 1: Syllabus of Information Technology and placement Information



Fig. 2: Eligibility of admission of first year and Scholarship Information

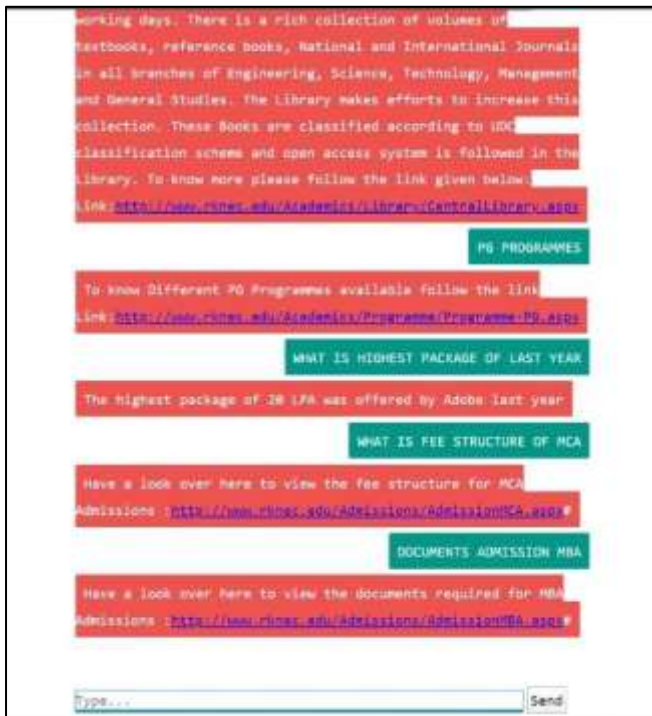


Fig. 3: Information About PG Course, Highest Package, Fee Structure and Document Required for Admission

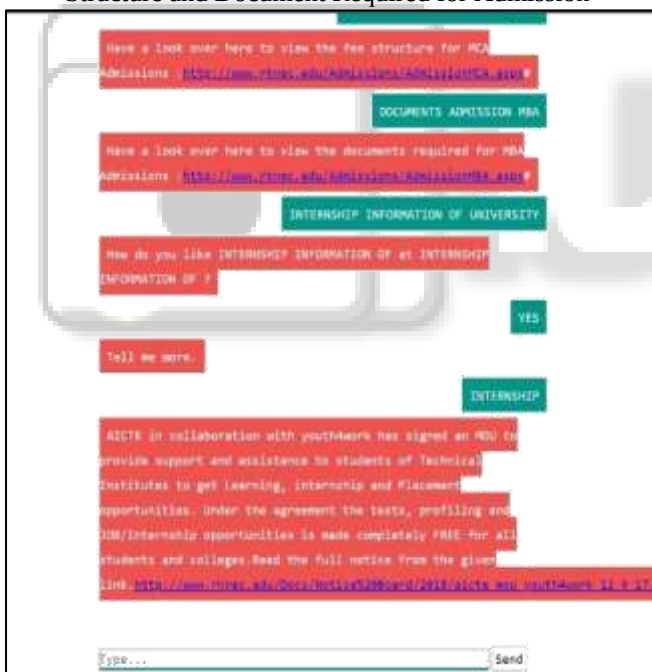


Fig. 4: Information about Central Library

V. CONCLUSION

In this paper, I have implemented an automatic response giving system which will give a reply to the student's questions. The use of artificial intelligence and machine learning is used for implementing this system. The user will type his or her queries and then the system will extract the proper keyword from the given query and will produce the response. The future scope can be implemented in this project in the following manner: If data is not available in a static database then it will be fetched from online sources. Because of this, every answer of the user will be generated

either from online sources or static database. So in this way we have implemented an automated response generation system.

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