

CHATBOT FOR COLLEGE INFORMATION SYSTEM

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Abstract: Chatbot is a software application that is responsible for making interaction possible between man and machine. People use language for communicating with each other, likewise Chat-bot use favorable language to communicate with its user. Chatbot for college information system is a web application which aims on providing the required information to the user regarding college related queries. As the curriculum of a college varies periodically, as a result the database has to be altered and upgraded from time to time. The project focuses on developing a Chat-bot which will be used by college students to get their queries solved. Students can ask any College related query on the chat section of the chatbot and the bot will respond to the query with appropriate answer. Students need not follow any certain format for asking query. This system will help students to stay updated about college related activities. With the help of this Chatbot the work of college administration is reduced to a certain extent, giving them relief from responding to each and every student separately. The Chatbot is capable of making friendly conversations; answer the queries; give the link for academic calendar; display faculty information; and give the timings, address, contact details, and events information of a respected college.

Index Terms – Chatbot, Web Application, Queries, College.

I. INTRODUCTION

Chatbot is a computer program that can interact with humans in natural language by using machine learning and Natural language processing, the way we interact with each other. [6] A chatbot can replace a human from answering many queries. A chat bot is a program intended to counterfeit with smart responses on communication by text or speech yet, this project only concentrates on text [7]. The Chatbots are motivated by the necessity of websites to provide a chat facility where a bot is required to be able to chat with user and solve queries [1]. If required the system can also be trained by using human assistance. Where administrator can handle only one to two operations at a time, chat bots can operate without a limit which scales up the operations [5]. Having a chat bot improves the response rate compared to human support team. Furthermore, a chat bot can relate to the repetitive tasks. In some situation's a college or school receives similar queries again and again in a day and it becomes tedious job to respond to each question repetitively. Lastly, the 24/7 availability is the most important feature of having a Chat-bot in the system [4]. The user queries are covered without any time restrictions. All these advantages of a Chat- bot constitute the motivation of implementing a Chat-bot on College Information System. 'Chat-bot for College Information System' project is developed using Natural Language Processing algorithm that will analyse user queries and respond to it with required solution. Machine Learning will be used to answer the user queries. The answers are provided using the Machine Learning algorithms [6]. Student's need not physically go to the college for college related questions which results in saving plenty of time and money. Moreover, the college staff is relieved from answering the same queries again and again [8]. Whenever a user asks any query, the bot first recommend the similar type of the request which helps in identifying similar queries and then user can select the question from given suggestions else type their own question. In this the system stores the knowledge database to identify the sentence and make the decision to answer the question [2]. For example, if a student wants to know the office hours of faculty, then the answer to this can be already stored in the Chatbot so that the replies are immediate.

II. LITERATURE SURVEY

1. Enhancing Community Interactions with Data-Driven Chatbots – The DBpedia Chatbot:

This paper is based on a modular approach to account for different types of user queries and responses. It's capable of responding to users via elaborate interactive messages using the underlying knowledge graph. Users can communicate with the DBPEDIA CHATBOT through text but also through interactions such as clicking on buttons or links as well as giving feedback.

2. Chatbot Using Gated End-to-End Memory Networks:

This system gated end-to-end memory networks model. Model is trained with training data that contain input user utterances with expected output. In an interactive environment user can chat with the bot in his own language, since we are using memory network rather than rule based, dialogues are context specific and bot give appropriate responses.

3. College Information Chatbot System:

A Student bot project is built using artificial algorithms that analyzes user's queries and understand user's message. Chat Bot Algorithm which is been utilized in this project has been developed by Michael Maudlin in 1994 and was first published in the book Julia. He had developed this algorithm for the creation of verb bot which was first AI based Chatter bot.

4. College Information Chatbot System Based on Natural Language Processing:

In this paper Porter Stemmer Algorithm is applied. The algorithmic program is utilized for fixing or expelling the postfixes naturally from words in English and is developed by the Michael Maudlin in 1994.

5. Chatbot for College Website:

This paper shows that an application is created with the help of Facebook messenger API which is open source and uses artificial intelligence to interact with user and provide the desired information. This Facebook API is integrated with Python backend, web book is used to deliver the query of the user to the server.

6. Conversational Agent for Student Service and Support:

In this project, Natural language processing algorithm takes in the query given by the user as an input and performs various steps on the query and accordingly provide the required output to the user. The query at first is tokenized into different words and the all the stop words from the sentence are removed for a better abstraction of the word.

7. Human Chatbot Interaction:

It is a very simple chat bot is created using python as its source. Db.sqlite3 database file is created which includes the main buffer where we stored the message to be printed on the bot to the user. No Artificial Intelligence Algorithm or Machine Learning is used.

8. Chatbot for College Management System using A.I:

This is an AI chatbot developed with NLP Processing and Sentiment Analysis for Complaint. When user complaint is submitted to the system, NLP is applied and sense of the complaint is detected. Algorithms used are Porter Stemmer Algorithm and Word Order Similarity between Sentences.

III. PROBLEM DEFINITION

In half a century web and mobile development is rising rapidly and the chatbot applications are evolving day by day, becoming useful in various applications to help the user accordingly. The Chat-bots are designed for quick automated response. These applications are used as the conversational agents that run on software programming or on Artificial Intelligence (AI) interaction between the user and bot with the help of NLP. Chatbots are referred to be the most promising and advanced form of human and machine interaction. So, this project we have designed a system which provides a platform for clearing out all the college related queries.

IV. EXISTING SYSTEM

The existing systems will simply take the query of the user and will give response according to the query. The system will match the user query with knowledge base and see for the appropriate response. There is a predefined response to the query which doesn't match with the keywords in the knowledge base. As this system is not capable of answering queries whose answers are not mentioned in the knowledge base.

V. PROPOSED SYSTEM

The proposed system is designed to take the query from the student and will give response according to the query. If the system provided response is found to be incorrect then the respected user can simply report the question to the administrator. Administrator can see incorrect answer and can correct the same with the help of some administrative privileges by entering in the system. System permits administrator to erase the invalid answer and to block/unblock any reported user. Later, admin is permitted to do all the necessary changes to the database so that user will get the proper response when the same query is raised next time. Priority is provided to the most invalid answers reported by user. Moreover, special permissions are granted to the administrator for blocking/unblocking a user who is found violating rules of the system (use of abusive language).

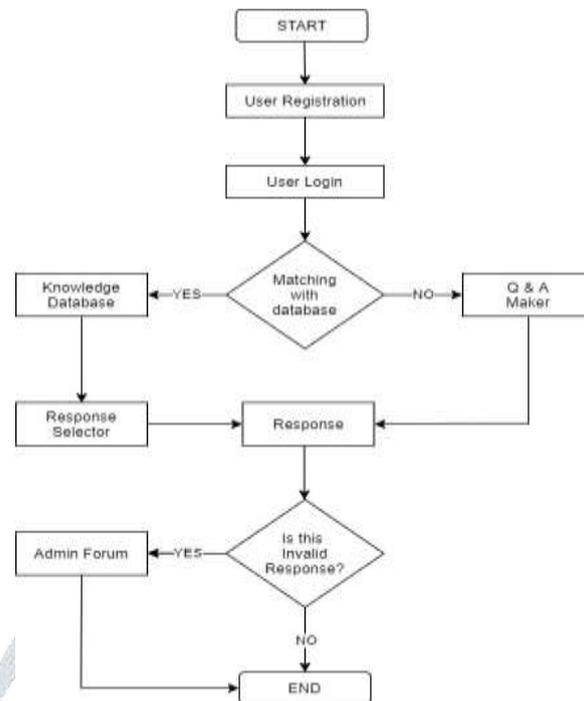


Fig 4.1 Proposed system architecture

In the above figure, it is shown that how user messages (queries) are given to an intent classification and entity recognition.

Intent: The intent given in the figure above is defined as a user's intention, for ex: the purpose of the word "Bye" is to show the end of the conversation similarly, the purpose of the word "Who is the HOD of Computer Department?" the intent would be to respond by providing HOD's name.

Entity: An Intent in the chatbot is usually modified by Entity and there are three major types of entities they are System entity, Session entity and Developer entity.

Candidate Response Generator: Candidate response generator in a Chat-bot performs all the calculations with the help of different algorithms to process the user request. Candidate's response is the result of calculations performed by chat-bot.

Response Selector: Response selector in the Chatbot is mostly used in selecting the word or text according to the user queries to respond the user with appropriate answer.

VI. SYSTEM REQUIREMENTS

HARDWARE REQUIREMENT:

1. PROCESSOR: INTEL CORE I3 OR MORE.
2. RAM: 4GB OR MORE.
3. SPACE REQUIREMENT: 20-25GB.

SOFTWARE REQUIREMENT:

1. Operating System: Windows 7 and above.
2. Python.
3. Anaconda.
4. Spyder notebook.
5. MySQL.

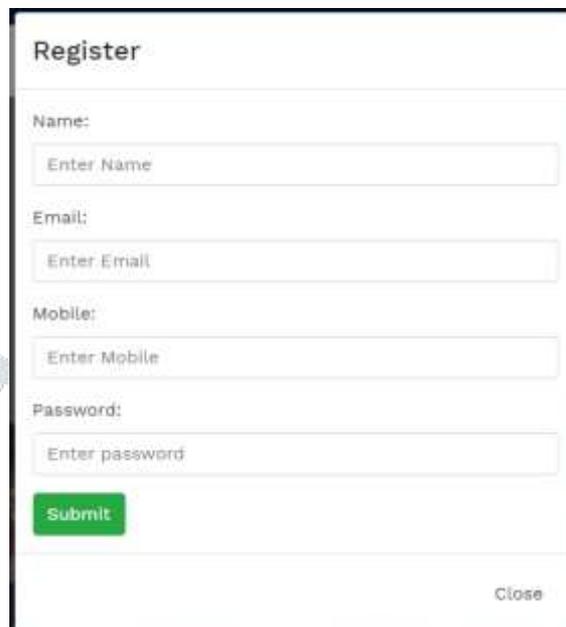
VII. ADVANTAGES OF PROPOSED SYSTEM

1. This system will help to students, to save their time and get proper information regarding college.
2. Administrative staff won't have to answer same queries again and again.
3. Improves the performance of the system.
4. Auto generates frequently asked questions which gives benefit to the user.
5. It will be extremely helpful for students in solving queries regarding college.

VIII. RESULTS

8.1 Registration Page

Registration is the process of compiling individual scans into a cohesive point cloud. By registering the user can enroll. This can be done when the user will provide basic information about oneself as shown in the figure.

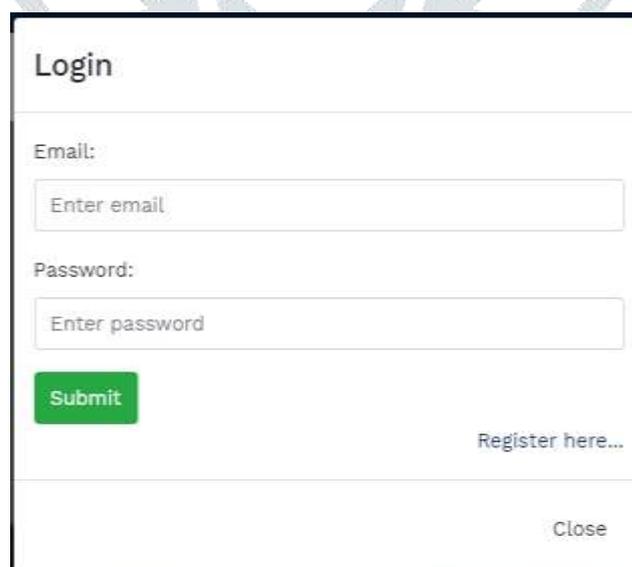


The screenshot shows a 'Register' form with the following fields: Name, Email, Mobile, and Password. Each field has a corresponding input box with a placeholder text: 'Enter Name', 'Enter Email', 'Enter Mobile', and 'Enter password'. A green 'Submit' button is located below the password field. A 'Close' button is located at the bottom right of the form.

Fig 8.1 Registration Page.

8.2 Login Page

This is a web page or an entry page to a website that requires user identification and authentication, regularly performed by entering a username and password combination. Logins may provide access to an entire site or part of a website. It is the starting point of navigating a website in a personalized manner.



The screenshot shows a 'Login' form with the following fields: Email and Password. Each field has a corresponding input box with a placeholder text: 'Enter email' and 'Enter password'. A green 'Submit' button is located below the password field. A 'Register here...' link is located to the right of the 'Submit' button. A 'Close' button is located at the bottom right of the form.

Fig 8.2 Login Page

8.3 Home Page

Below given is the home page, which is the primary web page a visitor navigating to a website from a search engine will see. It is the name of main page of website where visitors can find hyperlinks to other pages on the site and it may also serve as a landing page to attract visitors.



Fig 8.3 Home Page

8.4 Chat Window

Following is the chat window used by a user or administrator, as well as those messages that he or she has sent. The display section of a chat window typically shows those messages that have already been sent or received.

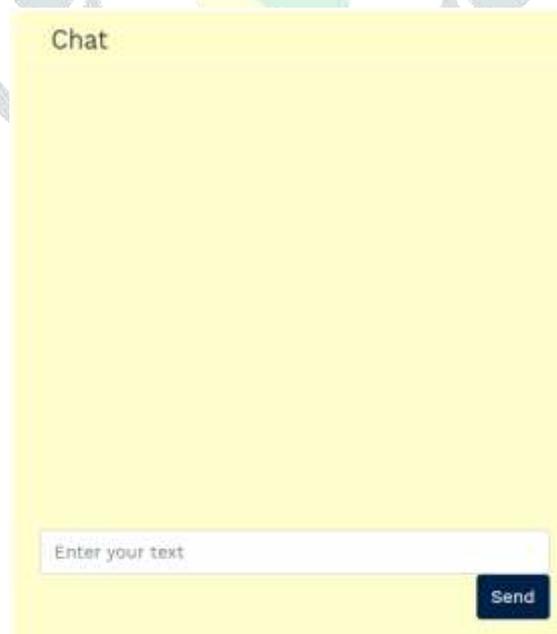


Fig 8.4 Chat Window

8.5 Chatbot Interaction with Users

Chatbot will help to add convenience for users, the figure below shows the interaction between a User and Bot.

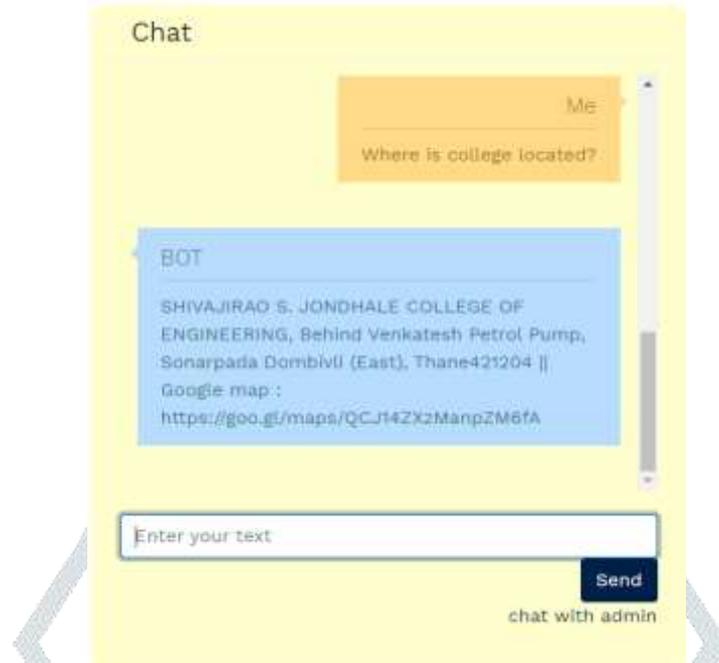


Fig 8.5 Chatbot Interaction with User

8.6 Chatbot Recommendations

Chatbot uses data from database to recommend the related queries which can be personalized recommendations based on user preferences, previous interactions or histories. This will help the user to ask his/her queries and get them solved within no time.



Fig 8.6 Chatbot Recommendations

8.7 Interaction between Admin and User

User Queries which are not answered by the Chatbot are forwarded to Administrative Section. Such queries are answered on one-to-one basis by Administrative Team.

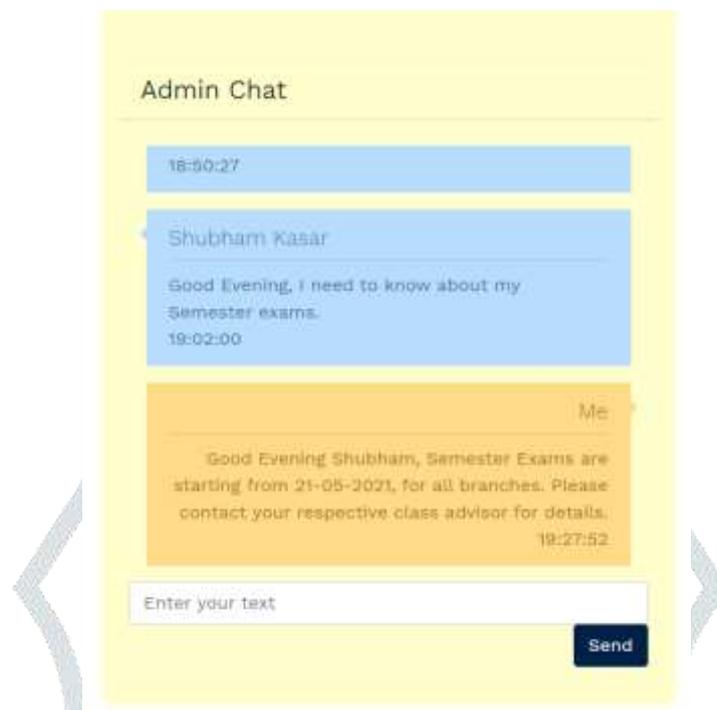


Fig 8.7 Interaction between Admin and User

XI. FUTURE MODIFICATION

In the future, we will use more accurate dataset and apply more different machine learning algorithm and check accuracy of the dataset and use that algorithm in the system. We generate new more dataset on the basis of questions and answer and we expand this system.

X. CONCLUSION

A chatbot is appreciable tool for solving and query in desired field. Here the software application is developed for providing quality of answers in a short duration of time. One of the greatest use of Chat-bot is relieving the answer provider by directly delivering the answer to the user using expert system. In this project we developed a system using artificial intelligence, machine learning and natural language processing for extracting the keyword from the user query.

To recapitulate, Chatbot for College Information System is found to be exceedingly helpful in guiding students with correct queries and up to date sources of information. Students receive the information at any desired time on their fingertips rather than visiting college office. Our result proves that the total time required to perform all the task, which include visiting the college, spending hours in travelling, waiting for the administrative team to answer the query and waiting in the queue is reduced after application of our designed system.

For this study secondary data has been collected. From the website of KSE the monthly stock prices for the sample firms are obtained from Jan 2010 to Dec 2014. And from the website of SBP the data for the macroeconomic variables are collected for the period of five years. The time series monthly data is collected on stock prices for sample firms and relative macroeconomic variables for the period of 5 years. The data collection period is ranging from January 2010 to Dec 2014. Monthly prices of KSE -100 Index is taken from yahoo finance.

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