Life Saver Chatbot

Report submitted to

ITM University, Raipur, Chhattisgarh

for the partial fulfilment of the award of the degree

of

Bachelor of Technology
in
Computer Science & Enginnering

Submitted by

Name of the Student	Enrollment No
Jay Deshmukh	**H0476**

Under the Supervision of
Dr. Puja Shrivastava

School of Engineering and Research
ITM University, Uparwara, Naya Raipur,
Raipur, Chhattisgarh-492002

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DECLARATION

We **Jay Deshmukh** the student of Bachelor of Technology in **Cloud Technology and Information Security. B.Tech** under the School of Engineering and Research in ITM University, Naya Raipur, Chhattisgarh hereby declare that the work contained in this Project report is original and has been done by me under the guidance of my supervisor.

The work has not been submitted to any other University/Institute for any degree or diploma. I have followed the guidelines provided by the University in preparing the dissertation report.

The used materials (data, theoretical analysis, figures, and text) from other sources, I have given due credit to them by citing them in the text of the report and giving their details in the references.

Name of the students	Enrolment No.	Signature
1. Jay Deshmukh	H0476	

Date:

CERTIFICATE

This is to certify that the Project Report entitled, " **Life Saver Chatbot** " submitted by "**Jay Deshmukh**" to ITM University, Raipur, India, is a record of bonafide Project work carried out by him/her under my/our supervision and guidance and is worthy of consideration for the award of the degree of Bachelor of Technology in **Cloud Technology and Information Security.**

Signature

Dr. Puja Shrivastava

Project Supervisor

Department of Engineering

Date:

Signature

Department Co-ordinator
Department of Engineering
ITM University, Raipur

Forwarded By

Head
School of Engineering and Research
ITM University, Raipur.

PROJECT REPORT APPROVAL CERTIFICATE

This is to certify that dissertation work entitled "**Life Saver Chatbot**" carried out by the Jay Deshmukh in Computer Science Engineering department of ITM University Raipur. We hereby accepted and approved after proper evaluation as a creditable work submitted in partial fulfilment of the requirement for the award of the Degree, Bachelor of Technology in Computer Science Engineering (CTIS) at ITM University Raipur.

Objective of this Project report is **satisfactory / unsatisfactory** for the partial fulfilment of the requirement for the award of the Degree, **Bachelor of Technology** in **Computer Science Engineering(CTIS)**.

Internal Examiner: External Examiner

Name: Name:

Signature: Signature:

Date:_____

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ABSTRACT

The days of using a keyboard to interact with a service exclusively are over. Voice assistants and chatbots are being used by users to communicate with systems more and more. Chatbots are a computer software that can communicate with people utilising messaging systems and artificial intelligence. Every time a user provides input, the chatbot records that input and the user's answer. This allows a chatbot with limited beginning knowledge to develop utilising the gathered responses. The chatbot's precision improves as the number of responses rises. This project's ultimate objective is to include an API and chatbot functionality for those who are depressed. This study will look into how machine learning and artificial intelligence developments are being applied to enhance a variety of services. It will specifically examine the creation of chatbots as a means of information dissemination. Using WordNet, the programme chooses the closest-matching response from the closest-matching statement, and then it selects the response from a known set of statements for that response. This project aimed to implement an online chatbot system to help users who access a college website, using tools that expose Artificial Intelligence methods like Natural Language Processing. Users could communicate with the college chatbot using natural language input, and the chatbot would be trained using the proper Machine Learning techniques so it could produce a response. There are several programmes that mimic human speech and have a human appearance, but most of the time, a chatbot's knowledge is saved in a database that a human expert produced.

Keywords:- Chatbot, artificial intelligence, machine learning, WordNet, and natural language processing are some related terms.

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CHAPTER 1

INTRODUCTION

The implementation of Artificial Intelligent (AI) systems has been complicated by advancements in information technology and inter-networking. These systems, such as robotics, natural language processing, choice emotionally supporting networks, and other technologies, are getting closer to human activities. In fact, various hybrid tactics and adaptive techniques are used in artificial intelligence disciplines to create ever-more-complex techniques. However, there are already a number of intelligent computers and Natural Language Processing (NLP) tools that can understand human language. Artificially intelligent systems read the necessary electronic articles that have been available on the web to educate themselves and gain understanding. A chatbot, also known as a chatterbox, bot, or Artificial Conversational Entity, is an AI programme [2] that mimics human conversations, including content and language use, using artificial intelligence techniques including Natural Language Processing (NLP), image and video processing, and voice analysis. A chatbot for the college management system has been developed using AI algorithms that look at user inquiries. This chatbot system is an online application that responds to a user's segmented questions. Users only need to select the category for their inquiry before posing their query to the bot that will record it. To react to the user's questions, artificial intelligence has been implemented. The user can then obtain the appropriate answers to their concerns.

The right responses are provided using artificial intelligence. algorithmic intelligence. Users won't have to physically visit the webpage of a college or university. Users must register to the system and is required to log in. after users log in can access the many assistance sites. There will be modifications. assisting websites that allow people to chat by asking college-related activities-related queries. The computer responds. responses to users' inquiries with the help of efficient Graphical User Experience (GUI). The user may inquire about the university. By the aid of this web application, associated operations. Activities associated to college, such as admissions, academics, consumption and additional social activities. It will assist in Students and other users should be updated about the college activities.

CHAPTER 2
LITERATURE REVIEW

Artificial intelligence can be used to create a variety of applications. A college chatbot system is one of several that is covered in this essay. Despite the fact that chatbots can be used in a wide range of industries including marketing, education, banking, healthcare, and finance. Researchers are working to develop routine rule-based chatbots that are enlightening, receptive, and finish the correspondence in a conversational human language. This necessitates integrating machine learning (ML) and natural language processing (NLP) technology into the collegiate chatbot system. There are several ways to go about doing this. The area of the chatbot, the functions it anticipates providing, the language of correspondence, the target audience, etc. all have a role in choosing the best method.

The "Chatter Bot Algorithm," developed by Michael Maudlin in 1994 and published in the book Julia, was used to respond to the questions. From this original concept, more efforts to establish a chatbot system were developed. To utilise the Chat-Bot programme, the user must log in. The user is able to submit complaints and inquiries at that precise moment. When a user submits a question to the bot, the context of the inquiry is identified and NLP is used. To identify the words' feelings, WordNet calculation [4] and grammatical forms labelling are used. The knowledge base is checked for answers to user questions.

In that case, the user is supplied the proper response if it has been found. If a specific query cannot be answered by the database, the administrator will respond. The relevant response is given to the user at the precise moment the administrator responds to the query. Question and response are entered into a database so that, whenever such questions are posed, they can be appropriately answered from the database. As a result, the administrator is no longer required to physically respond to the same demand. To remove suffixes from English words, many algorithms are utilised, including the Porter Stemmer Algorithm [5]. Word request proximity between two sentences is estimated using the word request vector technique. Sentences with the exact same words but a different word sequence might have a completely different meaning. The user is free to ask as many inquiries as they like about the institution. After receiving a user enquiry, chatbots check the confidence [6] score and provide a genuine answer. The user query is processed through three keyword matching algorithms as part of the keyword match calculation [7]. If the keyword matching is unsuccessful, the query is then submitted to the database for 2 and 1 keyword matching. Even then, if the query doesn't provide the correct keyword match, the chatbot programme will respond with No Answer Found.

Another approach used in chatbot applications uses logic adapters to select an answer. An input adapter's goal is to collect input from the bot source and then translate it into a language that the chatbot can understand. The chatbot system makes use of a unique logic adaptor that enables selection of the appropriate response from a pool of responses. Out of all the responses supplied by the logic adapters that the chatbot has been set up to use, the Multi Logic Adapter is used to select one. Word embedding is used for information pre-processing . Each word is represented by a vector in this instance, and the vector structure is spoken to in a one-hot encoded manner [8], implying that 1 denotes the presence of a word and 0 denotes everything else. A Python module called Natural Language Toolkit (NLTK) provides help with natural language processing (NLP). Tokenizers are incorporated into NLTK [9].

The NLTK includes several different tokenizers, including those that adhere to the following norms: letters, paths, words, keywords, classes, N-grams, patterns, and so on. The word-punkt tokenizer [10], which breaks sentences up at blank spaces, is the most often used tokenizer. The NLTK tokenizers are exceptional in terms of their accuracy, speed, and efficiency. A portal administrator logs in and has the ability to add explicit answers to a particular inquiry or delete invalid answers. The chatbot programme responds to the users' inquiries using automated reasoning.

CHAPTER 3
METHODOLOGY

This web-based application, the College Chatbot System, responds to user inquiries. Fig. 3.1 depicts the chatbot system's system architecture.

The user is first greeted by the chatbot, who then requests his or her email so that he or she can log in to the system. The user then locates the UI buttons that correspond to the various college classifications. The chatbot system asks the user if it was helpful in providing the response after going through the buttons. The user can continue the chat with the college chatbot system by short expanding on their queries if they are unable to find the appropriate response. Then, the chatbot system breaks down the user requests using machine learning techniques.

Chatbot System Architecture:

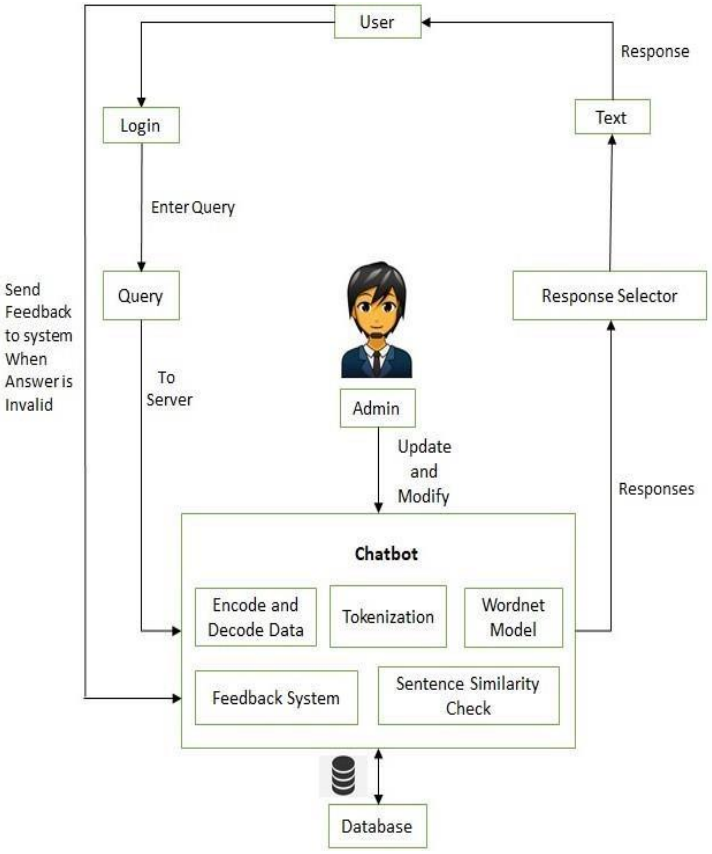

Fig 3.1

The WorldNet Algorithm uses the user's query to identify the keywords in the query. As the description of the enquiry can vary depending on the person. Users may ask the same question in a variety of ways. A user may pose the same question in a very straightforward way, while another user may express it in an entirely different way. Therefore, identifying the precise information that a user is looking for and determining the appropriate response to that user question are both necessary. If stop words are present in the user's questions, the chatbot system first removes them from the user input. Tokenization and lemmatization [11] processes are completed when stop words are eliminated from user queries.

Tokenization is the process of separating a body of text into its individual words and sentences.

Lemmatization, a variant of stemming, is the process of assembling a word's various inflected forms so they may be analysed as a single entity. Following the detection and correction of any spelling errors in the query using the spell checker [12], a suitable response is then looked for in the knowledge database [14] using the sentence similarity and WordNet Algorithm [13]. A semantic and lexical database for the English language is called WorldNet. Tokenization is the process of separating a body of text into its individual words and sentences.

Lemmatization, a variant of stemming, is the process of assembling a word's various inflected forms so they may be analysed as a single entity. Following the detection and correction of any spelling errors in the query using the spell checker [12], a suitable response is then looked for in the knowledge database [14] using the sentence similarity and WordNet Algorithm [13]. A semantic and lexical database for the English language is called WorldNet.

It is used to classify English words into sets of synonyms known as synsets [15], provides brief explanations and use models, and keeps track of various relationships between these synonym sets or their constituent parts. The system informs the administrator about the missing response in the database and provides the user with a prepared response if the response is located in the database and can be displayed to the user.

By login into the admin section of the website, the administrator can add the missing response to the database, ensuring that the user will receive the appropriate response the next time he or she submits the same question. The college chatbot system captures user feedback at the conclusion of the interaction in order to increase system effectiveness.

The user's duties include making inquiries, offering feedback, and other tasks. As seen in Fig. 3.2.

a. Login: every action the user must take is described in full below. after using the conversation feature offered by the college website's chatbot. The chatbot system welcomes the user and asks for their mail address. The user and the chatbot then begin a conversation.

b. Botindex: After selecting a chatbot, the user will get a response to their question, the chatbot shows them a link to chooses a few possibilities for colleges and determines type of inquiry. If the user's inquiry is answered, the chatbot's duty is finished

c. Asking Questions: If the user is unsatisfied with the rule-based response, the chatbot system prompts the user to type in his or her question in words, and the appropriate response is provided by Fig. 2. Flowchart for the chatbot's User Module.

Flowchart for User Module:

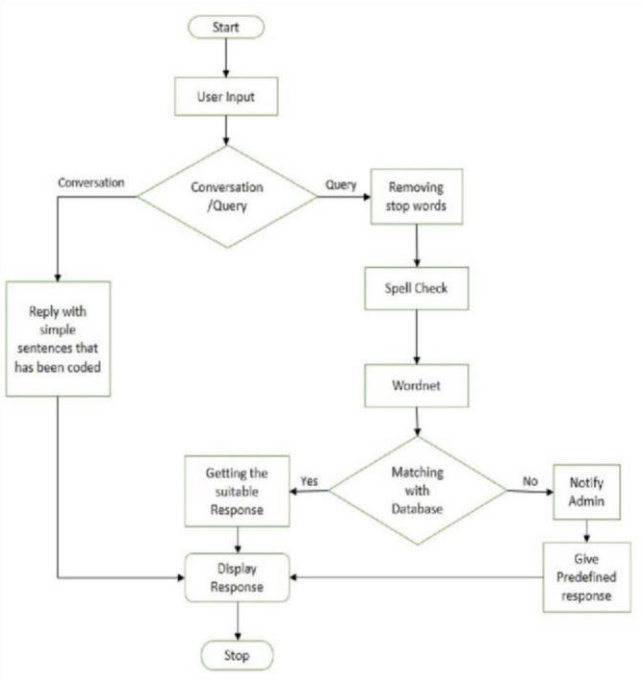

Fig 3.2

A database query is initially checked. A suitable response is sent to the user if the query is valid. If the query is invalid, the chatbot suggests the user ask questions about the college.

d. Giving feedback: Following the interaction, the chatbot solicits user comments. Feedback is gathered to learn how users feel about the chatbot. If the user provides favourable comments, the bot thanks them and offers a box to enter any additional questions. If the user provides unfavourable feedback, the bot will ask the user to be more specific in order to answer. The user's username is also saved, which aids the administrator in monitoring user behaviour. The administrator who is in charge of there are various reasons to keep the college chatbot system updated: there are tasks to complete like adding the query to the database, View feedback from users, edit data, and delete data and so forth. The administrator is required to carry out all tasks. are described in detail below as depicted in Fig. 3.

a. Login: The system only has one administrator (administrators cannot register). The administrator must log in using their username and password, which are both encrypted using the SHA-256 technique. The username and password that are entered for login are compared to those that are kept in the database and encrypted with the SHA-1 technique. The administrator can access the college chatbot system if the provided details match the database.

b. Add query: When an administrator adds a dataset, the chatbot gives them three options for adding a query: adding a question, adding an answer, and choosing the category that the dataset belongs to.

c. Examine dataset: If the admin chooses to do so, the chatbot will allow them to view the dataset by category. The chatbot also offers the two extra alternatives of deleting and editing the dataset.

d. Delete query: If the admin decides to delete the query, the chatbot will allow deletion from the view page by selecting the appropriate category.

Flowchart for Admin Module:

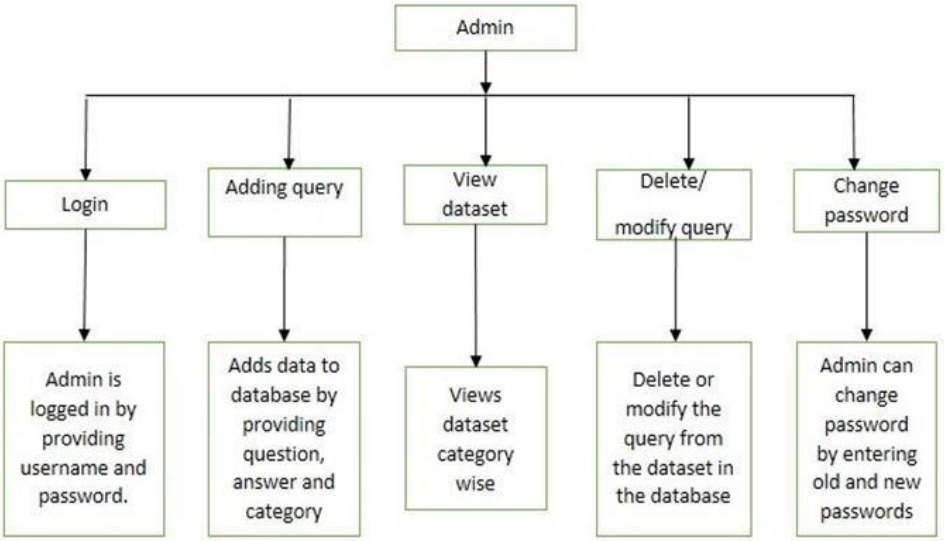

Fig 3.3

e. Edit existing query: If admin chooses to modify an existing question, the chatbot enables this right from the view page by selecting the appropriate category.

f. Password changing: The chatbot permits admin to change the password if they so want. The administrator must input the old password, the new password, and the new password again on the password change webpage in order to change the password. resulting in the creation of a new password that is stored in the code and is encrypted.

g. Viewing an invalid dataset: If the admin continues to see an invalid dataset, the chatbot will allow them to view it by category. The user's negative comments on the data or the inquiries that the chatbot is unable to answer constitute faulty data. The chatbot also provides two more alternatives, delete and amend the relevant inquiry.

h. Edit Static Responses: The admin can change or update the text that appears when a user clicks on buttons in the chatbot system's GUI. The administrator can modify the data that is retrieved by clicking the button on the webpage or alter the button's functionality by rewriting it in the database.

All of the features enable the administrator to carry out any task via the website without using the database.

CHAPTER 4
RESULTS AND DISCUSSIONS

A chatbot system has been put in place to help users with their academic needs. A knowledge-based chatbot uses simulation or answer generation. The replies are retrieved by Wordnet, which in this case comprises all of the logics that are activated once the user context matches. Once a user starts submitting questions to the chatbot's graphical user interface (GUI). The database is searched using the query. If the answer is in the database, it is presented to the user; otherwise, the system tells the administrator that the answer is missing from the database and provides the user with a predetermined answer.

Chatbot code:

```
from chatterbot import ChatBot
from chatterbot.trainers import ListTrainer
from tkinter import *
import pyttsx3 as pp
import speech_recognition as s
import threading

engine = pp.init()
voices = engine.getProperty('voices')
print(voices)
engine.setProperty('voice', voices[1].id)


def speak(word):
    engine.say(word)
    engine.runAndWait()


bot = ChatBot("My Bot")
convo = [
    'Hello',
    'hi there!',
    'What is your name ?',
    'My Name is Doremon',
    'How are you ?',
    'I am good what about you',
    'Can you speak in Hindi ?',
    'Yes i can',
]
trainer = ListTrainer(bot)
```

Fig 4.1

```
]
trainer = ListTrainer(bot)

trainer.train(convo)
print("Talk to Life Saver")


main = Tk()
main.geometry("500x650")
main.title("My Chat bot")
img = PhotoImage(file="bot.png")
photoL = Label(main, image=img)
photoL.pack(pady=5)


def takeQuery():
    sr = s.Recognizer()
    sr.pause_threshold = 4
    print("Your bot is listening")
    with s.Microphone() as m:
        audio = sr.listen(m)
        query = sr.recognize_google(audio, language='eng-in')
        print(query)
        textF.delete(0, END)
        textF.insert(0, query)
        ask_from_bot()


def ask_from_bot():
    query = textF.get()
```

Fig 4.2

```
def ask_from_bot():
    query = textF.get()
    answer_from_bot = bot.get_response(query)
    msgs.insert(END, "you : " + query)
    print(type(answer_from_bot))
    msgs.insert(END, "bot : " + str(answer_from_bot))

    speak(answer_from_bot)
    textF.delete(0, END)
    msgs.yview(END)


frame = Frame(main)
sc = Scrollbar(frame)
msgs = Listbox(frame, width=80, height=25, yscrollcommand=sc.set)
sc.pack(side=RIGHT, fill=Y)
msgs.pack(side=LEFT, fill=BOTH, pady=10)
frame.pack()

textF = Entry(main, font=("Verdana", 15))
textF.pack(fill=X, pady=10)

btn = Button(main, text="Talk to Life Saver", font=("Verdana", 15), command=ask_from_bot)
btn.pack()


def enter_function(event):
    btn.invoke()
```

Fig 4.3

By login into the website's admin block, the administrator can add the omitted response to the database. The chatbot is built using AIML, a form of extensible markup language (XML). This makes it easier for users of all types to get information such as the most recent news, university rank holders, schedules, updates on college exams and events, and other academic data. Figures 4.2,4.3 demonstrate several images of the suggested chatbot system. By providing options, consumers may quickly find their solutions.

Chatbot Interface:

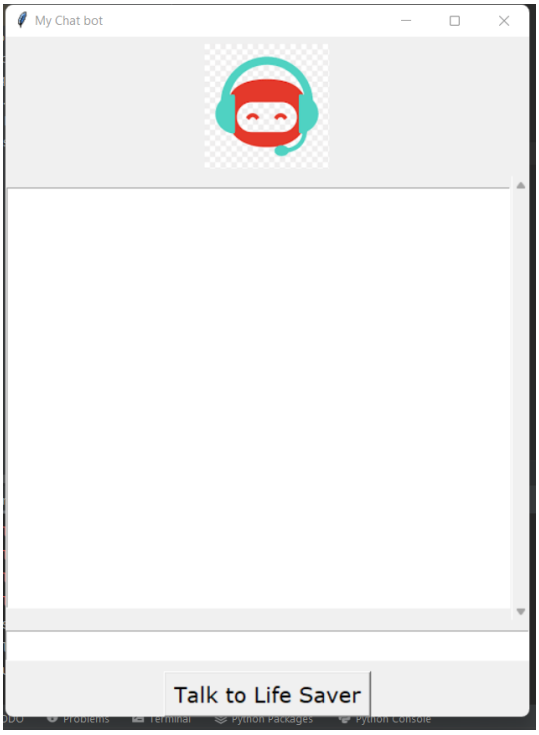

Fig 4.4

The chatbot immediately gathers the user's email address when they select a certain category. If the user's inquiry cannot be answered by the available alternatives, the chatbot system provides an extra dialogue box for the user to enter a college-related topic. Users may ask the chatbot system as many questions as they want about college. In Fig. 4.4, a few representative user questions are displayed. The chatbot system instantly responds to all user inquiries. After the interaction, the chatbot system requests that the user supply comments as seen in Fig. 6. This system of feedback is used to determine the degree to which the user is satisfied with the answer from the chatbot to user inquiries. This input is recorded in the database, which the institution may access to see how effectively the chatbot is resolving consumer inquiries.

Chatbot Replies Output:

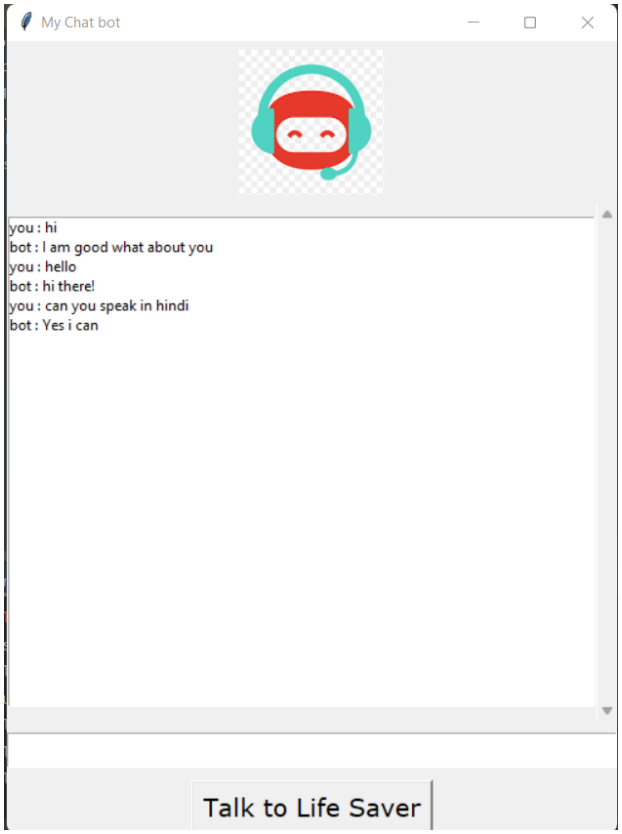

Fig 4.5

Administrators must provide their username and password to log in. Administrator access to the database is only permitted with appropriate authentication. Fig. 4.5 depicts the admin menu screen when the admin logs in using the correct username and password. where the administrator may carry out tasks including adding data to a dataset, changing an existing data set, viewing all incorrect queries, editing preset data, viewing user feedback, deleting existing data, and changing the admin module's password. Every modification made here has an immediate impact on the database. When a user is unhappy with the chatbot's replies, they provide unfavourable feedback. If the administrator determines that the queries are legitimate, they may also add the appropriate response. If not, the administrator can simply click to remove the inquiry.

CHAPTER 5

Conclusions and Future Scopes

In this project, we created a college-specific chatbot system that can be specifically tailored to the education domain. By integrating this chatbot system into the college website, we hope to increase user interaction on the page while also investigating the design stages of our college chatbot system and a few methods for increasing the chatbot system's precision. The administrator must provide the chatbot system with more information about college and broaden its knowledge base in order to train it to provide meaningful and accurate responses. To develop the college Chatbot system and ultimately answer user queries, feedback from the potential user can be gathered.

Interactive chatbots will definitely advance quickly. Bots that today serve a single purpose as point products will now provide a larger range of services. There is still a sizable market for bots because millions of companies have yet to introduce their first bot or fully grasp the technology (for more information on chatbot fundamentals. For instance, chatbots are widely used in education but only for a few specific purposes. Those applications will soon merge into one or two more helpful bots. A chatbot that currently supports a college course by assisting with lesson plans, room numbers, and attendance may soon be able to assist by teaching those lessons, offering revision advice, conducting ad hoc testing, and much more to benefit both the students enrolled in the course and the college through higher pass rates.

Reference:

1. A guide to Natural Language Processing, Available at https://en.wikipedia.org/wiki/Natural_language_processing
2. Chatbot definition, Available at https://medium.com/@mg/bot-is-ahilariously-over-simplified-buzzword-let-s-fix-thatf1d63abb8ba7#:~:text=A%20chatterbot%20(also%20known%20as,via%20auditory%20or%20textual%20methods.
3. Introduction to Artificial Intelligence Mark up Language, Available at https://www.tutorialspoint.com/aiml/aiml_introduction.htm
4. Prof.K.Bala, Mukesh Kumar, SayaliHulawale, SahilPandita,"Chat-Bot For College Management System Using A.I" International Research Journal of Engineering and Technology (IRJET) Volume: 04, Issue: 11, Page no: 2030-2033| Nov 2017.
5. Porter Stemmer Algorithm, Available at http://snowball.tartarus.org/algorithms/porter/stemmer.html
6. Guruswami Hiremath, AishwaryaHajare, PriyankaBhosale, RasikaNanaware, Dr. K. S. Wagh, "Chatbot for education system" International Journal of Advance Research, Ideas and Innovations in Technology (IJARIIT) ISSN: 2454-132X, Volume: 4, Issue: 3, Page no: 37-43|2018.
7. Amey Tiwari, Rahul Talekar, Prof.S.M.Patil, "College Information Chat Bot System" International Journal of Engineering Research and General Science (IJERGS) Volume: 5, Issue: 2, Page no: 131-137| March-April 2017.
8. K. Jwala, G.N.V.G Sirisha, G.V. Padma Raju, "Developing a Chatbot using Machine Learning" International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume: 8 Issue: 1S3, Page no: 89-92| June 2019.
9. Basics of Natural Language ToolKit, Avalilable at https://www.nltk.org/
10.] Naeun Lee, Kirak Kim, Taeseon Yoon, "Implementation of Robot Journalism by Programming Custombot using Tokenization and Custom Tagging" International Conference on Advanced Communications Technology (ICACT) Page no: 566-570| Feb 2017.
11. Fundamentals of Natural Language Processing - Tokenization, Lemmatization, Stemming and Sentence Segmentation, Available at https://colab.research.google.com/github/dairai/notebooks/blob/master/_notebooks/2020-03-19nlp_basics_tokenization_segmentation.ipynb#scrollTo=H7gQFbUxOQt b
12. Jazzy spell checker Library, Available at http://jazzy.sourceforge.net/
13. WordNet Algorithm, Avaliable at https://wordnet.princeton.edu/
14. Setiaji Bayu, Wibowo Ferry "Chatbot Using a Knowledge in Database: Human-to-Machine Conversation Modeling" 7th International Conference on Intelligent Systems, Modelling and Simulation (ISMS) Page no: 72-77| Jan 2016. DOI: 10.1109/ISMS.2016.53.
15. Synsets for a word in WordNet, Available at https://www.geeksforgeeks.org/nlp-synsets-for-a-word-inwordnet/#:~:text=WordNet%20is%20the%20lexical%20database,that%20express%20the%20same%20concept.