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TITLE

CHATBOT QUERY SYSTEM

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This is to certify that the project titled

CHATBOT QUERY SYSTEM

is a bonafide work carried out by the following students in partial fulfilment of the requirements for Advanced Academic Center intern, submitted to the chair, AAC during the academic year 2021-22.

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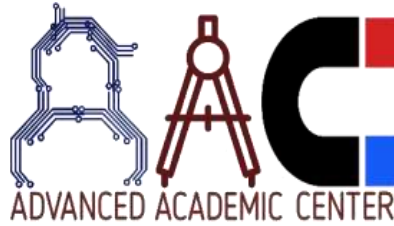
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I. ABSTRACT

Chat-Bot or conversational interfaces as they are also known, present a new way for individuals to interact with computer system. A chatbot allows a user to simply ask questions in the same manner that they would address a human. The technology at the core of the chatbot is natural language processing (“NLP”).

NLP enables computers to understand natural language as humans do. Whether the language is spoken or written, natural language processing uses artificial intelligence to take real-world input, process it, and make sense of it in a way a computer can understand. The main functions of NLP include text classification, text extraction, machine translation and natural language generation.

The future advancements in machine learning and NLP can make the chat-bots more intelligent which can make a conversation with a chat-bot similar to a conversation with humans. This can be used in query resolution for businesses replacing humans.

II. INTRODUCTION

Brief Introduction:

Chatbots are also known as chatter bots. A chatbot is developed with the help of AI (Artificial Intelligence) application. It gives permission to humans to interact with digital devices as if they were communicating with a human being.

AI chatbots employ machine learning, an AI capability that allows bots to become smarter over time as they are used. AI chatbots are a natural match for customer service because of this. Chatbots use digital instant messenger to communicate with people and can be integrated into a variety of applications and websites.

These websites include:

- B2B: Mobile Monkey.
- Services: Massage Envy.
- Restaurant: Domino's.
- E- commerce: Peloton.

Types of Chatbot:

- 1) Menu/button chatbot
- 2) Linguistic based
- 3) Keyword recognition-based chatbots
- 4) Machine Learning chatbots
- 5) The hybrid models
- 6) Voice bots

Background:

In 1966, MIT's Joseph Weizenbaum invented ELIZA, the first chatbot that came close to simulating a human. ELIZA will detect keywords in a sentence as well as pattern match them against a list of pre procedures to generate appropriate responses. Amazon's Echo and Alexa, Apple's Siri, and Microsoft's Cortana are examples of modern chatbot.

Challenges:

Now that we've learned about the advantages of using AI chatbots, one can put its power to work to improve customer happiness. Whenever it comes to adopting AI chatbots within the company, unfortunately, there are some major challenges.

Chatbot security.
Understanding the emotions and sentiments of your customers.

- 1) They are susceptible to data security breaches.
- 2) They can misunderstand user point of view.
- 3) They can face spoken language problems.
- 4) They can interrupt the user experience.

Why do chatbots fail?

Chatbots are programmed by humans and typically follow a decision-tree. The chatbot's activities are expressly mapped out by the authors based on what a user says. Chatbots fail because pre-training a chatbots to operate correctly in every case is nearly hard.

Consider slang, misspellings, intonation, comedy, and syntax when it comes to communication. I hate to admit it, but I'm a human who sometimes misses sarcasm or comedy in my own relationships.

As a result, chatbots make mistakes. We see consumers angry or annoyed, brand reputation harmed, or flat-out negative user feedback for a variety of reasons.

How to Prevent Chatbot Failure?

1. Send a message to a human agent

"Please bear with us while we connect you with our expert." When it comes to dealing with common client complaints and questions, a chatbot can be useful. But don't expect these AI-powered bots to work fully independently! Human action is required.

2. Be honest (transparent)

Make it clear to customers that they are speaking with a chatbot rather than a human. You should not conceal it from your consumers as a brand because it might have a beneficial impact on them. Surprisingly, using a chatbot can encourage customers to spend more money.

3. Timely maintenance

Maintaining it on a regular basis entails providing it with up-to-date information and ensuring that all its functions are operational. You may have thoroughly prepared your chatbot software, but routine maintenance ensures that it is up to date and functioning properly, reducing the likelihood of it failing while communicating with your clients.

Goals and Objectives

A chatbot can interact with a human being like a human. You may develop chatbots in any business field such as :

Despite of whether you're a:

- Mill owner
- Senior Manager
- Instant help for students
- Teaching Assistant
- Customize Chatbot

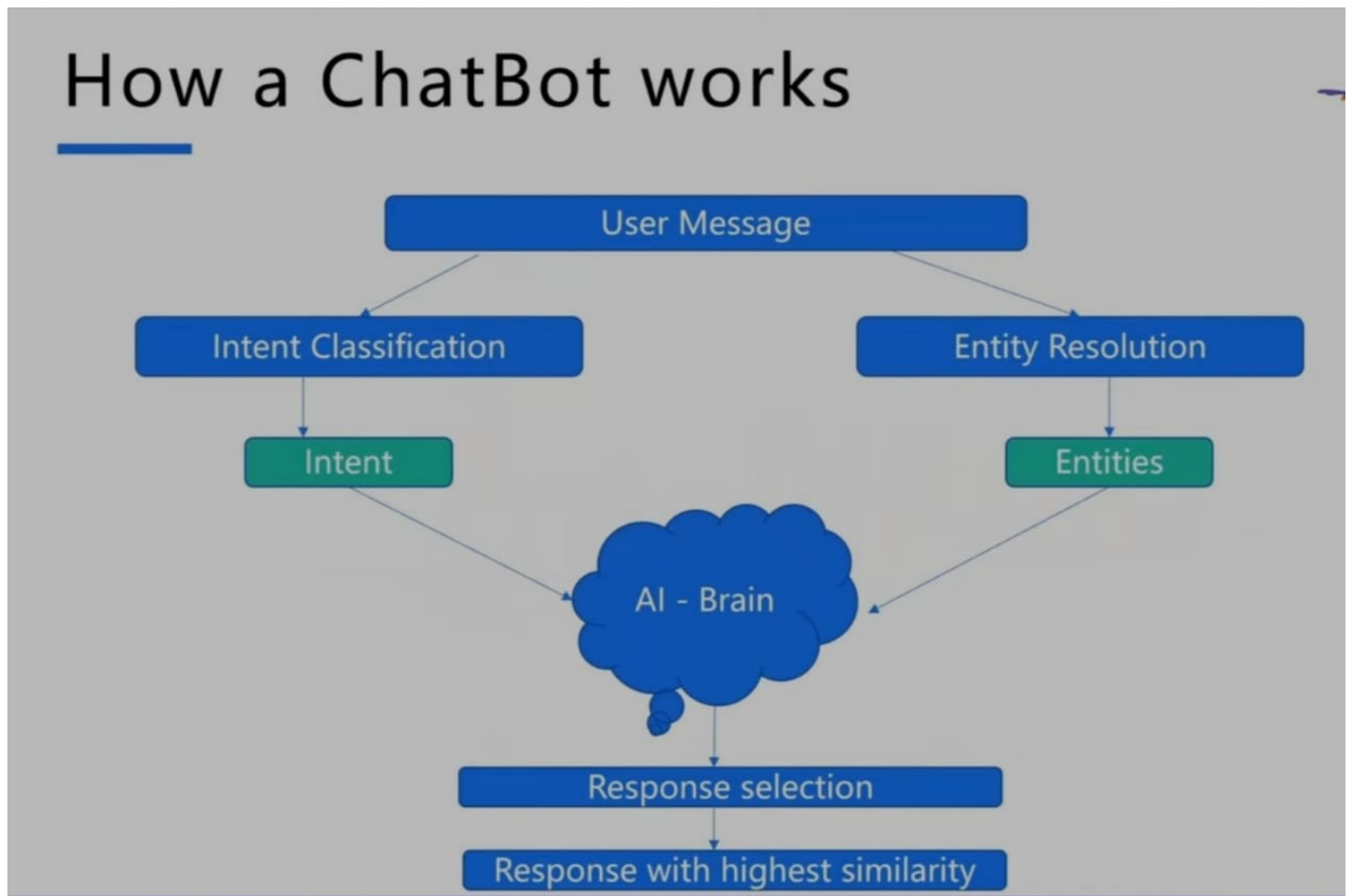
Let's list down objectives and purpose of chatbots.

- It provides 24/7 availability.
- Themes.
- Voice-to-text.
- Language.
- Customize Chatbot.
- Quality of conversation.

Solution:

Use machine learning to understand the basic questions and emotions of the users and handle complex queries intelligently.

III. PROJECT WORKFLOW



1) Defining the goal of the project:-

Understanding what kind of chatbot we are creating and ideating what it must do.
The goal of the project is to create a chatbot which responds to basic questions.

2) Crafting the algorithms to satisfy our goals:-

Algorithm of the program must do tasks such as understanding the keywords of the input and fix any errors in data input with the help of machine learning .

3) Creating the dataset:-

Brainstorming few common questions and answers to these questions was the basis for the response system. Using these questions and answers the dataset was created.

4) Writing the program:-

Implementing the algorithm into an actual python program and checking for errors.

5) Execution of the project:-

After all errors are dealt with, the project including the program and dataset completed and ready for execution

IV. CODE

```
import
t
numpy
as np

import nltk
import string
import random
f = open('/content/data.txt','r',errors = 'ignore')
raw_doc = f.read()
raw_doc = raw_doc.lower()
nltk.download('punkt')
nltk.download('wordnet')
nltk.download('omw-1.4')
sentence_tokens = nltk.sent_tokenize(raw_doc)
word_tokens = nltk.word_tokenize(raw_doc)
lemmer = nltk.stem.WordNetLemmatizer()
def LemTokens(tokens):
    return[lemmer.lemmatize(token) for token in tokens]
remove_punc_dict = dict((ord(punct), None) for punct in string.punctuation)
def LemNormalize(text):
    return LemTokens(nltk.word_tokenize(text.lower().translate(remove_punc_dict)))
greet_inputs = ('hello','hi','whatsup','how are you')
greet_responses = ('Hi','Hey','Hello','Good Morning')
def greet(sentence):
    for word in sentence.split():
        if word.lower() in greet_inputs:
            return random.choice(greet_responses)
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.metrics.pairwise import cosine_similarity
def response(user_response):
    robo1_response = ''
    TfidfVec = TfidfVectorizer(tokenizer = LemNormalize, stop_words = 'english')
    tfidf = TfidfVec.fit_transform(sentence_tokens)
    vals = cosine_similarity(tfidf[-1],tfidf)
    idx = vals.argsort()[0][-2]
    flat = vals.flatten()
    flat.sort()
    req_tfidf = flat[-2]
    if (req_tfidf == 0):
        robo1_response = robo1_response + "I am sorry. Unable to understand you!"
        return robo1_response
    else:
        robo1_response = robo1_response + sentence_tokens[idx]
        return robo1_response
flag = True
print('Hello! I am the GRIET Bot. Start typing your text after greeting to talk to me. For
ending the conversation type bye!')
while(flag == True):
    user_response = input()
```

```
user_response = user_response.lower()
if(user_response != 'bye'):
if(user_response == 'thank you' or user_response == 'thanks'):
flag = False
print('Bot: You are welcome.')
else:
if(greet(user_response) != None):
print('Bot ' + greet(user_response))
else:
sentence_tokens.append(user_response)
word_tokens = word_tokens + nltk.word_tokenize(user_response)
final_words = list(set(word_tokens))
print('Bot: ', end = '')
print(response(user_response))
sentence_tokens.remove(user_response)
else:
flag = False
print('Bot: Goodbye!')
```

V. FUTURE DEVELOPMENTS

Future of Chatbots is very exciting. With the massive improvements in the fields of Artificial Intelligence and Machine Learning here are some developments we can see with chatbots.

1) Customized Learning:-

Students benefit from individual attention because teachers get understanding of the domain in which the students are vulnerable. A bigger number of professionals can be conceived if personal educators are accessible to specific students of various capacities. Students can learn more about their areas of interest.

2) Spaced Interval Learning:-

Students could use spaced interval learning to analyze what they've learned so far. The kids can recollect the information they have learned. Super Memo is a system that aware the children when they are about to forget something. It monitors the frequency mode in which learning occurs and repeats things that have already been covered using an algorithm.

3) Assessment of composition skills:-

Currently, instructors choose to test students using multiple-choice surveys, which makes their jobs easier. A student's writing and composition skills, that could be acquired via essay writing, can help them be better judged. This has been investigated just use an automated evaluating system where the researchers had to use unsupervised machine learning to perform robotic evaluation as well as an analysis of the robot's performance, that was finished using a mixture of Term Frequency Inverse Document Function (TFIDF) and cosine Euclidean distance.

A real-time study on a group of medical students found that the web tutoring system raised their test scores and cognitive efficacy by three times the size, as measured by Cohen's D effective dose (95%) and confidence interval.

An actual investigation was conducted at University of Salerno for a set of computer science students where Latent Dirichlet Allocation (LDA) algorithm was used in the operation of managing queries. This produced a satisfactory outcome.

Teachers who believe that chatbots would take their jobs and they will be laid off are making a mistake. It simply makes jobs easier for them by assisting pupils with common questions and evaluating them individually. Throughout their free time, teachers can stay up to date on the newest research. One of the first educators to employ such strategy was Ashok Goel, who created his own chatbot, Jill Watson. Jill attempted to respond to the students via an online forum, disseminating all accessible information as well as technical questions

4) Business Field:-

Businesses are using chatbots to increase sales and improve customer service. To demonstrate the broad range of pricing and abilities there in chatbot field, they created the top AI chatbot system comparison and reviews list.

The user's interaction with the AI chatbot system is defined by the kind. All systems have conversation chatbots that are using AI and/or logic, and some can transition to a human individual in such a chat session.

There are four types of chatbots which are as follows

Rule-Based Chatbot

AI Chatbot

Live Chat

Voice

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