CREATE A CHATBOT IN PYTHON

Team Leader:

962821106033 : JERRIK PRAYWIN RAJ J

Team Members:

962821106004 : ABINANDH R S

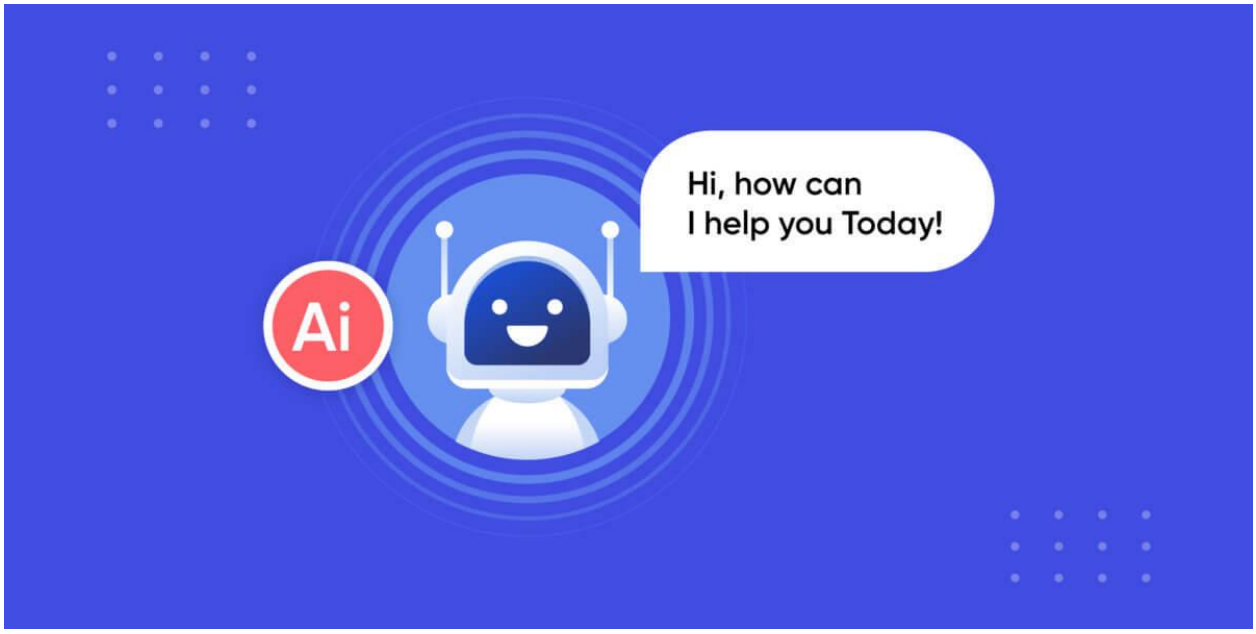
962821106014 : ARSHATH SHARIEF S

962821106017 : BALASUBRAMANIAN K

962821106018 : BASKARAN K

Phase - 3: DEVELOPMENT PART 1

TOPIC: CREATE A CHATBOT



INTRODUCTION:

A chatbot is a computer program designed to simulate human conversation, primarily through text-based or voice-based interactions. It serves as an artificial intelligence (AI) system that can engage in discussions, answer questions,

and assist users in a conversational manner. Chatbots have become increasingly popular in recent years, thanks to advancements in natural language processing and machine learning technologies.

Chatbots are used in various applications across industries, including customer support, e-commerce, healthcare, and education. They are employed to streamline processes, provide instant responses, and enhance user experiences. Chatbots can be simple rule-based systems that follow predefined scripts, or more advanced AI-driven models that learn and adapt from user interactions, becoming more proficient over time.

The main advantages of chatbots include their availability 24/7, their ability to handle large volumes of inquiries simultaneously, and their potential to reduce operational costs by automating routine tasks. They can be deployed on websites, messaging platforms, mobile apps, and even integrated into hardware devices like smart speakers.

As technology continues to advance, chatbots are expected to become more sophisticated and capable of understanding and generating increasingly complex and nuanced conversations, offering improved assistance and support to users across a wide range of domains.

This introduction will guide you through the initial steps for the

Development part 1 of training and data preprocessing for the building a chatbot using a python

DATA SET:

Dataset Link: https://www.kaggle.com/datasets/grafstor/simple-dialogs-for-chatbot

Project Description:

Developing Chat-bot with predetermined conversation with some questions and answer with respective each questions. This chat-bot integrated with a website build using HTML, CSS and JAVA Script.

Environment Set-up:

The environment set-up for the development of the code to develop chat-bot and integrate with a website, such that with HTML code with CSS designing.

Chat-Bot:

The Chat-Bot is created with the help of python which is used to develop in the AI (Artificial Intelligence) and ML (Machine Learning)

The Python code is developed in the Juypter Notebook which has all the required library pre-installed.

The Required main libraries are:

1. Flask
2. Tensorflow
3. Numpy
4. Pandas
5. Matplotlib && pyplot
6. Csv

These are the main libraries used for development of backend working of chat-bot.

Web-Development:

The chat-bot need to integrated with the user by User-Interface, so here we plan on integrating with a website.

The website is created in Visual Code Studio using HTML and CSS

Coding and Process:

Data-Transformation:

TSV - ->CSV:

The Given data set is in the form of Tab separated values and its not be used in the chat-bot effectively, hence we first convert the TSV file into CSV

```
import csv

def tsv_to_csv(input_file, output_file):
    with open(input_file, 'r', newline='') as tsv_file:
        tsv_reader = csv.reader(tsv_file, delimiter='\t')
        with open(output_file, 'w', newline='') as csv_file:
            csv_writer = csv.writer(csv_file)
            for row in tsv_reader:
                csv_writer.writerow(row)

# Specify input and output file paths
input_tsv_file = 'dialogs.txt'  # Update with your TSV file path
output_csv_file = 'output.csv'  # Update with desired CSV file path

# Convert TSV to CSV tsv_to_csv(input_tsv_file, output_csv_file)
```

Here the file is converted in to csv file which is make easy t o access the questions and answers from the data set and stores in **output.csv** file.

Data-Quality Assesment:

Backend Chat-bot Coding:

In the development of the background chat-bot

Import necessary libraries:

```
import csv
import tensorflow as tf
import numpy as np
import pandas as pd
import matplotlib.pyplot as ple
import seaborn as sns
import re,string
from flask import Flask, request, render_template
```

These are the main libraries to import to create chat-bot and to implement in the website

Loading data:

Opening or loading a file to process the data from the file and can react with it

```
# Load the data into a DataFrame
df = pd.read_csv("your_data.csv")
```

Data-Cleaning:

While removing unwanted chat detail so that we can easily maintain the chatting with the bot.

Lowercasing:

Convert all text to lowercase to ensure consistency using following Keywords

```
str.lower()
```

Removing Punctuation and Special Characters:

Use regex or string manipulation function to remove unwanted characters.

Tokenization:

Split the text into words or tokens for further analysis using NLTK or spaCy.

Stopword Removal:

Remove common, uninformative words(e.g., “the”,”and”) using NLTK or spaCy.

Stemming and Lemmatization:

Reduce word to their base or root from using NLTK or SpaCy.

Data-Comparing and Interface:

In chat-bot the basic concept to compare questions and answers and give it to the user

```
import csv
from flask import Flask, request, render_template

app = Flask(__name__)

# Read destinations from CSV
destinations = {}
with open('output.csv', 'r', newline='', encoding='utf-8') as csvfile:
    reader = csv.DictReader(csvfile)
    for row in reader:
        destinations[row['Question'].lower()] = row['Answer']

@app.route('/')
def index():
    return render_template('index.html')

@app.route('/get_destination', methods=['POST'])
def get_destination():
```

```
if __name__ == '__main__':
    app.run(debug=True)
```

INPUT FILE:

The given input file or dataset is in the form of text document or tsv(tab separated value) format, we need to convert it into csv file for the further calculation the given file is:

```
hi, how are you doing?  i'm fine. how about yourself?
i'm fine. how about yourself?   i'm pretty good. thanks for asking.
i'm pretty good. thanks for asking.     no problem. so how have you been?
no problem. so how have you been?       i've been great. what about you?
i've been great. what about you?        i've been good. i'm in school right now.
i've been good. i'm in school right now.        what school do you go to?
what school do you go to?       i go to pcc.
i go to pcc.    do you like it there?
do you like it there?   it's okay. it's a really big campus.
it's okay. it's a really big campus.    good luck with school.
good luck with school.  thank you very much.
how's it going? i'm doing well. how about you?
i'm doing well. how about you?  never better, thanks.
never better, thanks.   so how have you been lately?
so how have you been lately?    i've actually been pretty good. you?
i've actually been pretty good. you?    i'm actually in school right now.
i'm actually in school right now.       which school do you attend?
which school do you attend?     i'm attending pcc right now.
i'm attending pcc right now.    are you enjoying it there?
are you enjoying it there?      it's not bad. there are a lot of people there.
it's not bad. there are a lot of people there.  good luck with that.
good luck with that.    thanks.
```

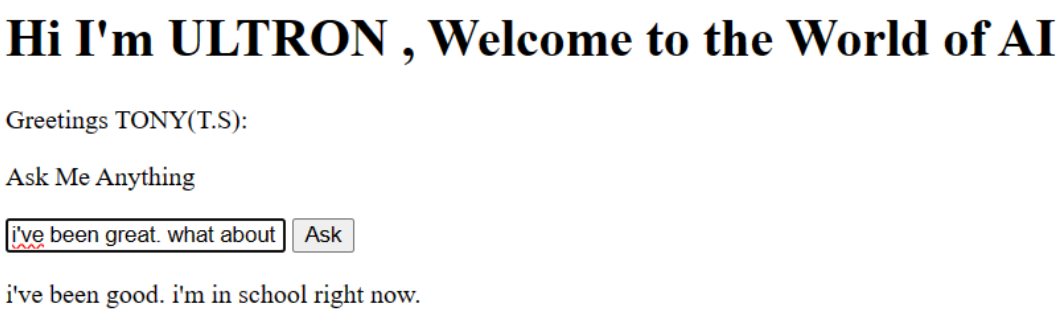
OUTPUT FILE :

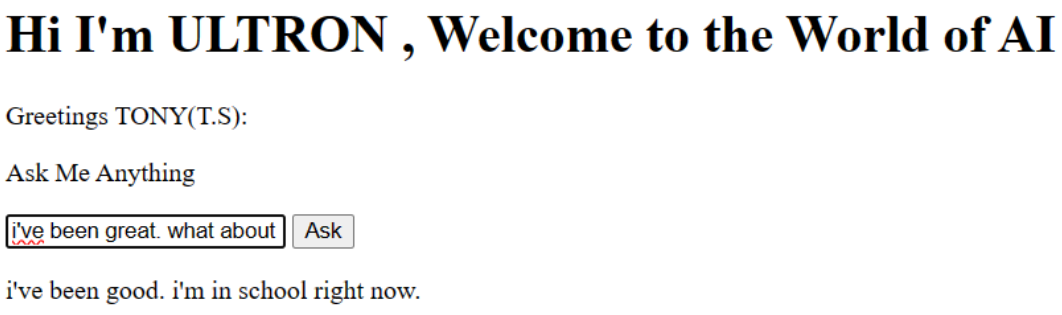
The converted outfile is in the format of csv(comma seperated value)

	A	B
1	Question	Answer
2	hi, how are you doing?	i'm fine. how about yourself?
3	i'm fine. how about yourself!?	i'm pretty good. thanks for asking.
4	i'm pretty good. thanks for asking.	no problem. so how have you been?
5	no problem. so how have you been?	i've been great. what about you?
6	i've been great. what about you?	i've been good. i'm in school right now.
7	i've been good. i'm in school right now.	what school do you go to?
8	what school do you go to?	i go to pcc.
9	i go to pcc.	do you like it there?
10	do you like it there?	it's okay. it's a really big campus.
11	it's okay. it's a really big campus.	good luck with school.
12	good luck with school.	thank you very much.
13	how's it going?	i'm doing well. how about you?
14	i'm doing well. how about you?	never better, thanks.
15	never better, thanks.	so how have you been lately?
16	so how have you been lately?	i've actually been pretty good. you?

IMPLEMENTATION :

The implemented project is given by in the name ULTRON





CONCLUSION :

In conclusion, chatbots are developed to engage in natural conversations,assist user interface,and streamline various processes.Our chatbot has already demonstrated its basic capabilities.

In the next upgrde,we aim to focus enhance its performance and user experince.