

Name :- Jinesh . N

Roll No :- 64

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Assignment - 08 [AI/ES]

* Title :-

Implement a chat bot using techniques of Natural language processing

* Aim :-

Create a chat bot using various natural language processing (NLP) libraries.

* Objective :-

Write a program in C/C++/Python to create a chatbot using various NLP libraries.

* Theory :-

i. Natural Language Processing (NLP)

- NLP is a field of Artificial intelligence that focuses on the interaction of computers and human language.
- It involves enabling computer to understand, interpret and generate human language in a way that is valuable.
- NLP combines techniques from linguistics, computer science and ML to process large amounts of natural language data.

(ii) NLP Libraries

- NLTK (Natural language tool kit)
- spacy
A fast and efficient library.
- Transformers (by hugging face)
- Rasa
- AllenNLP
- Chatterbot
- Textblob

* Input

User data

* Output

Working chatbot

* Platform

Windows / Linux

* Conclusion

Learned the concept of NLP and created a chatbot

* FAQs :-

Q1. What is NLP.

→ NLP is the branch of artificial intelligence that focuses on enabling computers to understand, interpret and generate human language.

Key Components of NLP :-

- Tokenization
- Part of Speech (POS)
- Named Entity Recognition
- Sentiment Analysis
- Machine Translation.
- Text summarization

Q2. Explain limitations one face while creating a chatbot.

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- Understanding Content and Ambiguity
 - Handling complex conversations
 - Natural language understanding limitations
 - Training data and domain knowledge
 - Handling unexpected inputs
 - Error handling and recovery.

Q.3. Uses of chat bot in various domains

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- Customer service and support
 - Healthcare
 - E commerce and retail
 - Banking and finance
 - Travel and hospitality
 - Education.

10/10/24


```

pairs = [
    # Greetings
    [r"hi|hello|hey", ["Hello!", "Hi there!", "Hey!"]],
    # Small talk
    [r"how are you ?|how r u|hw r u?|how r u?", ["I'm doing well, thank you!", "I'm good, thanks for asking."]],
    # Handling user's name
    [r"my name is (.*)", ["Hello %1! Nice to meet you.",]],
    # Providing information about the chatbot
    [r"what can you do??", ["I can answer questions, tell jokes, provide recommendations, and more!"]],
    # Asking about the weather
    [r"what's the weather like today??", ["The weather today is sunny/cloudy/rainy/etc."]],
    # Asking about the time
    [r"what time is it??", ["It's currently {time}."]],
    # Asking for a joke
    [r"tell me a joke", ["Why don't scientists trust atoms? Because they make up everything!"]],
    # Asking for recommendations
    [r"do you have any recommendations for books??", ["One popular book is 'Sapiens: A Brief History of Humankind' by Yuval Noah Harari."]],
    # Asking for fun facts
    [r"can you tell me a fun fact??", ["Sure! Did you know that the shortest war in history lasted only 38 minutes between Britain and Zanzibar in 1896?"]],
    # Asking for contact information
    [r"how can I contact support??", ["You can contact support by emailing support@example.com or calling our helpline at 1-800-123-4567."]],
    # Asking about hobbies
    [r"what are your hobbies??", ["I'm a bot, so I don't have hobbies in the traditional sense. But I love helping users like you!"]],
    # Asking about the bot's age
    [r"how old are you??", ["I'm just a computer program, so I don't have an age!"]],
    # Asking for the purpose of the bot
    [r"what is your purpose??", ["My purpose is to assist you with any questions or tasks you have!"]],
    # Asking for help
    [r"can you help me??", ["Of course! What do you need help with?"]],
    # Expressing gratitude
    [r"thank you|thanks", ["You're welcome!", "No problem."]],
    # Asking for more information
    [r"tell me more", ["Sure! What would you like to know more about?"]],
    # Requesting to quit the conversation
    [r"quit|exit|goodbye", ["Goodbye! Have a great day!", "See you later!"]],
    # Fallback response for unknown questions
    [r".*", ["I'm not sure I understand. Can you please rephrase or ask something else?"]],

```

```
[r"how old are you\\?", ["I'm just a computer program, so I don't have an age!"]],
# Asking for the purpose of the bot
[r"what is your purpose\\?", ["My purpose is to assist you with any questions or tasks you have!"]],
# Asking for help
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[r"tell me more", ["Sure! What would you like to know more about?"]],
# Requesting to quit the conversation
[r"quit|exit|goodbye", ["Goodbye! Have a great day!", "See you later!"]],
# Fallback response for unknown questions
[r".*", ["I'm not sure I understand. Can you please rephrase or ask something else?"]],
# Asking for the meaning of life
[r"what is the meaning of life\\?", ["The meaning of life is subjective and can vary from person to person."]],
# Asking about favorite books
[r"what's your favorite book\\?", ["As a bot, I don't read, but I've heard '1984' by George Orwell is a classic."]],
# Asking about favorite music
[r"what kind of music do you like\\?", ["I don't have personal preferences, but I can recommend various genres."]],
# Asking for travel recommendations
[r"can you recommend a travel destination\\?", ["One popular travel destination is Paris, known as the City of Love."]],
# Asking about dreams
[r"do you dream\\?", ["I'm just a bot, so I don't dream like humans do."]],
# Asking about pets
[r"do you have any pets\\?", ["As a virtual assistant, I don't have pets, but I'm happy to talk about them!"]],
# Asking about favorite movies
[r"what's your favorite movie\\?", ["I don't watch movies, but 'The Matrix' is often recommended."]],
# Asking about favorite TV shows
[r"what's your favorite TV show\\?", ["I don't watch TV, but 'Breaking Bad' is highly acclaimed."]],
# Asking about favorite foods
[r"what's your favorite food\\?", ["I don't eat, but I hear sushi is delicious."]],
# Asking about favorite sports
[r"what's your favorite sport\\?", ["I don't play sports, but many people enjoy soccer."]],
# Asking about favorite hobbies
[r"what's your favorite hobby\\?", ["I don't have hobbies, but reading and coding are popular among humans."]],
# Asking for advice on relationships
[r"can you give me relationship advice\\?", ["Communication and mutual respect are key in any relationship."]],
# Asking about favorite quotes
[r"do you have a favorite quote\\?", ["One famous quote is 'The only way to do great work is to love what you do.'"]],
# Asking about favorite colors
```

Terminal Help

Min_max.ipynb chatbot.ip: You: (Press 'Enter' to confirm or 'Escape' to cancel)

AB > Jinesh_PC-64_1032222029.ipynb > def chat():

+ Code + Markdown | Interrupt Restart Clear All Outputs Go To View data Variables Outline ... Python 3.11.9

```
def chat():
    print("Hey there! I am a chatbot created for your service. Feel free to ask me anything!")
    chat = Chat(pairs, reflections)
    while True:
        try:
            response = chat.respond(input("You: "))
            print("Bot:", response)
        except KeyboardInterrupt:
            print("Bot: Goodbye!")
            break
        except:
            print("Bot: I'm sorry, I didn't understand that. Can you please repeat?")

# Initiate the conversation
if __name__ == "__main__":
    chat()
```

[5] 3m 37.5s Python

... Hey there! I am a chatbot created for your service. Feel free to ask me anything!
Bot: I'm not sure I understand. Can you please rephrase or ask something else?
Bot: Hi there!
Bot: I'm doing well, thank you!
Bot: I'm good, thanks for asking.
Bot: Goodbye! Have a great day!