

Chat bot for simple questions

DESCRIPTION,SOURCECODE,OUTPUT,PPT

Description:

The "Chatbot for Simple Questions" project focuses on creating an intelligent conversational agent capable of understanding and responding to basic user queries. Leveraging Natural Language Processing (NLP) and machine learning, the chatbot is trained on a labeled dataset to recognize user intents and generate appropriate responses. This project involves data extraction, preprocessing, model training, and evaluation to ensure accurate and efficient performance. The chatbot aims to enhance user experience by providing quick, relevant answers, automating routine tasks in customer support, education, and information retrieval, ultimately reducing the workload on human operators and offering instant solutions to users.

Source Code:

```
import json
import numpy as np
import tensorflow as tf
from tensorflow import keras
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense, Embedding, GlobalAveragePooling1D
from tensorflow.keras.preprocessing.text import Tokenizer
from tensorflow.keras.preprocessing.sequence import pad_sequences
from sklearn.preprocessing import LabelEncoder
```

```
with open("intentsnew.json") as file:
    data = json.load(file)

training_sentences = []
training_labels = []
labels = []
responses = []

for intent in data['intents']:
    for pattern in intent['patterns']:
        training_sentences.append(pattern)
        training_labels.append(intent['tag'])
        responses.append(intent['responses'])

    if intent['tag'] not in labels:
        labels.append(intent['tag'])

num_classes = len(labels)
```

```

lbl_encoder = LabelEncoder()
lbl_encoder.fit(training_labels)
training_labels = lbl_encoder.transform(training_labels)

```

```

[4] vocab_size = 10000
     embedding_dim = 16
     max_len = 20
     oov_token = "<OOV>"

     tokenizer = Tokenizer(num_words=vocab_size, oov_token=oov_token)
     tokenizer.fit_on_texts(training_sentences)
     word_index = tokenizer.word_index
     sequences = tokenizer.texts_to_sequences(training_sentences)
     padded_sequences = pad_sequences(sequences, truncating='post', maxlen=max_len)

```

```

model = Sequential()
model.add(Embedding(vocab_size, embedding_dim, input_length=max_len))
model.add(GlobalAveragePooling1D())
model.add(Dense(16, activation='relu'))
model.add(Dense(16, activation='relu'))
model.add(Dense(num_classes, activation='softmax'))

model.compile(loss='sparse_categorical_crossentropy',
              optimizer='adam', metrics=['accuracy'])

model.summary()

```

Model: "sequential"

Layer (type)	Output Shape	Param #
embedding (Embedding)	(None, 20, 16)	16000
global_average_pooling1d (GlobalAveragePooling1D)	(None, 16)	0
dense (Dense)	(None, 16)	272
dense_1 (Dense)	(None, 16)	272
dense_2 (Dense)	(None, 31)	527
Total params: 17071 (66.68 KB)		
Trainable params: 17071 (66.68 KB)		
Non-trainable params: 0 (0.00 Byte)		

```

import numpy as np
from tensorflow import keras
from sklearn.preprocessing import LabelEncoder
import colorama
colorama.init()
from colorama import Fore, Style, Back
import random
import pickle
with open("intentsnew.json") as file:
    data = json.load(file)
def chat():
    model = keras.models.load_model('chat_model')
    with open('tokenizer.pickle', 'rb') as handle:
        tokenizer = pickle.load(handle)
    with open('label_encoder.pickle', 'rb') as enc:
        lbl_encoder = pickle.load(enc)
    max_len = 20
    while True:
        print(Fore.LIGHTBLUE_EX + "User: " + Style.RESET_ALL, end="")
        inp = input()
        if inp.lower() == "quit":
            break
        result = model.predict(keras.preprocessing.sequence.pad_sequences(tokenizer.texts_to_sequences([inp]),
                                                                           truncating='post', maxlen=max_len))
        tag = lbl_encoder.inverse_transform([np.argmax(result)])
        for i in data['intents']:
            if i['tag'] == tag:
                print(Fore.GREEN + "ChatBot:" + Style.RESET_ALL , np.random.choice(i['responses']))
print(Fore.YELLOW + "Start messaging with the bot (type quit to stop)!" + Style.RESET_ALL)
chat()

```

```

!pip install colorama

Collecting colorama
  Downloading colorama-0.4.6-py2.py3-none-any.whl.metadata (17 kB)
  Downloading colorama-0.4.6-py2.py3-none-any.whl (25 kB)
Installing collected packages: colorama
Successfully installed colorama-0.4.6

```

Output:

```
... Start messaging with the bot (type quit to stop)!
User: hi
1/1 [=====] - 1s 711ms/step
ChatBot: Hello
User: who discover u
1/1 [=====] - 0s 23ms/step
ChatBot: I am Ted, a Deep-Learning chatbot
User: who made u
1/1 [=====] - 0s 22ms/step
ChatBot: I was made by Maturu Deepika.
User: how can i help u
1/1 [=====] - 0s 34ms/step
ChatBot: ...
User: jk
1/1 [=====] - 0s 26ms/step
ChatBot: Yeah!
User: bye
1/1 [=====] - 0s 23ms/step
ChatBot: Bye! Come back again soon.
User:

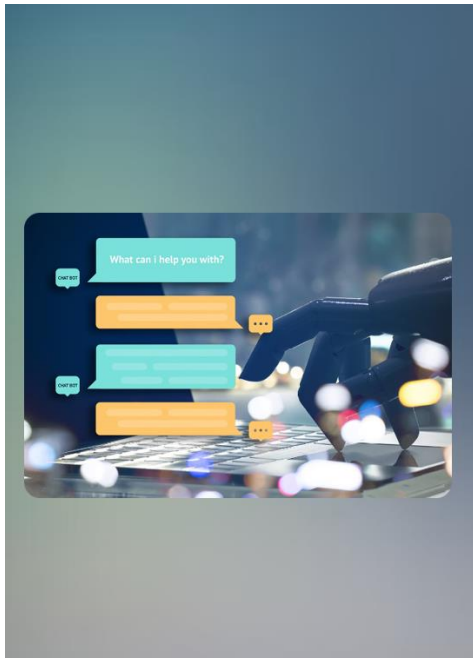
```

PPT:

Introduction to Chatbots

Welcome to the world of chatbots! These AI-powered conversational agents are transforming the way we interact with technology.





What are Chatbots?

Conversational AI

Chatbots are computer programs designed to simulate conversation with human users.

Text or Voice

They can interact through text, voice, or a combination of both, mimicking human-like dialogue.

Automated Responses

Chatbots use predefined rules or machine learning algorithms to provide responses.



Benefits of Chatbots

1 24/7 Availability

Chatbots are always available to assist customers, providing instant responses.

2 Increased Efficiency

They automate routine tasks, freeing up human agents to handle complex issues.

3 Personalized Experiences

Chatbots can learn user preferences and provide tailored interactions.

4 Cost Savings

Chatbots reduce the need for human support staff, leading to significant cost reductions.

Common Use Cases for Chatbots

Customer Support

Answering frequently asked questions, providing troubleshooting guidance, and resolving simple issues.

E-commerce

Assisting customers with product recommendations, order tracking, and payment processing.

Lead Generation

Qualifying potential leads, collecting contact information, and scheduling appointments.

Key Features of Chatbots

1

Natural Language Processing (NLP)

Enabling chatbots to understand and interpret human language.

2

Dialogue Management

Managing the flow of conversation, guiding interactions through different stages.

3

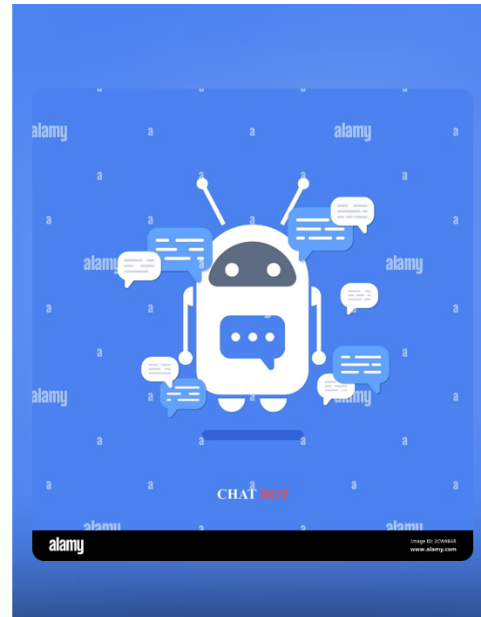
Integration with Other Systems

Connecting to databases, APIs, and other applications to access relevant information.

4

Machine Learning

Improving chatbot performance over time by learning from user interactions.



Building a Simple Chatbot

Choose a Platform

1

Select a chatbot development platform that aligns with your needs.

2

Develop the Logic

Use scripting or visual tools to implement the conversational logic.

3

4

Deploy and Monitor

Deploy the chatbot to your chosen channel and track its performance over time.

5

Design the Flow

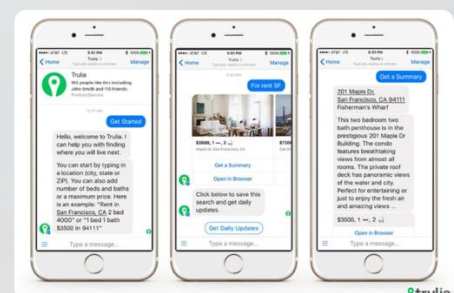
Plan the conversation flow, mapping out potential user questions and responses.

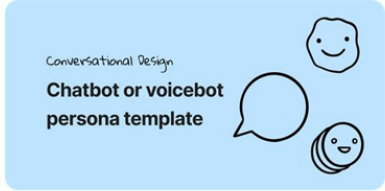
Test and Refine

Thoroughly test the chatbot with various inputs and make adjustments as needed.

Integrating Chatbots with Messaging Messaging Platforms

Platform	Benefits
Facebook Messenger	Massive user base, robust API, marketing marketing features.
WhatsApp	Widely used globally, high engagement rates, excellent for customer support.
Telegram	Powerful bot platform, customizable, strong strong community.
Slack	Ideal for workplace communication, automating tasks, and streamlining workflows.





Conversational Design Principles



Know Your Audience

Understand the language, tone, and preferences of your target users.



Clear and Concise

Use simple, direct language to ensure clear communication.



Feedback Mechanisms


Provide ways for users to give feedback and report issues.



Personalization

Tailor the conversation to individual user needs and preferences.

Measuring Chatbot Performance





IT CHATBOT INTERACTION LOG TEMPLATE

Custom-designed for the tech sector, it records crucial data points like user queries, bot responses, and interaction durations.

CONSISTS OF 3 PAGES

Improve your chatbot conversion rate using rich media





Conversation Metrics

Track conversation volume, response times, and customer satisfaction.

Conversion Rates

Measure how effectively the chatbot drives desired outcomes, such as sales or bookings.



Future Trends in Chatbot Technology

1 Advanced NLP

More sophisticated language understanding and natural dialogue.

2 Multimodal Interactions

Combining text, voice, and visual elements for richer experiences.

3 Integration with IoT

Chatbots controlling smart home devices and other connected systems.

4 Ethical Considerations

Addressing concerns about bias, privacy, and transparency.