

PAI LAB

BS in Artificial Intelligence



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RESTAURANT CHATBOT USING NLP:

1 INTRODUCTION:

This project uses **Python**, **Flask** (a web framework), and **NLTK** (a natural language processing library) to build the chatbot.

- The chatbot understands simple questions and gives quick, helpful responses.
- Using a chatbot improves customer service by providing instant replies 24/7.

2 CODE IMPLEMENTATION:

```
main.py > ...
1  from flask import Flask, render_template, request
2  from nltk.chat.util import Chat, reflections
3
4  app=Flask(__name__)
5
6  pairs = [
7      # Greetings
8      [r"(?i)hello|hi|hey|salaam|assalam.*",
9       ["Hello! Welcome to Food Haven. How can I assist you today?"]],
10
11     [r"(?i)how are you.*",
12      ["I'm just a chatbot, but I'm here to help! How can I assist you?"]],
13
14     # Menu inquiries
15     [r"(?i).*menu.*|.dishes.*|.food.*",
16      ["We offer Biryani, Zinger Burger, Fries, Pepsi,
17       Karahi, Handi, and more. Which item would you like to know more about?"]],
18
19     # Specific dishes and prices
20     [r"(?i).*biryani.*",
21      ["Biryani is Rs. 350."]],
22
23     [r"(?i).*zinger.*|.burger.*",
24      ["Zinger Burger is Rs. 450."]],
25
26     [r"(?i).*fries.*",
27      ["Fries are Rs. 150."]],
28
29     [r"(?i).*pepsi.*|.drink.*",
30      ["Pepsi is Rs. 80."]],
31
```

Figure a. main.py-1

```

[r"(?i).*karahi.*",
 ["Chicken Karahi is Rs. 1200 (full) and Rs. 650 (half)."]],

[r"(?i).*handi.*",
 ["Boneless Handi is Rs. 950 (half) and Rs. 1600 (full)."]],

# Prices
[r"(?i).*price.*|.cost.*",
 ["Please mention the dish you want the price for, like Biryani, Karahi, etc."]],

# Opening hours
[r"(?i).*timing.*|.open.*|.closing.*|.hours.*",
 ["We are open every day from 11 AM to 11 PM."]],

# Location
[r"(?i).*address.*|.location.*|.where.*",
 ["Our restaurant is located at 123 Main Street, Lahore, Pakistan."]],

# Delivery
[r"(?i).*deliver.*|.home delivery.*",
 ["Yes, we offer home delivery within a 10 km radius. Please call 0300-1234567 to place an order."]],

# Reservations
[r"(?i).*reservation.*|.book.*table.*",
 ["You can reserve a table by calling us at 0300-1234567 or via our website."]],

# Payment methods
[r"(?i).*payment.*|.card.*|.cash.*",
 ["We accept cash, credit/debit cards, and mobile wallets like Easypaisa and JazzCash."]],

# Thank you

```

Activ
Go to

Figure b main.py-2

```
[r"(?i).*thank.*|.*thanks.*",
["You're welcome! Is there anything else you'd like to know?"]],

# Goodbye
[r"(?i).*bye.*|.*goodbye.*|.*exit.*",
["Goodbye! Hope to serve you again soon."]],

# Unknown fallback
[r"(.*)",
["Sorry, I didn't understand that. Please ask about our menu, prices, timings, or location."]]
]

chatbot = Chat(pairs, reflections)

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

@app.route("/get")
def get_bot_response():
    user_input = request.args.get('msg')
    response = chatbot.respond(user_input)
    return str(response)

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

Figure c. main.py-3

```
templates > <> index.html > html > body
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <meta charset="UTF-8" />
5      <meta name="viewport" content="width=device-width, initial-scale=1" />
6      <title>Restaurant Chatbot</title>
7      <style>
8          body {
9              font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;
10             background-color: #f4f7f6;
11             display: flex;
12             justify-content: center;
13             align-items: center;
14             height: 100vh;
15             margin: 0;
16         }
17         .chat-container {
18             background: white;
19             width: 360px;
20             max-width: 100%;
21             box-shadow: 0 4px 12px rgba(0,0,0,0.15);
22             border-radius: 8px;
23             display: flex;
24             flex-direction: column;
25             overflow: hidden;
26         }
27         .chat-header {
28             background-color: #0078d7;
29             color: white;
30             padding: 15px;
31             font-size: 1.25rem;
32             font-weight: 600;
```

Figure d index.html-1

```
34     }
35     #chatbox {
36         flex-grow: 1;
37         padding: 15px;
38         overflow-y: auto;
39         border-bottom: 1px solid #ddd;
40         font-size: 0.95rem;
41     }
42     #chatbox div {
43         margin-bottom: 10px;
44         padding: 8px 12px;
45         border-radius: 15px;
46         max-width: 80%;
47         word-wrap: break-word;
48     }
49     .user-msg {
50         background-color: #e1f5fe;
51         align-self: flex-end;
52     }
53     .bot-msg {
54         background-color: #f1f1f1;
55         align-self: flex-start;
56     }
57     .chat-input {
58         display: flex;
59         padding: 10px;
60         background-color: #fafafa;
```

Figure eindex.html-2

```
border-top: 1px solid #ddd;
}
#userInput {
  flex-grow: 1;
  padding: 10px;
  font-size: 1rem;
  border: 1px solid #ccc;
  border-radius: 20px;
  outline: none;
  transition: border-color 0.3s ease;
}
#userInput:focus {
  border-color: #0078d7;
}
button {
  background-color: #0078d7;
  color: white;
  border: none;
  padding: 10px 20px;
  margin-left: 10px;
  border-radius: 20px;
  font-size: 1rem;
  cursor: pointer;
  transition: background-color 0.3s ease;
}
button:hover {
  background-color: #005fa3;
```

Figure f index.html-3


```

    }
  </style>
</head>
<body>
  <div class="chat-container">
    <div class="chat-header">Restaurant Chatbot</div>
    <div id="chatbox"></div>
    <div class="chat-input">
      <input type="text" id="userInput" placeholder="Type your message..." onkeydown="if(e
      <button onclick="sendMessage()">Send</button>
    </div>
  </div>

  <script>
    function sendMessage() {
      var userInput = document.getElementById("userInput").value.trim();
      if(userInput === '') return;
      var chatbox = document.getElementById("chatbox");

      var userDiv = document.createElement('div');
      userDiv.className = 'user-msg';
      userDiv.textContent = 'You: ' + userInput;
      chatbox.appendChild(userDiv);
      chatbox.scrollTop = chatbox.scrollHeight;

      fetch('/get?msg=' + encodeURIComponent(userInput))
        .then(response => response.text())
        .then(data => {
          var botDiv = document.createElement('div');

```

Figure g index.html-4

```
    fetch('/get?msg=' + encodeURIComponent(userInput))
      .then(response => response.text())
      .then(data => {
        var botDiv = document.createElement('div');
        botDiv.className = 'bot-msg';
        botDiv.textContent = 'ChatBot: ' + data;
        chatbox.appendChild(botDiv);
        chatbox.scrollTop = chatbox.scrollHeight;
      });

    document.getElementById("userInput").value = '';
    document.getElementById("userInput").focus();
  }
</script>
</body>
</html>
```

Figure h.index.html-5

3 OUTPUT:

127.0.0.1:5000

Restaurant Chatbot

You: hi

ChatBot: Hello! Welcome to Food Haven. How can I assist you today?

You: menu

ChatBot: We offer Biryani, Zinger Burger, Fries, Pepsi, Karahi, Handi, and more. Which item would you like to know more about?

You: location

ChatBot: Our restaurant is located at 123 Main Street, Lahore, Pakistan.

Send

Activate
Go to Settings

Figure 1 CHATBOT OUTPUT

4 CONCLUSION:

- The restaurant chatbot successfully answers customer questions about food, prices, delivery, and reservations.
- It provides fast and accurate responses, making it easier for customers to get information anytime.