



SWPSD – 2023/2024

1. **Projektowanie chatbotów:** jest ważnym aspektem interakcji człowiek-komputer w aplikacjach internetowych. Polega na stworzeniu interfejsu, który pozwoli użytkownikom na interakcję z chatbotem w naturalny i intuicyjny sposób. Oto kilka kluczowych elementów projektu chatbota:
2. **Przeptyw konwersacji:** Przeptyw konwersacji powinien być zaprojektowany w sposób naturalny i intuicyjny dla użytkownika. Użytkownik powinien łatwo zrozumieć, jak wchodzić w interakcję z chatbotem i czego się spodziewać w odpowiedzi.
3. **Przetwarzanie języka naturalnego:** Chatbot powinien być w stanie rozumieć dane wejściowe użytkownika i reagować na nie w naturalny sposób. Wiąże się to z wykorzystaniem technik przetwarzania języka naturalnego (NLP) do analizy danych wejściowych użytkownika i generowania odpowiednich odpowiedzi.
4. **Interfejs użytkownika:** Interfejs użytkownika powinien być przejrzysty i łatwy w użyciu. Dla użytkownika powinno być jasne, w jaki sposób wchodzi w interakcję z chatbotem i jakie opcje są dla niego dostępne.
5. **Personalizacja:** Chatbot powinien mieć możliwość personalizacji interakcji w oparciu o preferencje i historię użytkownika. Może to pomóc w stworzeniu bardziej angażującego i satysfakcjonującego doświadczenia użytkownika.
6. **Obsługa błędów:** Chatbot powinien sprawnie obsługiwać błędy i przekazywać użytkownikowi przydatne informacje zwrotne. Może to pomóc zapobiec frustracji i zapewnić użytkownikowi możliwość wykonania zadania.

Chatbot został zaprojektowany, aby oferować informacje i pomoc związaną z kawą i herbatą i herbaty. Użytkownicy mogą wchodzić w interakcje z chatbotem za pośrednictwem interfejsu internetowego. interfejs.

Opis problemu

Stworzenia chatbota e-commerce w Pythonie, który zapewni obsługę klienta, odpowiadając na zapytania użytkowników na stronie internetowej lub w aplikacji. Celem jest zapewnienie użytkownikom wysokiej jakości wsparcia, zapewniając pozytywne doświadczenie użytkownika i satysfakcję klienta.

Myślenie projektowe

Stworzenie chatbota, który odpowie na najczęściej zadawane pytania, udzielanie wskazówek i kierowanie użytkowników do odpowiednich zasobów, należy wziąć pod uwagę następujące aspekty:

Odpowiedzi i reakcje

Przygotuj zestaw predefiniowanych odpowiedzi na najczęściej zadawane pytania, wspólnych pytań. Odpowiedzi te powinny być dokładne.

Interakcja z użytkownikiem

W jaki sposób użytkownicy będą wchodzić w interakcję z chatbotem? Będzie to chatbot tekstowy chatbot z przyjaznym dla użytkownika interfejsem.

Przetwarzanie języka naturalnego (Nlp)

Wdrożenie technik NLP. Obejmuje to rozpoznawanie podmiotów, wykrywanie intencji i analizę nastrojów.

Integracja

Integracja chatbota z odpowiednimi systemami lub bazami danych w celu dostępu do aktualnych informacji lub wykonywania określonych zadań.

Dokumentacja

Zapewnienie dokumentacji lub zasobów pomocy dla użytkowników, aby zrozumieć, jak skutecznie wchodzić w interakcje z chatbotem.

```
<!DOCTYPE html>
<html>
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-
scale=1.0">
```

```

<title>Chatbot</title>
<link rel="stylesheet" href="{{ url_for('static',
filename='style.css') }}">
</head>
<body>
    <div id="chat-container">
        <div id="chat-header">ChatBot</div>
        <div id="chat-box">
            <div id="chat-output">
                <!-- User and bot messages will be added here -
->
            </div>
        </div>
        <div id="chat-input">
            <input type="text" id="user-input"
placeholder="Type a message...">
            <button id="send-button">Send</button>
        </div>
    </div>
    <script src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
    <script>
        function scrollToBottom() {
            var chatOutput = document.getElementById("chat-
output");
            chatOutput.scrollTop = chatOutput.scrollHeight;
        }

        $(document).ready(function(){
            $("#send-button").on('click', sendMessage);

            $("#user-input").on('keydown', function(event) {
                if (event.which == 13) {
                    event.preventDefault();
                    sendMessage();
                }
            });
        });
    </script>

```

```

    });

    function sendMessage() {
        var user_msg = $("#user-input").val();
        $("#chat-output").append("<p>You: " + user_msg
+ "</p>");

        $("#user-input").val('');

        $.ajax({
            url: "/get_response",
            type: "POST",
            data: {user_msg: user_msg},
            success: function(response){
                var bot_response = response.response;
                $("#chat-output").append("<p>Bot: " +
bot_response + "</p>");
                scrollToBottom();
            }
        });
    }
});
</script>
</body>
</html>

```

Za pomocą skryptu otrzymujemy odpowiedź od chatbota i dołączamy ją do dokumentu.

KOD CSS (style.css)

```

body {
    font-family: 'Poppins', sans-serif;

```

```
background-color: #f0f0f0;
color: #333;
margin: 0;
padding: 0;
display: flex;
flex-direction: column;
justify-content: center;
align-items: center;
min-height: 100vh;
}

#chat-container {
  align-items: center;
  border-radius: 10px;
  background: linear-gradient(45deg, #4CAF50, #2196F3);
  box-shadow: 0 0 20px rgba(0, 0, 0, 0.3);
  color: white;
  overflow: hidden;
  border: 1px solid #ccc;
  display: flex;
  flex-direction: column;
  height: 95vh;
  width: 95%;
  border-top: 5px solid #1976D2;
  animation: chatEntry 0.5s ease;
}
```

```
#chat-header {
  padding: 20px;
  text-align: center;
  font-size: 2em;
  font-weight: bold;
  animation: headerEntry 1s ease;
}

#chat-header h1 {
```

```
margin: 0;
font-size: 1.5em;
font-weight: bold; /* Make the text bold */
background-color: transparent;
}

#chat-box {
  background-color: rgba(255, 255, 255, 0.9);
  color: #333;
  padding: 20px;
  text-align: left;
  font-size: 1.2em;
  overflow-y: auto;
  flex-grow: 1;
  border-radius: 10px;
  margin: 20px;
  width: 60%;
  box-shadow: 0 4px 8px rgba(0, 0, 0, 0.1);
  animation: boxEntry 1s ease;
}

#chat-output {
  padding: 10px;
  word-wrap: break-word;
  background-color: transparent;
  font-family: 'Poppins', sans-serif;
}
```

```
#chat-input {
  display: flex;
  align-items: center;
  background-color: white;
  padding: 10px;
  border-radius: 10px;
  margin: 20px;
  width: 60%;
```

```

    box-shadow: 0 4px 8px rgba(0, 0, 0, 0.1);
    animation: inputEntry 1s ease;
}

input[type="text"] {
    flex: 1;
    padding: 10px;
    border: none;
    border-radius: 25px;
    margin-right: 10px;
    outline: none;
    font-size: 20px;
    font-family: 'Poppins', sans-serif;
}

#send-button {
    background-color: #4CAF50;
    color: white;
    border: none;
    border-radius: 25px;
    padding: 10px 20px;
    cursor: pointer;
    outline: none;
}

```

W tej sekcji zaimportowane zostaną niezbędne biblioteki i moduły Pythona są importowane w celu wsparcia funkcjonalności Chatbota.

INICJALIZACJA APLIKACJI FLASK Instancja aplikacji Flask jest tworzona za pomocą Flask(name), co pozwala utworzyć aplikację internetową.

ŁADOWANIE INTENCJI I MODEL CHATBOTA

W tym miejscu chatbot łąduje dane JSON zawierające "intencje", które są predefiniowanymi wiadomościami użytkownika i ich odpowiadające im odpowiedzi.

Model chatbota jest ładowany z wcześniej wytrenowanego pliku punktu kontrolnego.

FUNKCJA GENEROWANIA ODPOWIEDZI (get_response)

Funkcja get_response jest odpowiedzialna za generowanie odpowiedzi chatbota na podstawie danych wprowadzonych przez użytkownika. Tokenizuje ona wiadomość użytkownika, konwertuje ją do worka

słów i wykorzystuje załadowany model sieci neuronowej do wygenerowania odpowiedzi. Sprawdza zaufanie do przewidywanej intencji i wybiera odpowiedź spośród intencji jeśli zaufanie jest powyżej pewnego progu.

TRASA STRONY GŁÓWNEJ (/)

Trasa / jest definiowana przy użyciu @app.route('/').

Gdy użytkownik uzyskuje dostęp do głównego adresu URL aplikacji, ta trasa renderuje szablon HTML o nazwie `.index.html` dla strony głównej.

TRASA INTERAKCJI CZAT (/get_response) Trasa `/get_response` jest zdefiniowana do obsługi interakcji czatu interakcje. Oczekuje ona żądań POST. Wyodrębnia wiadomość wiadomość użytkownika z żądania i przekazuje ją do funkcji `get_response` w celu uzyskania odpowiedzi chatbota. Odpowiedź chatbota jest następnie zwracana w formacie JSON.

URUCHAMIANIE APLIKACJI Aplikacja Flask jest uruchamiana przy użyciu `app.run(debug=True)`. Parametr `debug=True` umożliwia debugowanie, ułatwiając identyfikację i rozwiązywanie problemów podczas programowania.

`app.py`

```
from flask import Flask, render_template, request, jsonify
import random
import json
import torch
from model import NeuralNet
```

```
from nltk_utils import bag_of_words, tokenize

app = Flask(__name__)

# Load intents and the chatbot model
with open('intents.json', 'r') as json_data:
    intents = json.load(json_data)

FILE = "data.pth"
data = torch.load(FILE)

input_size = data["input_size"]
hidden_size = data["hidden_size"]
output_size = data["output_size"]
all_words = data['all_words']
tags = data['tags']
model_state = data["model_state"]

model = NeuralNet(input_size, hidden_size, output_size)
model.load_state_dict(model_state)
model.eval()

# Function to get chatbot responses
def get_response(msg):
    sentence = tokenize(msg)
    X = bag_of_words(sentence, all_words)
    X = X.reshape(1, X.shape[0])
    X = torch.from_numpy(X)
```

```

output = model(X)
_, predicted = torch.max(output, dim=1)

tag = tags[predicted.item()]

probs = torch.softmax(output, dim=1)
prob = probs[0][predicted.item()]

```

```

if prob.item() > 0.75:
    for intent in intents['intents']:
        if tag == intent["tag"]:
            return random.choice(intent['responses'])

    return "I do not understand..."

# Define the home page route
@app.route('/')
def home():
    return render_template('index.html')

# Define a route for handling chat interactions
@app.route('/get_response', methods=['POST'])
def chat():
    user_msg = request.form['user_msg']
    bot_response = get_response(user_msg)
    return jsonify({'response': bot_response})

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

```

DATASET intents.json

Rozszerzamy zbiór danych z poprzedniej fazy o więcej wzorców i odpowiedzi.

```

{
  "intents": [

```

```
{
  "tag": "greeting",
  "patterns": [
    "Hi",
    "Hey",
    "How are you",
    "Is anyone there?",
    "Hello",
    "Good day",
    "Hi there!",
    "Greetings",
    "How's it going?",
    "Hi, what's up?"
  ],
  "responses": [
    "Hey :-)",
    "Hello, thanks for visiting",
    "Hi there, what can I do for you?",
    "Hi there, how can I help?",
    "Hello! How can I assist you?",
    "Hi! I'm here to assist you.",
    "Greetings! Welcome to our online store."
  ]
},
{
  "tag": "goodbye",
  "patterns": ["Bye", "See you later", "Goodbye",
    "Farewell", "See you", "Take care", "Until next time"],
```

```
  "responses": [
    "See you later, thanks for visiting",
    "Have a nice day",
    "Bye! Come back again soon.",
    "Farewell! Come back soon.",
    "See you later, have a great day!",
    "Take care and have a wonderful day.",
    "Until next time! Don't hesitate to return."
  ]
}
```

```
]
},
{
  "tag": "thanks",
  "patterns": [
    "Thanks",
    "Thank you",
    "That's helpful",
    "Thank's a lot!",
    "I appreciate it",
    "Thank you very much",
    "You've been great"
  ],
  "responses": [
    "Happy to help!",
    "Any time!",
    "My pleasure",
    "You're welcome! If you have any more questions, feel free to ask.",
    "Thank you for your kind words!",
    "You're too kind. It's been a pleasure assisting you.",
    "You've been a great customer. Thank you!"
  ]
},
{
  "tag": "items",
```

```
"patterns": [
  "Which items do you have?",
  "What kinds of items are there?",
  "What do you sell?",
  "What flavors of tea do you have?",
  "Tell me about your coffee selection",
  "Tell me about your herbal tea selection",
  "What are your unique coffee blends",
  "Can you recommend a fruity tea?",
```

```
    "What's your menu like?",
    "Any specials today?",
    "Got any recommendations?",
    "What's popular here?"
  ],
  "responses": [
    "We sell coffee and tea",
    "We have coffee and tea",
    "We offer a wide variety of tea flavors, including traditional, fruity, and exotic options. Explore our menu for details.",
    "Our coffee range spans from light to dark roasts, including unique single-origin beans. Check them out on our website.",
    "Our herbal tea selection includes a variety of blends, from relaxing chamomile to invigorating peppermint. Explore the full range on our website.",
    "We have some unique coffee blends like our Espresso Roast and Mocha Java. Check them out for a distinctive coffee experience.",
    "If you're looking for a fruity tea, you'll love our Tropical Paradise blend. It's bursting with tropical fruit flavors.",
    "Our menu includes a variety of coffee and tea options. Don't miss our daily specials and recommendations from our baristas."
  ]
},
```

```
{
  "tag": "payments",
  "patterns": [
    "Do you take credit cards?",
    "Do you accept Mastercard?",
    "Can I pay with Paypal?",
    "Are you cash only?",
    "Can I use Apple Pay?",
```

```
    "What payment methods are accepted?",
    "Do you have contactless payment options?",
    "How can I settle the bill?",
    "Is it cashless payment available?",
    "Do you accept digital wallets?"
  ],
  "responses": [
    "We accept VISA, Mastercard, and Paypal",
    "We accept most major credit cards and Paypal",
    "Yes, we accept Apple Pay along with other major credit cards and digital payment methods.",
    "You can pay with credit cards, digital wallets, and cash. We offer contactless payment options for your convenience.",
    "We provide a variety of payment options, including credit cards, digital wallets, and cash payments.",
    "We support modern payment methods, including contactless payments for a hassle-free checkout.",
    "Settling the bill is easy. You can use credit cards, digital wallets, or pay with cash. We've got your preferred payment method covered.",
    "We're a cashless establishment, and we accept a wide range of digital wallets for your convenience."
  ]
}
```

```
},
{
  "tag": "delivery",
  "patterns": [
    "How long does delivery take?",
    "How about delivery",
    "What about delivery",
    "How long does shipping take?",
    "When do I get my delivery?",
    "What's your shipping cost?",
    "Can I track my order?",
    "Do you offer same-day delivery?",
  ]
}
```

```
    "What's the shipping time for international orders?",
    "What's the shipping cost for international orders?",
    "What's your delivery radius?",
    "Can I get my order today?",
    "Do you offer express shipping?",
    "Tell me about your shipping policies."
  ],
  "responses": [
    "Delivery takes 2-4 days",
    "Shipping takes 2-4 days",
    "Delivery takes 2-4 days",
    "Shipping takes 2-4 days",
    "Shipping is free for orders over $50. For smaller orders, a flat rate shipping fee applies.",
    "Yes, you can track your order using the tracking number provided in your confirmation email.",
    "Currently, we don't offer same-day delivery, but we provide fast shipping within 2-4 days.",
    "International shipping times vary by location, but it typically takes 7-14 days. Check with us for specific details.",
    "The shipping cost for international orders depends on the destination and package size. Contact us for a precise quote.",
    "Our delivery radius covers most areas within the city. Contact us to confirm if we can deliver to your location.",
```

```
    "We aim to deliver your order as swiftly as possible. While we don't offer same-day delivery, our standard shipping is quite efficient.",
    "For express shipping options or specific details on our shipping policies, please visit our website or contact our customer support."
  ]
},
{
```

```
"tag": "product_info",
"patterns": [
    "Tell me about your tea products",
    "What types of tea do you offer?",
    "Give me details about your coffee offerings",
    "Where do your coffee beans come from?",
    "Tell me about your exotic tea flavors",
    "What's special about your dark roast coffee?",
    "Tell me about your herbal tea ingredients",
    "What's unique about your single-origin coffee?",
    "What's the caffeine content in your tea?",
    "Do you have decaffeinated coffee?",
    "Tell me about your green tea options."
],
"responses": [
    "We offer a wide range of tea products, including black, green, herbal, and specialty teas. Each tea is carefully selected for its unique flavor and aroma.",
    "Our coffee selection includes various blends, from medium roast to dark roast, as well as single-origin options. We have something for every coffee enthusiast.",
    "Our coffee beans are sourced from various regions worldwide. Each origin has a unique flavor profile. Explore our origins on our website.",
    "Discover exotic tea flavors like Passionfruit Mango and Blueberry Bliss. They're a delightful departure from traditional teas.",
    "Our dark roast coffee is known for its bold and rich flavor. It's perfect for those who enjoy a robust coffee experience.",
    "Our herbal teas feature high-quality ingredients like chamomile, peppermint, and hibiscus. They're naturally caffeine-free and soothing.",
    "Explore the world of coffee with our single-origin options. Each one showcases the unique characteristics of the region it comes from.",
```



```
        "Caffeine content varies among our teas. Our black and green teas have moderate caffeine levels. For decaffeinated options, check our herbal teas.",
```

```
        "Yes, we offer decaffeinated coffee for those who prefer to enjoy coffee without the caffeine kick. It's just as flavorful.",
```

```
        "Our green tea selection includes classic green teas and unique blends like Jasmine Pearl and Moroccan Mint. They're all packed with flavor and antioxidants."
```

```
    ]
```

```
  },
```

```
  {
```

```
    "tag": "best_sellers",
```

```
    "patterns": [
```

```
      "What are your best-selling teas?",
```

```
      "Tell me your popular coffee choices",
```

```
      "What's your customer-favorite tea?",
```

```
      "Which coffee is a hit with customers?",
```

```
      "What's the most ordered tea on your menu?",
```

```
      "Tell me about your top-rated coffee blend.",
```

```
      "Which is best Tea or Coffee?"
```

```
    ],
```

```
    "responses": [
```

```
      "Our best-selling teas include our classic black tea and soothing chamomile herbal tea. Customers also love our signature coffee blend for its rich taste.",
```

```
      "Customers often choose our house blend coffee and the aromatic French roast. They're our top picks!",
```

```
      "Our classic black tea is a customer favorite, and
```

```
the house blend coffee is a top choice for coffee enthusiasts.",
```

```
      "The most ordered tea on our menu is our classic black tea. For coffee, our house blend is a customer favorite.",
```

```
        "Our customers rave about the classic black tea and
our rich house blend coffee. They're beloved choices among our
customers.",
        "Our top-rated coffee blend is the house blend.
It's known for its well-balanced flavor and is a constant hit
with coffee lovers.",
        "The choice between coffee and tea is a matter of
personal preference"
    ]
},
{
    "tag": "discounts",
    "patterns": [
        "Do you offer any discounts?",
        "Are there any ongoing promotions?",
        "Are there any loyalty programs or rewards for
regular customers?",
        "How can I save on my orders?",
        "Tell me about your current deals and offers.",
        "Do you have a student discount?"
    ],
    "responses": [
        "Yes, we have special discounts on selected tea and
coffee products. You can check our website for the latest
promotions and offers.",
        "Absolutely! We frequently run promotions on our
premium blends. Don't miss out on our current discounts.",
        "Yes, we have a loyalty program that rewards our
regular customers with exclusive discounts and perks. Sign up
on our website for more details.",
```

```
        "You can save on your orders by taking advantage of
our ongoing promotions and by signing up for our loyalty
program.",
        "We have a range of current deals and offers that
you can explore on our website. Don't forget to sign up for our
newsletter to stay updated.",
```

```
        "We offer a student discount on select products. Visit our website or contact us for more information on eligibility and savings."
    ]
},
{
    "tag": "customer_support",
    "patterns": [
        "How can I contact customer support?",
        "I need assistance with my order",
        "What's your return policy?",
        "How can I request a refund?",
        "What's the best way to get in touch with you?",
        "I have a question. How do I reach out to your support team?",
        "What's your customer service email?",
        "Tell me more about your customer support options.",
        "I'd like to talk to a customer service representative.",
        "I want to return a product. How can I do that?",
        "I have an issue with my order. Can you help me?"
    ],
    "responses": [
        "Our customer support team is here to assist you. You can reach out to us through our website's live chat, email, or phone. We're ready to help!",
        "If you have any questions or need assistance with your order, please don't hesitate to contact our dedicated customer support team.",
        "Our return policy allows returns within 30 days of purchase. Visit our returns page for details.",
        "To request a refund, contact our customer support team. They'll guide you through the process.",
    ]
}
```

```
        "You can get in touch with our support team through  
our website's live chat, email us at support@yourwebsite.com,  
or call our hotline at (123) 456-7890.",
```

```
        "Our customer service email is  
support@yourwebsite.com. We're available to assist you through  
various channels, so feel free to reach out.",
```

```
        "We offer multiple customer support options,  
including live chat, email, and phone support. You can choose  
the method that suits you best.",
```

```
        "If you'd like to talk to a customer service  
representative, please call our hotline, and we'll connect you  
with one of our helpful team members.",
```

```
        "For information on how to return a product or  
assistance with an order issue, please contact our dedicated  
customer support team. They're here to help.",
```

```
        "We're here to resolve any issues with your order.  
Please contact us, and we'll ensure your concern is addressed  
promptly."
```

```
    ]
```

```
  },
```

```
  {
```

```
    "tag": "reviews",
```

```
    "patterns": [
```

```
      "Can you share customer reviews?",
```

```
      "What do customers say about your products?",
```

```
      "Tell me about your product ratings and feedback.",
```

```
      "Are there any testimonials from customers?",
```

```
      "Where can I find product reviews?",
```

```
      "Do you have a review section on your website?",
```

```
        "I want to read what others think about your  
products.",
```

```
        "How well are your products rated by customers?"
```

```
    ],
```

```
    "responses": [
```

"Our customers have shared fantastic reviews about our tea and coffee. You can find authentic reviews on our website to learn about their experiences.",

"We're proud to have received positive feedback from our satisfied customers. Check out the reviews section on our website for firsthand testimonials.",

"Our products have received excellent ratings and reviews from customers. You can explore their feedback on our website.",

"Customers have shared their testimonials and product feedback on our website. Feel free to read about their experiences and opinions.",

"You can find a dedicated review section on our website where customers have shared their thoughts on our products. It's a great resource for insights.",

"We have a review section on our website where customers have generously shared their experiences and opinions about our products.",

"Our products are highly rated by customers, and their reviews reflect their satisfaction with our offerings. Check out our website for more details."

]

},

{

"tag": "recommendation",

"patterns": [

"What tea would you recommend?",

"Suggest a coffee blend for me",

"I'm new to your menu. What should I try?",

"Can you recommend a unique tea flavor?",

"Give me a coffee suggestion",

"What's your personal favorite tea?",

"I'm a coffee enthusiast. What's a must-try for me?",

"Help me choose a tea variety",

```

        "I want to explore something new. What's your
suggestion?"
    ],
    "responses": [
        "For a soothing experience, we recommend trying our
Chamomile Herbal Tea. If you prefer coffee, our House Blend is
a great choice for its balanced flavor.",
        "If you're new to coffee, you might enjoy our
Medium Roast Blend. For a bolder taste, go for our French
Roast. Enjoy your cup of goodness!",
        "As a starting point, consider trying our classic
Black Tea. If you're looking for coffee, our House Blend is a
well-loved choice among our customers.",
        "If you're in the mood for something unique, give
our Blueberry Bliss Tea a try. For coffee enthusiasts, our
Espresso Roast offers a bold experience.",
        "A coffee suggestion is our House Blend, known for
its well-balanced flavor. If you're interested in tea, explore
our revitalizing Green Tea options.",
        "One of our personal favorites is the Peppermint
Herbal Tea. If you're into coffee, you'll enjoy our rich and
aromatic French Roast.",
        "For coffee enthusiasts, we recommend trying our
Espresso Roast. If you prefer tea, our Honey Lemon Ginger Tea
is a delightful and soothing choice.",
        "Explore our variety of tea options, including
classic Black Tea and vibrant Green Tea. If coffee is your
preference, don't miss our House Blend.",

        "Let's venture into something new! Consider our
specialty Chai Tea for a different tea experience. For coffee,
our Mocha Java blend is a unique choice."
    ]
},
{
    "tag": "brewing_tips",
    "patterns": [

```

```
"How should I brew the perfect cup of tea?",
"Give me some coffee brewing tips",
"Teach me the art of tea brewing",
"I want to make the best coffee. Any tips?",
"What's the secret to a great cup of tea?",
"How can I brew coffee like a pro?",
"Tell me about your tea steeping recommendations."
],
"responses": [
    "To brew the perfect cup of tea, use freshly boiled water and steep the tea bag or leaves for the recommended time. Follow our brewing guide on the product label for best results.",
    "For a delightful cup of coffee, use freshly ground beans, maintain the right water temperature, and consider your preferred brewing method, such as French press or drip. Check our website for detailed brewing tips.",
    "Brewing tea is an art! Start with freshly boiled water and let the tea steep for the recommended time. Each tea has its own ideal brewing temperature and time, so explore our product labels for guidance.",
    "For the best coffee, use high-quality beans, grind them just before brewing, and maintain the water temperature between 195-205°F. Experiment with different brewing methods to find your perfect cup.",
    "The secret to a great cup of tea lies in using fresh, clean water and allowing it to steep for the right amount of time. Be patient and savor the flavor as it develops.",
```

```
    "To brew coffee like a pro, invest in quality beans, grind them to your desired coarseness, and experiment with brew times to find your ideal taste. Each cup is a work of art.",
    "Tea steeping is an intricate process. Follow the recommended steeping times and temperatures on our product labels to unlock the full flavor of your tea."
```

```

    ]
  },
  {
    "tag": "casual_jokes",
    "patterns": [
      "Tell me a joke",
      "Tell me a coffee pun joke",
      "Tell me a tea pun joke"
    ],
    "responses": [
      "Why did the coffee file a police report? It got mugged!",
      "How do you know coffee is strong enough? It can espresso itself.",
      "What do you call it when someone spills their tea? It's a proper-tea disaster!"
    ]
  }
]}

```

Wyjście końcowe:



1. **Zadanie 1:** Instalacja wymaganych bibliotek

Zainstaluj biblioteki Flask, nltk, keras, pandas, numpy, scikit-learn, requests.

```
pip install flask nltk keras pandas numpy scikit-learn requests
```

2. **Zadanie 2:** Konfiguracja środowiska

Skonfiguruj wirtualne środowisko i zainstaluj wymagane biblioteki.

Krok 2: Przygotowanie danych

3. **Zadanie 3:** Utwórz plik intents.json

Utwórz plik JSON zawierający intencje, wzorce i odpowiadające im odpowiedzi.

```
{
  "intents": [
    {
      "tag": "greeting",
      "patterns": ["Hi", "Hello", "How are you?"],
      "responses": ["Hello!", "Hi there!", "Greetings!"]
    },
    {
      "tag": "coffee",
      "patterns": ["Tell me about coffee", "What is coffee?", "Coffee types"],
      "responses": ["Coffee is a brewed drink prepared from roasted coffee beans.",
        "We offer different types of coffee such as Espresso, Latte, Cappuccino."]
    },
    {
      "tag": "tea",
      "patterns": ["Tell me about tea", "What is tea?", "Tea types"],
      "responses": ["Tea is an aromatic beverage commonly prepared by pouring hot
        water over cured or fresh leaves.", "We offer different types of tea such as Green
        Tea, Black Tea, Oolong Tea."]
    },
    {
      "tag": "goodbye",
      "patterns": ["Bye", "Goodbye", "See you later"],
      "responses": ["Goodbye!", "See you later!", "Have a nice day!"]
    }
  ]
}
```

4. **Zadanie 4:** Załaduj dane intencji

Napisać kod do ładowania danych JSON z pliku intents.json.

```
import json
```

```
with open('intents.json') as file:
```

```
    intents = json.load(file)
```

Krok 3: Przetwarzanie danych

5. Zadanie 5: Tokenizacja danych

Użyj nltk do tokenizacji wzorców w danych intencji.

```
import nltk
```

```
from nltk.stem import WordNetLemmatizer
```

```
lemmatizer = WordNetLemmatizer()
```

```
words = []
```

```
classes = []
```

```
documents = []
```

```
ignore_words = ['?', '!']
```

```
for intent in intents['intents']:
```

```
    for pattern in intent['patterns']:
```

```
        word_list = nltk.word_tokenize(pattern)
```

```
        words.extend(word_list)
```

```
        documents.append((word_list, intent['tag']))
```

```
        if intent['tag'] not in classes:
```

```
            classes.append(intent['tag'])
```

```
words = [lemmatizer.lemmatize(w.lower()) for w in words if w not in  
ignore_words]
```

```
words = sorted(list(set(words)))
```

```
classes = sorted(list(set(classes)))
```

6. Zadanie 6: Tworzenie worka słów (Bag of Words)

Konwertuj tokenizowane wzorce na formę numeryczną.

```
import numpy as np
```

```
training = []
```

```
output_empty = [0] * len(classes)
```

for doc in documents:
bag = []
pattern_words = doc[0]
pattern_words = [lemmatizer.lemmatize(word.lower()) for word in
pattern_words]
for w in words:
bag.append(1) if w in pattern_words else bag.append(0)
output_row = list(output_empty)
output_row[classes.index(doc[1])] = 1
training.append([bag, output_row])
import random
random.shuffle(training)
training = np.array(training)
train_x = list(training[:, 0])
train_y = list(training[:, 1])

Krok 4: Modelowanie

7. Zadanie 7: Budowa modelu sieci neuronowej

Użyj Keras do stworzenia modelu sieci neuronowej.

from keras.models import Sequential
from keras.layers import Dense, Dropout
from keras.optimizers import SGD
model = Sequential()
model.add(Dense(128, input_shape=(len(train_x[0]),), activation='relu'))
model.add(Dropout(0.5))
model.add(Dense(64, activation='relu'))
model.add(Dropout(0.5))
model.add(Dense(len(train_y[0]), activation='softmax'))
sgd = SGD(learning_rate=0.01, decay=1e-6, momentum=0.9, nesterov=True)
model.compile(loss='categorical_crossentropy', optimizer=sgd,
metrics=['accuracy'])
model.fit(np.array(train_x), np.array(train_y), epochs=200, batch_size=5,
verbose=1)
model.save('chatbot_model.h5')

8. Zadanie 8: Załaduj wcześniej wytrenowany model

Wczytaj model sieci neuronowej z pliku.

```
from keras.models import load_model

model = load_model('chatbot_model.h5')
```

Krok 5: Implementacja funkcji pomocniczych

9. **Zadanie 9:** Funkcja przetwarzania wejścia użytkownika

Funkcja konwertująca wejście użytkownika do formatu zrozumiałego dla modelu.

```
def clean_up_sentence(sentence):
    sentence_words = nltk.word_tokenize(sentence)
    sentence_words = [lemmatizer.lemmatize(word.lower()) for word in sentence_words]
    return sentence_words

def bow(sentence, words):
    sentence_words = clean_up_sentence(sentence)
    bag = [0] * len(words)
    for s in sentence_words:
        for i, w in enumerate(words):
            if w == s:
                bag[i] = 1
    return np.array(bag)
```

10. **Zadanie 10:** Funkcja generowania odpowiedzi

Funkcja odpowiedzialna za generowanie odpowiedzi na podstawie wejścia użytkownika.

```
def get_response(ints, intents_json):
    tag = ints[0]['intent']
    list_of_intents = intents_json['intents']
    for i in list_of_intents:
        if i['tag'] == tag:
            return random.choice(i['responses'])
```

```

def predict_class(sentence, model):
    p = bow(sentence, words)
    res = model.predict(np.array([p]))[0]
    ERROR_THRESHOLD = 0.25
    results = [[i, r] for i, r in enumerate(res) if r > ERROR_THRESHOLD]
    results.sort(key=lambda x: x[1], reverse=True)
    return_list = []
    for r in results:
        return_list.append({"intent": classes[r[0]], "probability": str(r[1])})
    return return_list

```

Krok 6: Integracja z Flask

11. **Zadanie 11:** Inicjalizacja aplikacji Flask
- Tworzenie instancji aplikacji Flask.

```

from flask import Flask, request, jsonify, render_template

app = Flask(__name__)

```

12. **Zadanie 12:** Trasa strony głównej

Definiowanie trasy strony głównej, która renderuje szablon HTML.

```

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

```

13. **Zadanie 13:** Trasa do obsługi interakcji czatu

```

Definiowanie trasy /get_response do obsługi interakcji czatu.
@app.route('/get_response', methods=['POST'])
def get_response():
    message = request.form['message']
    ints = predict_class(message, model)
    res = get_response(ints, intents)
    return jsonify({"response": res})

```

Krok 7: Tworzenie interfejsu użytkownika

14. **Zadanie 14:** Utwórz folder templates

Stwórz folder templates i umieść w nim plik index.html.

Zadanie 15: Tworzenie pliku HTML

Stwórz plik index.html z podstawowym szablonem.

html
Skopiuj kod
<!DOCTYPE html>
<html>
<head>
<title>Coffee and Tea Chatbot</title>
<link rel="stylesheet" type="text/css" href="{{ url_for('static', filename='style.css') }}">
<script src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
</head>
<body>
<div class="chatbox">
<div class="chatlogs">
<div class="chat bot">
<div class="user-photo"></div>
<p class="chat-message">Hello! How can I assist you with coffee and tea today?</p>
</div>
</div>
<div class="chat-form">
<textarea id="message" placeholder="Type your message"></textarea>
<button id="send">Send</button>
</div>
</div>
<script>
\$(document).ready(function() {
\$("#send").click(function() {
var userMessage = \$("#message").### Zadania do realizacji chatbota e-commerce związanego z kawą i herbatą