AI - DRIVEN VIRTUAL STYLIST

A PROJECT REPORT

Submitted by

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MINI-PROJECT: AI-Driven Virtual Fashion Consultant for Personalized Styling Assistance

in partial fulfilment for the award of the degree of

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PSNA COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution, Affiliated to Anna University, Chennai)

DINDIGUL - 624622

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BONAFIDE CERTIFICATE

Certified that this idea report "**AI-Driven Virtual Fashion Consultant for Personalized Styling Assistance**" is the bonafide work of **"MATANKI S K (92132223087), MENAKA A (92132223089), MOGHANA PRIYA G (92132223090)**" who carried out the idea work under my supervision.

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Submitted for the idea on_____

ABSTRACT

This project presents an advanced AI-powered virtual fashion stylist that provides personalized fashion recommendations for men and women across a wide range of clothing styles and preferences. The system leverages Natural Language Processing (NLP) to interpret user queries and deliver precise, contextually relevant suggestions. It offers recommendations based on various attributes such as colour, style, fabric, and occasion, creating an interactive and user-centric experience.

The virtual stylist is built on a Flask framework, allowing for efficient back-end processing and seamless interaction between the user and the system. The chatbot fetches fashion data from dynamically structured JSON files, ensuring an adaptive and scalable system capable of handling a broad array of fashion categories. By using a modular design, the system facilitates the integration of additional product categories and styles, enabling flexibility for future expansion.

One of the key features of this project is its ability to deliver real-time, context-aware fashion advice. The system intelligently responds to user inputs, narrowing down clothing choices based on specific preferences like color or occasion. This personalized approach significantly enhances the user experience, offering practical, relevant fashion solutions that cater to individual tastes.

This virtual stylist can be deployed in multiple use cases, including personalized e-commerce platforms, fashion retail assistance, and smart shopping applications. By providing an intuitive, AI-enhanced shopping experience, the system aims to revolutionize the way users interact with online fashion services, making shopping more engaging, efficient, and tailored to personal preferences.

The virtual stylist system leverages machine learning to continuously improve its fashion recommendations based on user behavior, ensuring personalized and accurate suggestions. Its architecture supports integration with external APIs for real-time product updates, enhancing both the user experience and shopping convenience. This fusion of AI, fashion, and e-commerce creates a dynamic and adaptive solution for personalized fashion services.

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INTRODUCTION

The Virtual Stylist project is designed to provide an intelligent AI-powered solution that offers personalized fashion recommendations to users based on their preferences. In today's fast-paced digital-first world, consumers seek customized experiences, especially in the fashion industry. This project aims to bridge that gap by utilizing machine learning and natural language processing to suggest outfits tailored to individual tastes, styles, and current trends. The system is designed to assist users by offering a wide range of outfit suggestions for both men and women. By integrating user queries and preferences, the virtual stylist provides recommendations that span across various fashion categories, enhancing the online shopping experience. It supports multiple styles, occasions, and preferences, allowing users to get real-time suggestions that cater to their need.

PROBLEM STATEMENT

In the rapidly evolving fashion industry, consumers often struggle with finding personalized outfit recommendations that align with their specific tastes, body types, occasions, and the latest trends. Existing online platforms offer a vast array of clothing choices, but users frequently experience overwhelming decision fatigue due to the lack of tailored suggestions that consider individual preferences. Additionally, there is a gap in platforms that can provide personalized, AI-driven fashion advice in real-time based on specific user queries. The challenge lies in creating a solution that understands and responds to user preferences, integrates various fashion categories, and provides accurate, curated suggestions that enhance the shopping experience for both men and women. This project aims to address these gaps by developing an intelligent virtual stylist capable of offering customized outfit recommendations based on user input and preferences.

CHALLENGES

1. **Data Integration:** Difficulty in aggregating and updating a comprehensive database of diverse clothing items.
2. **Personalization Algorithms:** Creating effective algorithms to analyze user preferences for tailored recommendations.
3. **User Engagement:** Designing an intuitive user interface to enhance interaction and ensure user satisfaction.
4. **Real-time Processing**: Achieving efficient real-time processing of user queries and recommendations while managing multiple requests.

PROPOSED MODEL

- **Personalized Clothing Recommendations** : The model delivers tailored fashion suggestions that cater to individual tastes and preferences by combining machine learning and natural language processing (NLP).
- **Data Collection and Preprocessing**: Data is gathered from various sources, including JSON files with details about clothing (colors, styles, categories), and undergoes preprocessing to ensure accuracy and consistency for the recommendation engine.
- **NLP for Query Analysis**: Advanced NLP techniques extract keywords from user input and understand the context of queries to accurately interpret user needs and preferences.
- **Recommendation Engine**:
  - **Collaborative Filtering**: Uses user interaction data to find patterns and similarities between users.
  - **Content-Based Filtering**: Analyzes item attributes to recommend based on the user's expressed preferences.
- **Collaborative Filtering**: Uses user interaction data to find patterns and similarities between users.
- **Content-Based Filtering**: Analyzes item attributes to recommend based on the user's expressed preferences.
- **Feedback Mechanism**: Users can provide feedback on recommendations, allowing the system to learn and improve its algorithms over time.
- **User-Friendly Interface**: The system features a visually appealing and organized interface, simplifying the interaction and allowing users to easily browse through clothing options.
- **Continuous Evolution**: The model continuously evolves by learning from user interactions, ensuring it adapts to changing fashion needs and preferences.
- **Revolutionizing Shopping Experience**: The goal is to transform how individuals shop by offering a personalized, engaging, and dynamic fashion recommendation system that enhances their choices.

SOURCE CODE

Backend code:(python)

App.py

```
from flask import Flask, render_template, request, jsonify
import json

app = Flask(__name__)

# Load the JSON data for Kurti Sets and Black Shirts
with open('kurti_sets.json', 'r') as file:
    kurti_sets = json.load(file)["kurtiSets"]

with open('black_shirt.json', 'r') as file:
    black_shirts = json.load(file)["BlackShirt"]
with open('saree.json','r') as file:
    saree =json.load(file)["Saree"]
with open('lehenga.json','r') as file:
    lehenga = json.load(file)["Lehenga"]
with open('casual_wear_for_women.json','r') as file:
    casual_wear_for_women=json.load(file)["Casual_wear_for_women"]
with open('pink_kurti.json','r') as file:
    pink_kurti=json.load(file)["pink_kurti"]
with open('blue_kurti.json','r') as file:
    blue_kurti=json.load(file)["blue_kurti"]
with open('skirt.json','r') as file:
    skirt=json.load(file)["skirt"]
with open('chiffon.json','r') as file:
    chiffon=json.load(file)["chiffon"]
with open('shoes_for_women.json','r') as file:
    shoes_for_women=json.load(file)["shoes_for_women"]
with open('accessories_for_women.json','r') as file:
    accessories_for_women=json.load(file)["accessories_for_women"]

@app.route('/')
def home():
    # This will render an HTML file, make sure you have a 'home.html' in the 'templates' folder.
    return render_template('index.html')

@app.route('/chat', methods=['POST'])
def chat():
    user_query = request.json.get('query', '').lower()

    if 'normal kurti' in user_query or 'kurta set' in user_query:
        response = {"suggestions": kurti_sets}
    elif 'black shirt' in user_query or 'shirt' in user_query:
        response = {"suggestions": black_shirts}
    elif 'saree' in user_query or 'give me saree' in user_query:
        response = {"suggestions": saree}
    elif 'lehenga' in user_query or 'give me lehenga' in user_query:
        response={"suggestions": lehenga}
    elif 'casual wear for women' in user_query:
        response={"suggestions":casual_wear_for_women}
    elif 'pink kurti' in user_query or 'give me pink kurti' in user_query:
        response = {"suggestions":pink_kurti}
    elif 'blue kurti' in user_query or 'give me blue kurti' in user_query:
        response={"suggestions":blue_kurti}
    elif 'skirt' in user_query or 'give me long skirt' in user_query:
        response={"suggestions":skirt}
    elif 'chiffon' in user_query or 'give me chiffon' in user_query:
        response={"suggestions":chiffon}
```

```
    elif 'shoes for women' in user_query or 'women shoes' in user_query:
        response={"suggestions":shoes_for_women}
    elif 'accessories for women' in user_query :
        response={"suggestions":accessories_for_women}
    else:
        response = {"suggestions": "Sorry, I don't have any suggestions for your query."}

    return jsonify(response)

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

lehenga.json


```
{
    "Lehenga":[
        {
    "name": "Pink Embroidered Georgette Lehenga Set",
    "price": "899",
    "price_url": "https://www.amazon.in/Libas-Womens-Georgette-Lehenga-
34721_Pink_L/dp/B0D7VGTR5Y/ref=sr_1_13?crid=2PNHPZBBXE98T&dib=eyJ2IjoiMSJ9.DUMyuMlcyXQwpPVvFgaoWKb
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bin%3A11301357031&rnid=11301356031&s=apparel&sprefix=lehenga%2Caps%2C1068&sr=1-13",
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   },
   {
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Set(M-2410)",
    "price": "1,400",
    "price_url": "https://www.amazon.in/madhuram-Georgette-Embroidery-M-2410-Green_4X-
Large/dp/B0CR925SS4/ref=sr_1_14?crid=2PNHPZBBXE98T&dib=eyJ2IjoiMSJ9.DUMyuMlcyXQwpPVvFgaoWKbyLOQi7f6F
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WxxER2Q&dib_tag=se&keywords=lehenga+set+for+women&qid=1729078396&refinements=p_n_feature_nineteen_browse-
bin%3A11301357031&rnid=11301356031&s=apparel&sprefix=lehenga%2Caps%2C1068&sr=1-14",
    "rating": "4.3 out of 5 stars"
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   {
    "name": "Women Maxi Lehenga Skirt",
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bin%3A11301357031&rnid=11301356031&s=apparel&sprefix=lehenga%2Caps%2C1068&sr=1-15",
    "rating": "4.1 out of 5 stars"
   },
   {
    "name": "Women's Georgette Semi Stitched Lehenga Choli In Orange Colour SF218ver-37",
    "price": "2,399",
    "price_url": "https://www.amazon.in/Dhrishafashion-Georgette-Stitched-Multicolour-
SF218298/dp/B0C4LNX66P/ref=sr_1_16?crid=2PNHPZBBXE98T&dib=eyJ2IjoiMSJ9.DUMyuMlcyXQwpPVvFgaoWKbyLOQ
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```

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"rating": "3.0 out of 5 stars"
}
]
}

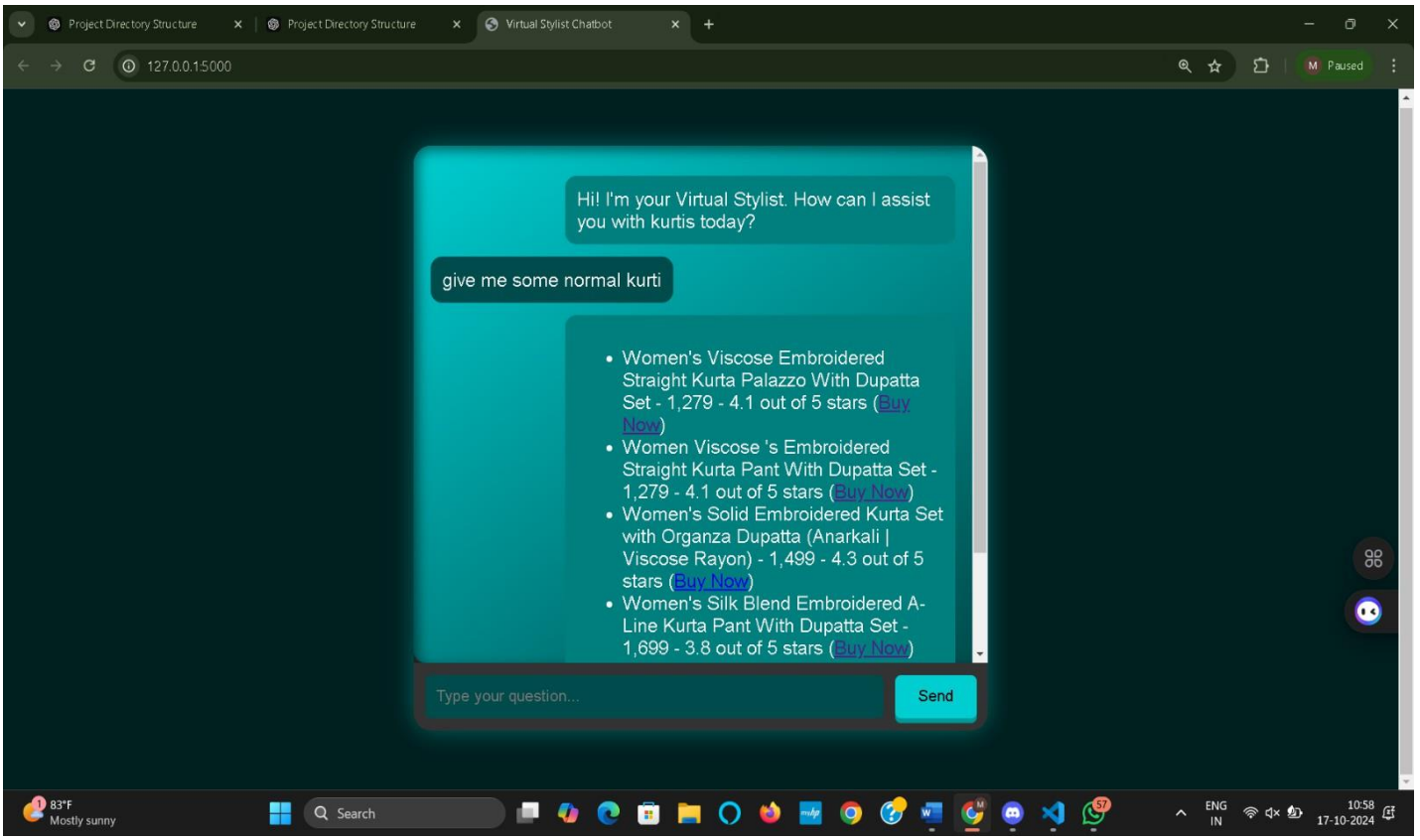
Frontend Code:(HTML, CSS)

Index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Virtual Stylist Chatbot</title>
    <link rel="stylesheet" href="/static/css/style.css">
</head>
<body>
    <div class="chat-container">
        <div class="chat-box" id="chat-box">
            <div class="message bot-message">
                Hi! I'm your Virtual Stylist. How can I assist you with kurtis today?
            </div>
        </div>
        <div class="input-box">
            <input type="text" id="user-input" placeholder="Type your question...">
            <button id="send-btn">Send</button>
        </div>
    </div>

    <script src="/static/js/chatbot.js"></script>
</body>
</html>
```

OUTPUT



CONCLUSION

The AI-Virtual Stylist has proven to be an innovative and efficient tool for enhancing the fashion experience. By providing users with personalized style recommendations, it bridges the gap between technology and personal fashion preferences. This project demonstrates how AI can offer convenience, inspiration, and confidence to users, helping them make more informed style choices based on their individual tastes. As virtual styling continues to evolve, this solution opens doors to more interactive and immersive fashion experiences, paving the way for a future where AI and fashion seamlessly integrate to meet diverse needs.

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AI-POWERED VIRTUAL FASHION STYLIST

Team Members:
Matanki SK,
Moghna Priya G,
Menaka A

Abstract

- This project introduces an AI-based virtual fashion stylist that offers personalized clothing recommendations using Natural Language Processing (NLP).
- It delivers suggestions tailored to user preferences like color, style, fabric, and occasion.
- Built on a Flask framework, it supports seamless interactions and scalable fashion data handling through modular design and dynamic JSON files.
- The system aims to transform online fashion experiences, enhancing user engagement and shopping convenience.

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Introduction

- The virtual fashion stylist uses AI to provide personalized recommendations for men and women.
- It leverages NLP for interpreting user preferences and delivers precise fashion suggestions.
- Designed for a more interactive and personalized online shopping experience.

Problem Statement

- Online fashion shopping lacks personalized assistance, making it hard for users to find the right products.
- There is a need for an intelligent system that can offer tailored fashion recommendations based on individual preferences and queries.

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Solution

- **AI-Powered Chatbot**: Our chatbot enhances the online shopping experience by providing instant, personalized assistance to customers.
- **Product Discovery and Recommendations**: It helps users easily find products and offers tailored recommendations based on their preferences and shopping history.
- **Real-Time Support**: Utilizing Natural Language Processing (NLP), the chatbot engages in seamless, real-time interactions, allowing customers to get quick answers to their questions.
- **24/7 Availability**: With round-the-clock support, the chatbot reduces cart abandonment and improves customer satisfaction, ultimately driving sales growth.

Challenges

- Accurately understanding diverse user queries using NLP.
- Managing seamless integration with dynamic data sources.
- Ensuring personalized recommendations are contextually relevant.
- Keeping the system adaptive and scalable to accommodate various fashion categories.

Tools and framework

- **Flask Framework:** For back-end processing and web development.
- **Natural Language Processing (NLP):** To understand and interpret user queries.
- **JSON Files:** For dynamic fashion data management.
- **Machine Learning:** To enhance recommendations based on user behavior.

Proposed model

- The virtual stylist uses NLP to interpret user preferences and narrow down clothing suggestions.
- The system fetches data from JSON files, providing adaptive recommendations based on color, style, fabric, and occasion.
- Uses a modular approach to allow for easy expansion of fashion categories.

Implementation

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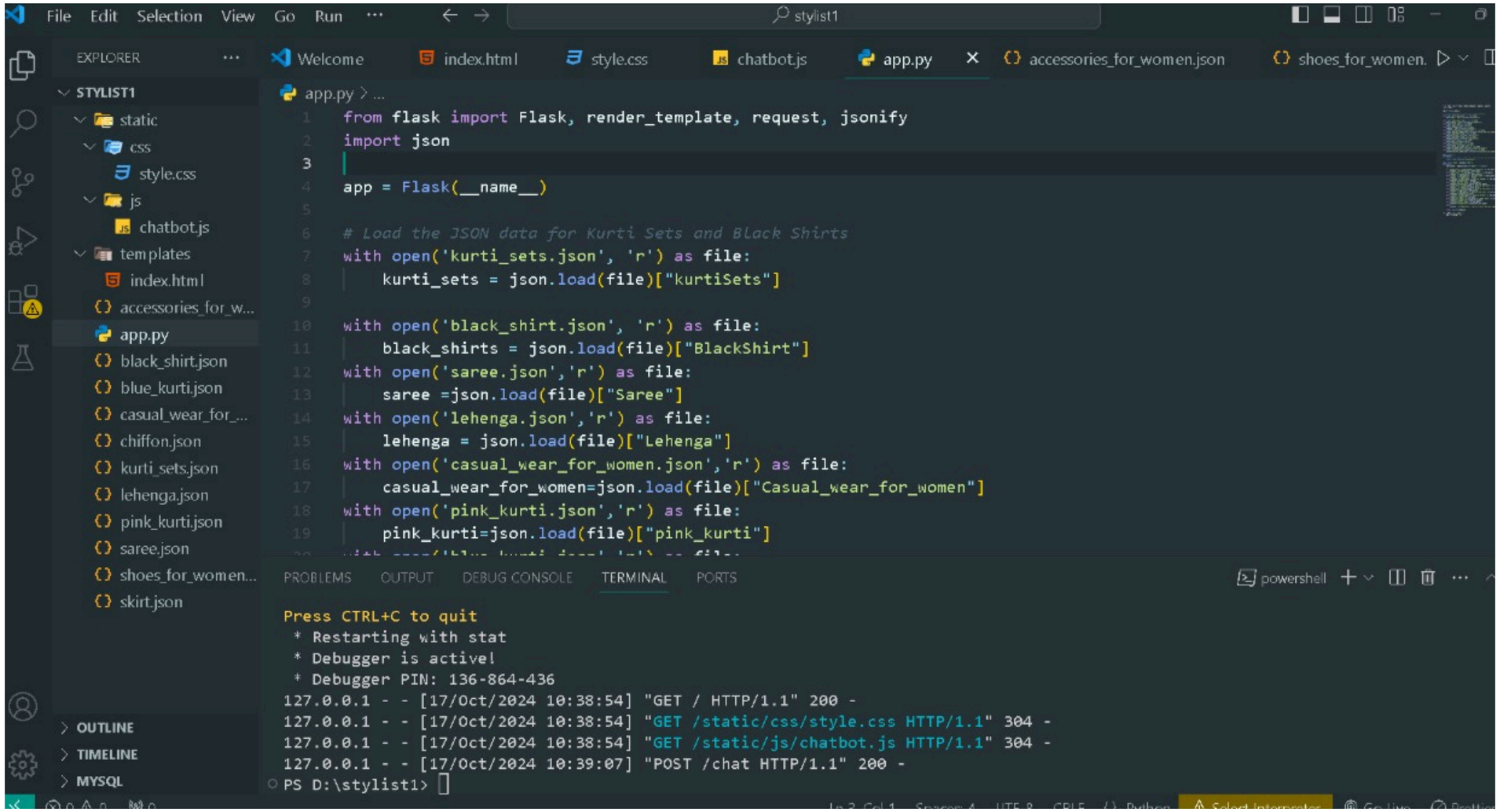

Demo screenshot

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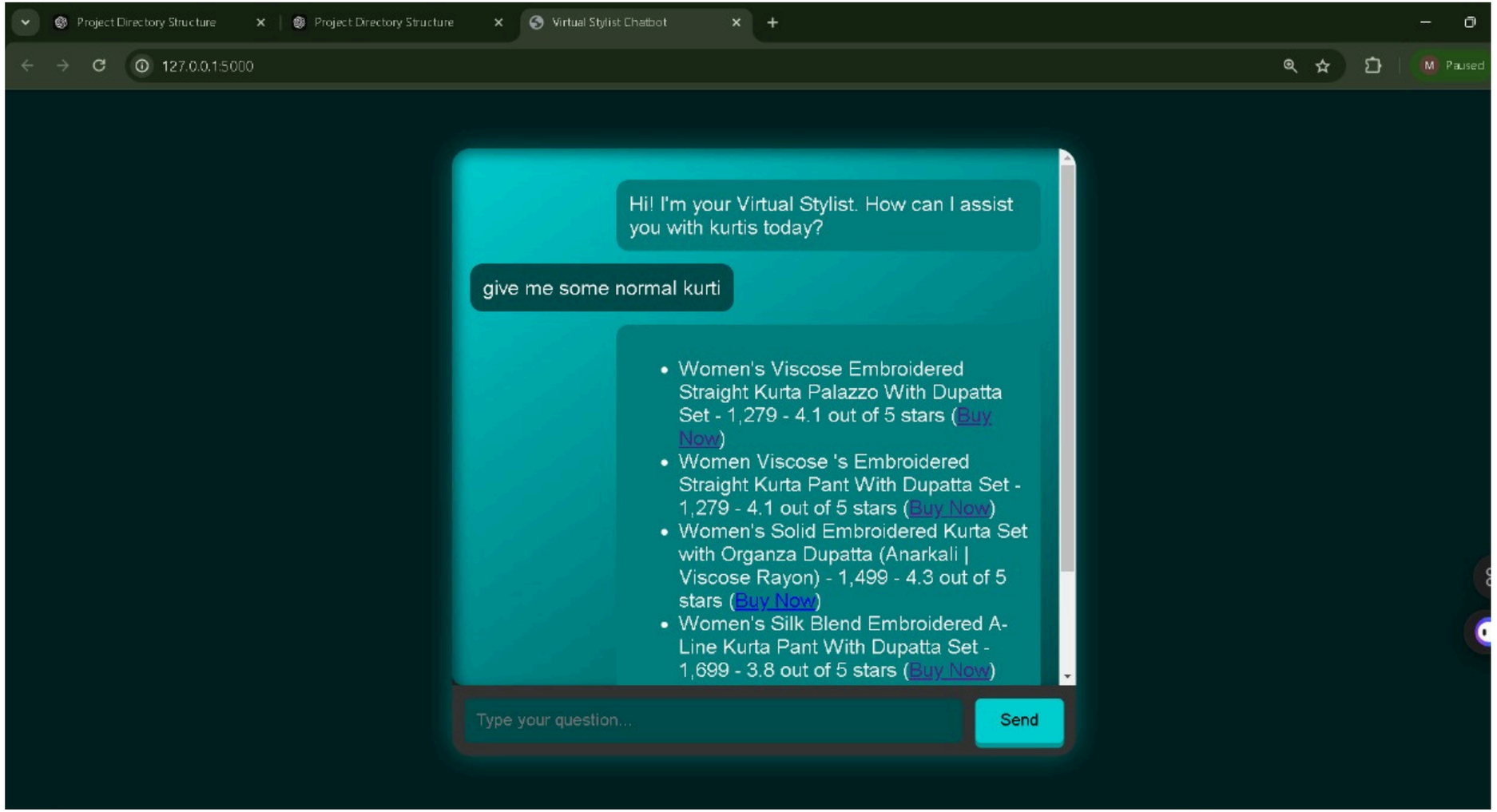

Conclusion

In conclusion, our AI-powered E-commerce chatbot significantly enhances the online shopping experience by providing instant and personalized assistance. By leveraging Natural Language Processing and real-time interactions, the chatbot improves customer engagement, helps reduce cart abandonment, and boosts overall satisfaction. As we continue to refine its capabilities, the chatbot represents a valuable tool for E-commerce businesses looking to meet the evolving needs of their customers.