DRESS RECOMMENDATION BOT

A MINI-PROJECT REPORT

Submitted By

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BONAFIDE CERTIFICATE

Certified that this project report **"DRESS RECOMMENDATION BOT"** is the Bonafide work of **"CHANDRU S (220701051)"** who carried out the project work for the subject OAI1903-Introduction to Robotic Process Automation under my supervision

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ABSTRACT

The "Dress Recommendation Bot" project is designed to automate the process of providing personalized outfit suggestions based on user preferences, leveraging the power of Robotic Process Automation (RPA) and Artificial Intelligence (AI). The system collects user inputs such as gender, occasion, weather conditions, style preferences, and wardrobe inventory through interactive dialogs, ensuring the data is comprehensive and accurate. Once validated, the system uses OpenAI's GPT-3.5-turbo model to analyze the inputs and generate tailored outfit recommendations. By leveraging natural language processing, the bot delivers highly relevant and context-specific suggestions that align with the user's style and requirements.The implementation of the bot is achieved using UiPath Studio, streamlining the workflow from data collection to recommendation generation. This ensures that the entire process is automated and efficient, providing a seamless user experience. After generating the outfit recommendations, the system displays them to the user in an interactive format and sends the suggestions via email using an SMTP server. This feature ensures that users can conveniently access their personalized recommendations at any time.The bot incorporates robust error-handling mechanisms to identify and rectify incomplete or invalid user inputs, enhancing the system's reliability and usability. By combining the automation capabilities of UiPath, the AI-driven analytical power of OpenAI's GPT-3.5-turbo, and email integration for communication, the Dress Recommendation Bot offers a scalable, efficient, and user-friendly solution for personalized outfit selection.This project represents an innovative approach to using AI and RPA to simplify decision-making processes and improve daily life. By automating and personalizing outfit recommendations, the Dress Recommendation Bot enhances user convenience, saves time, and makes fashion choices more accessible and tailored to individual needs.

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ABBREVATIONS

Abbreviation	Full Form
AI	Artificial Intelligence
RPA	Robotic Process Automation
UI	User Interface
SMTP	Simple Mail Transfer Protocol
API	Application Programming Interface
JSON	JavaScript Object Notation
NLP	Natural Language Processing
GPT	Generative Pre-trained Transformer
IDE	Integrated Development Environment
UiPath	UiPath Studio (RPA Tool)

CHAPTER - 1

INTRODUCTION

1.1 GENERAL

The **Dress Recommendation Bot** project leverages **Robotic Process Automation (RPA)** to streamline the process of collecting user information, analyzing it using artificial intelligence, and delivering personalized outfit suggestions. The workflow begins with a series of input dialogs that prompt users to provide their preferences, such as occasion, climate, and personal style. These inputs are processed using UiPath's GenAI activity with the GPT-35-Turbo model to generate customized outfit recommendations tailored to the user's needs. Additionally, the workflow includes an email automation step, which collects the user's email address and sends them a detailed email containing the recommendations. This project highlights the integration of RPA with AI to improve user interaction, simplify data handling, and automate personalized communication effectively.

1.2 OBJECTIVES

The primary objective of the **Dress Recommendation Bot** project is to automate the process of gathering user preferences, analyzing their data using artificial intelligence, and providing personalized outfit suggestions efficiently and seamlessly.

1. **Automate User Data Collection:** Streamline the process of gathering user preferences such as occasion, climate, and personal style through interactive input dialogs to reduce manual effort and enhance user experience.
2. **Leverage AI for Tailored Recommendations:** Utilize AI models to analyze user-provided data and generate personalized outfit suggestions, ensuring relevance and user satisfaction.
3. **Simplify Communication with Automation:** Automate the process of sending personalized emails containing detailed outfit recommendations, ensuring efficient and timely communication with users.
4. **Integrate RPA and AI for Productivity:** Demonstrate the effective integration of **Robotic Process Automation (RPA)** and **Artificial Intelligence**

(AI) to improve efficiency, reduce errors, and deliver a seamless and engaging user experience.

1.3 EXISTING SYSTEM

In traditional systems, outfit recommendations are often provided through manual processes, such as consulting fashion advisors, browsing style blogs, or using static online quizzes. These systems have several limitations, including:

1. **Manual Effort:** Users must spend considerable time searching for outfit ideas or consulting experts, which can be inefficient and inconvenient.
2. **Lack of Personalization:** Most existing systems offer generic advice or fixed style suggestions that fail to account for individual preferences, occasions, or environmental factors like climate.
3. **Delayed Feedback:** In manual or semi-automated processes, users may experience delays in receiving outfit recommendations, especially when consulting human advisors or stylists.
4. **Limited Integration:** Traditional systems lack advanced technologies like artificial intelligence or Robotic Process Automation (RPA), resulting in static and less dynamic recommendations.

These limitations emphasize the need for an automated, AI-powered system that can efficiently gather user preferences, analyze them intelligently, and provide personalized outfit suggestions in real-time.

1.4 PROPOSED SYSTEM

The **Dress Recommendation Bot** project proposes an advanced solution that combines **Robotic Process Automation (RPA)** with **Artificial Intelligence (AI)** to automate the outfit recommendation process. The system seeks to address the shortcomings of traditional systems by providing a more personalized, efficient, and user-friendly approach. Key features of the proposed system include:

1. **Automated Data Collection:** The system will automatically gather user preferences such as occasion, climate, and style through a series of interactive input dialogs, eliminating the need for manual data entry and improving efficiency.

2. **AI-Powered Personalization:** Using the GPT-35-Turbo AI model, the system will analyze the user's inputs to generate personalized outfit recommendations based on their preferences, occasion, and climate, providing highly relevant suggestions.
3. **Efficient Communication:** Once the personalized recommendations are generated, the system will automatically send the user an email containing their suggested outfits, ensuring fast and effective communication without requiring manual intervention.
4. **Seamless Integration of RPA and AI:** By combining RPA for automation with AI for intelligent data analysis, the system offers a fully integrated solution that minimizes errors, saves time, and enhances the user experience through personalization and real-time recommendations.

The **Dress Recommendation Bot** proposes an advanced, automated solution that integrates **Robotic Process Automation (RPA)** and **Artificial Intelligence (AI)** to offer personalized outfit suggestions based on user inputs. The system aims to overcome the limitations of traditional dress recommendation methods by automating data collection, enhancing personalization, and improving communication efficiency. The process begins with automated data collection, where the system gathers information from the user through a series of intuitive input dialogs. These inputs, which include preferences such as occasion, climate, and style, eliminate the need for manual data entry, reducing both effort and the risk of errors. The AI component, powered by the **GPT-35-Turbo model**, processes this data to generate highly personalized outfit suggestions tailored to the user's preferences, occasion, and external factors like weather conditions. By analyzing these variables, the system provides relevant and stylish outfit choices that match the user's needs. After generating the recommendations, the system automatically sends an email containing the suggestions, ensuring quick and efficient communication without requiring human intervention. The integration of RPA and AI ensures a seamless process that automates the entire workflow, from data collection to recommendation delivery, saving time and enhancing the user experience. Additionally, the system can adapt to real-time inputs, offering suggestions based on factors such as current weather or upcoming events, providing dynamic, context-aware recommendations. The entire process is designed to be user-friendly, with a simple interface that guides users through the necessary steps while keeping their involvement minimal. The combination of RPA and AI makes the system scalable, adaptable, and capable of offering accurate, real-time recommendations cater

CHAPTER - 2

2. LITERATURE REVIEW

AI in Personalized Recommendation Systems: Personalized recommendation systems, particularly in fashion, have been heavily influenced by AI technologies. Studies like **Zhou et al. (2019)** have shown the effectiveness of deep learning for personalized recommendations by analyzing user profiles and interactions. **Rendle et al. (2010)** highlighted the success of collaborative filtering and matrix factorization for predicting fashion preferences. These techniques form the backbone of recommendation algorithms used in the **Dress Recommendation Bot**, where AI models analyze user inputs to suggest personalized outfits.

Robotic Process Automation (RPA) in Fashion Tech: Avasarala and Bhattacharya (2018) explored how **RPA** has improved efficiency and user experience in fashion applications. By automating repetitive tasks such as data collection and processing, RPA reduces manual intervention and enhances productivity. In the **Dress Recommendation Bot**, RPA is used to automate data entry, process user preferences, and deliver recommendations, allowing for a smooth and efficient system operation.

Deep Learning and NLP for Fashion Recommendations: Chaudhuri et al. (2020) demonstrated the role of **Natural Language Processing (NLP)** in making fashion recommendations more accurate and personalized by analyzing user descriptions and preferences. The **Dress Recommendation Bot** uses **GPT-3.5-turbo**, an advanced NLP model, to understand natural language inputs from users, such as style preferences, and generate clothing suggestions tailored to their tastes.

Virtual Stylists and Fashion Bots: Lee and Kim (2021) examined virtual stylists in fashion, highlighting how AI-based bots are being used to suggest clothing based on user data like body type and occasion. These AI-driven systems have proven effective in providing personalized styling advice. The **Dress Recommendation Bot** operates similarly, using user input to generate personalized outfit suggestions based on factors like the user's body type, style preferences, and the occasion.

User Experience (UX) in Fashion Apps: Grewal et al. (2020) emphasized the importance of user experience in fashion-related applications, focusing on the role of intuitive, user-friendly interfaces to ensure high engagement and satisfaction.

CHAPTER-3
SYSTEM DESIGN

3.1 SYSTEM FLOW DIAGRAM

System Flow Overview: The system flow diagram for the **Dress Recommendation Bot** outlines the steps involved in generating personalized clothing recommendations for users. The process begins when the user interacts with the system and provides essential information such as their style preferences, body type, and occasion through input dialogs. This data is then validated to ensure it is complete and accurate. Once validated, the data is sent to the **AI model** for analysis. Using advanced algorithms, the system generates clothing suggestions tailored to the user's input. After the recommendations are generated, they are displayed to the user for review. The user is then prompted to provide an **email address**, allowing the system to send the personalized recommendations directly to the user's inbox through an **SMTP server**. The integration of **RPA** automates the entire process, from data collection and validation to email communication, ensuring an efficient and seamless user experience. The system's automated nature reduces manual intervention and enhances productivity, making the process of receiving fashion recommendations quick, personalized, and user-friendly.

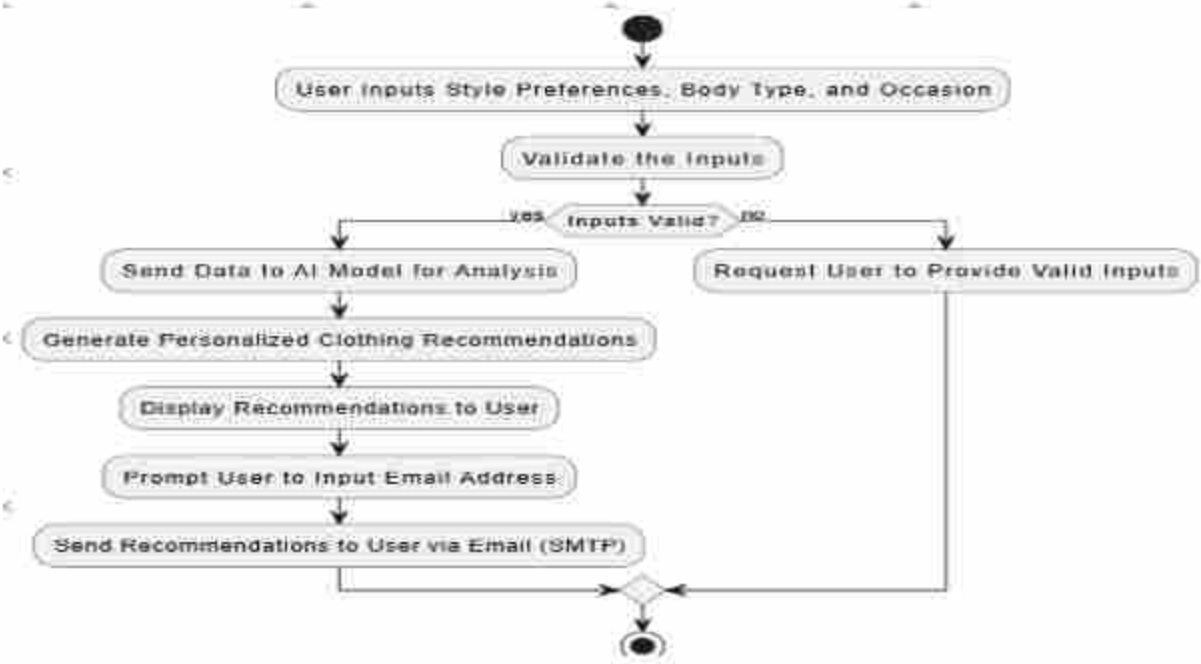


Figure 1 SYSTEM FLOW DIAGRAM

3.2 ARCHITECTURE DIAGRAM

The architecture diagram for the Dress Recommendation Bot project illustrates the overall system structure and the interaction between its key components. At the core of the system, the user interface interacts with the input module where the user provides their preferences, body type, and occasion details. The data from this interface is sent to the backend, which includes the validation module that ensures the completeness and accuracy of the inputs. Once validated, the information is passed to the **AI Model** (e.g., GPT-3.5-turbo), which analyzes the data and generates personalized clothing recommendations based on the user's profile. The recommendation results are then returned to the user interface for display. Additionally, the system includes an **Email Service**, which automatically sends the personalized recommendations to the user's email via an **SMTP server**. The entire workflow is managed and automated using **RPA (Robotic Process Automation)**, ensuring that each step, from data collection to communication, is carried out seamlessly and efficiently without manual intervention. This architecture is designed to deliver a smooth, automated, and highly personalized user experience.

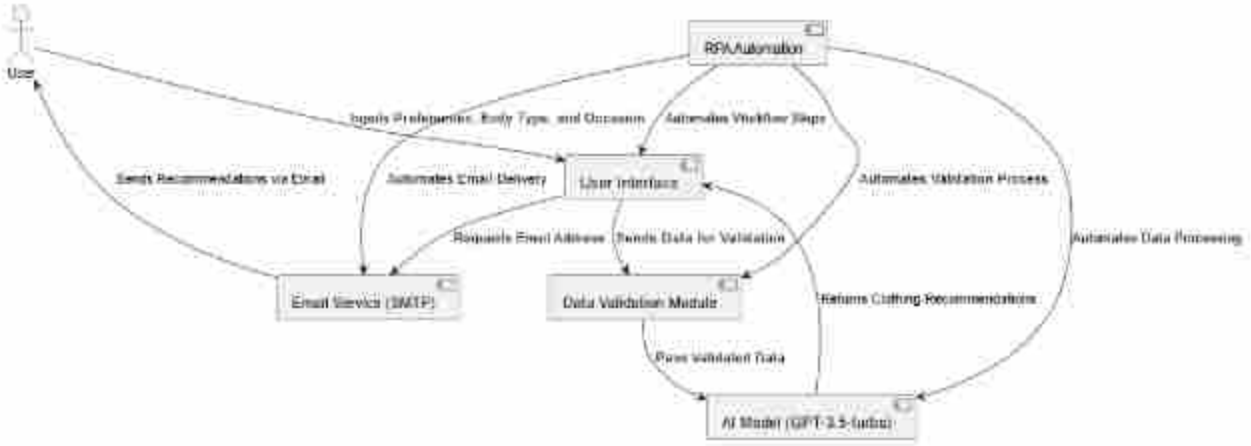


Figure 2 ARCHITECTURE DIAGRAM

3.3 SEQUENCE DIAGRAM

The sequence diagram for the Dress Recommendation Bot project outlines the step-by-step interactions between the user and the system components during the recommendation process. The process begins with the user providing their style preferences, body type, and occasion details through the user interface. The input data is then validated by the system to ensure completeness. Once validated, the data is sent to the AI model for analysis, where it generates personalized clothing recommendations based on the user's profile. These recommendations are then displayed to the user for review. The system prompts the user to input their email address, after which the system sends the personalized clothing suggestions via email using an SMTP server. Throughout this process, the automation engine (RPA) handles the flow of data and ensures that each step is carried out in a seamless, automated manner. The sequence diagram visually represents this dynamic interaction, showing the time sequence of messages exchanged between the user, the system components, and the automation processes.

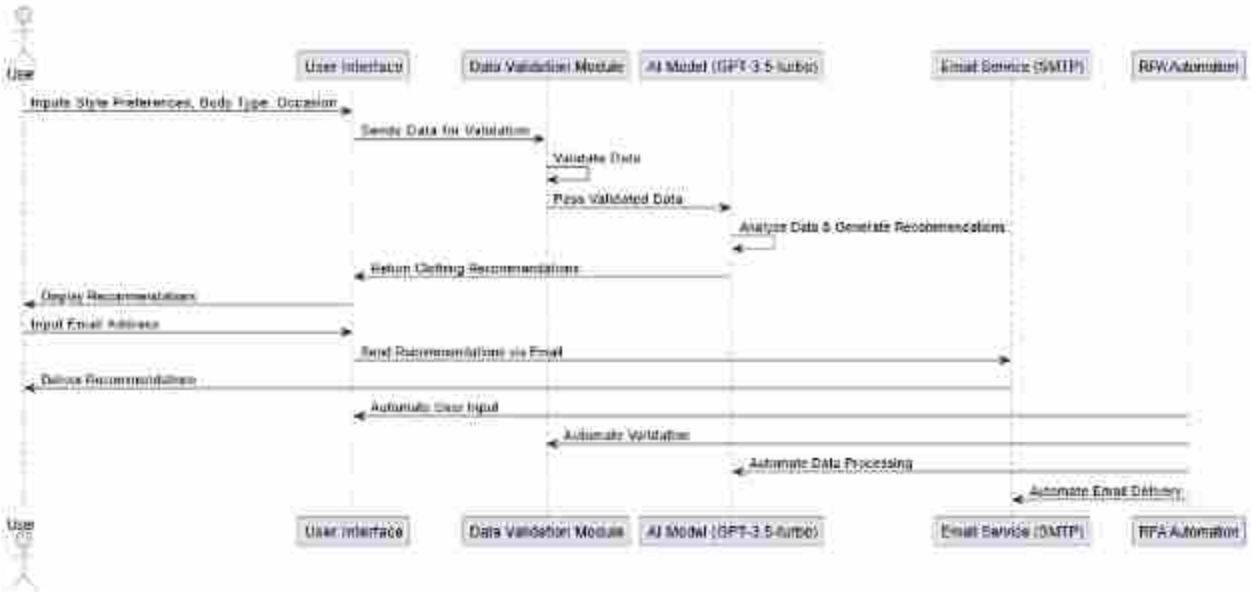


Figure 3 SEQUENCE DIAGRAM

4. PROJECT DESCRIPTION

The Dress Recommendation Bot project is designed to automate the process of providing personalized clothing recommendations based on user preferences, body type, and occasion. By integrating Robotic Process Automation (RPA) with Artificial Intelligence (AI), the system analyzes user inputs and delivers tailored clothing suggestions to enhance the user experience. The system is designed to be user-friendly, efficient, and highly responsive, providing personalized recommendations in real-time.

The project makes use of a combination of machine learning for analyzing user data and RPA for streamlining the workflow, which includes data collection, analysis, and recommendation delivery. The system can handle various tasks such as collecting user preferences, validating data, processing the information using AI, and sending personalized recommendations via email—all through automated steps.

The primary goal of the system is to provide users with accurate and relevant clothing recommendations that match their preferences and needs, while also making the process efficient and user-friendly. The system's architecture includes modules for data input, processing, analysis, and email communication, all integrated through an automated workflow powered by RPA.

4.1 METHODOLOGIES

The **Dress Recommendation Bot** project employs a combination of methodologies from Robotic Process Automation (RPA), Artificial Intelligence (AI), and Email Automation to achieve seamless and personalized recommendation delivery. The following methodologies are applied to ensure a robust and efficient system:

1. **Robotic Process Automation (RPA):** The workflow of the recommendation system is automated using RPA tools, such as UiPath Studio. This automation reduces manual effort, ensuring that user data is processed and recommendations are delivered quickly. The automation steps include collecting user preferences, validating inputs, sending data to the AI model, and triggering email communications.
2. **Artificial Intelligence (AI) and Machine Learning:** The GPT-3.5-turbo AI model is used to analyze user data and generate personalized clothing

recommendations. This AI model processes information related to style preferences, body type, and occasion to suggest appropriate clothing options. The model ensures that recommendations are highly relevant to the individual user.

3. **Email Automation (SMTP):** The system integrates email automation to deliver personalized clothing suggestions directly to the user's inbox. After generating recommendations, the system prompts the user to enter their email address, and an SMTP server is used to send the recommendations automatically.

4.2 MODULES

The **Dress Recommendation Bot** project is divided into the following key modules to ensure efficient functioning:

1. **User Input Module:** This module is responsible for collecting user information through interactive dialogs. The user provides details such as body type, style preferences, and occasion, which are crucial for generating personalized recommendations.
2. **Data Validation Module:** Once the user inputs their information, this module ensures that the data is complete and correct. If any data is missing or invalid, the system prompts the user to re-enter the required information.
3. **AI Processing Module:** This module uses the GPT-3.5-turbo AI model to analyze the validated data and generate clothing recommendations based on the user's preferences and needs. The AI model processes the user input to produce tailored suggestions that match the user's style, body type, and occasion.
4. **Email Communication Module:** After the recommendations are generated, this module collects the user's email address and sends the personalized suggestions via email. The integration of SMTP ensures that the recommendations are delivered to the user efficiently and securely.
5. **RPA Automation Module:** This module orchestrates the entire process, automating the workflow from data collection and validation to recommendation generation and email delivery. It reduces manual intervention, ensuring a smooth and fast user experience.
6. **User Interface Module:** This module is the front-end interface where users interact with the system. It provides the necessary input fields for users to submit their preferences, receive recommendations, and interact with the system.

CHAPTER-5

SCREEN SHOT OUTPUT

5.1 IMPLEMENTATION ON WORKFLOW

FIG 5.1 IMPLEMENTATION WORKFLOW

5.2 INPUT RECREATION

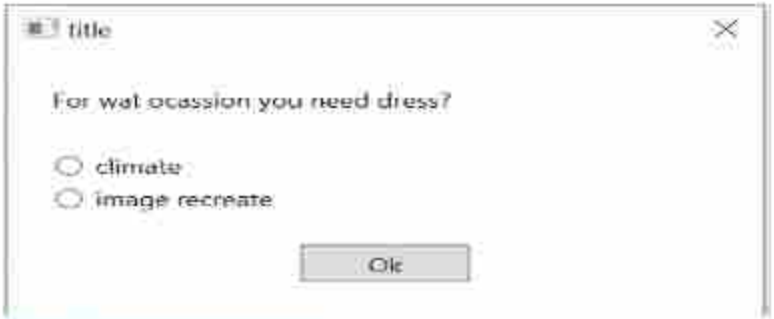


FIG 4.2 INPUTTING RECREATION

5.3 INPUT CLIMATE

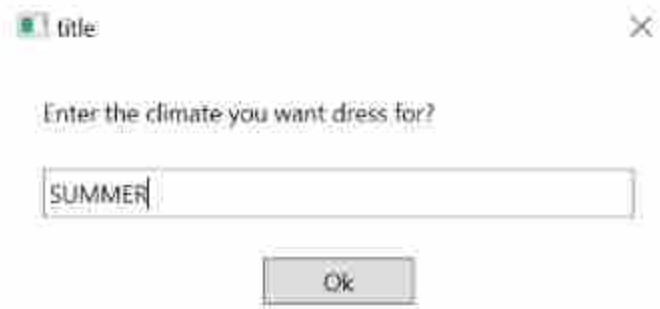
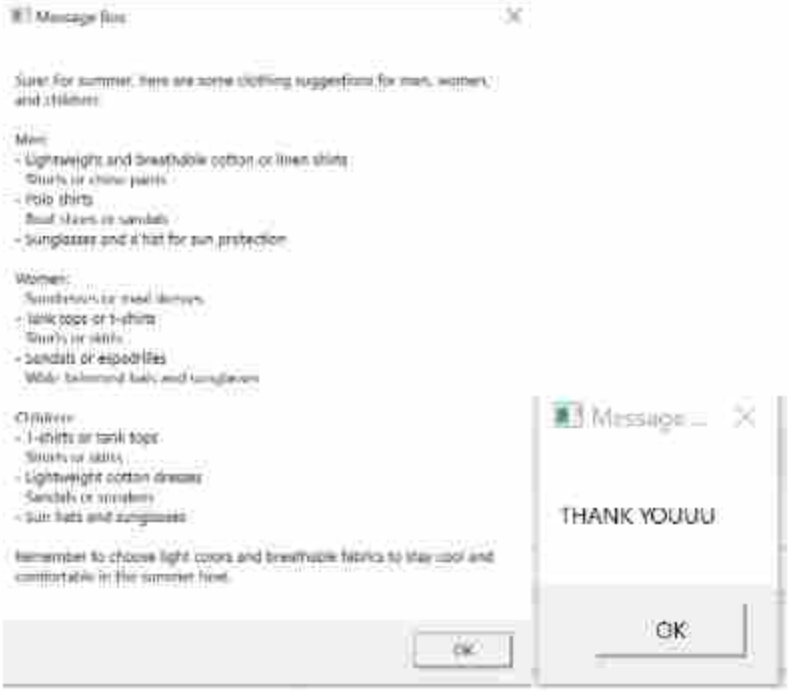


FIG 4.3 INPUTTING CLIMATE

5.3 OUT PUT RECOMMENDATION



CHAPTER-6
CONCLUSION

6. CONCLUSION

The **Dress Recommendation Bot** project successfully integrates Robotic Process Automation (RPA) with Artificial Intelligence (AI) to provide a seamless and personalized user experience for clothing recommendations. By automating the data collection, validation, processing, and recommendation delivery, the system significantly reduces the manual effort involved in finding personalized clothing suggestions, making the process more efficient and user-friendly.

The integration of AI, specifically the GPT-3.5-turbo model, ensures that the recommendations are tailored to individual user preferences, body type, and occasion. This personalization enhances the relevance and value of the recommendations, providing users with accurate clothing options that meet their unique needs. Furthermore, the use of email automation allows for instant communication, delivering the recommendations directly to the user's inbox.

The system's use of RPA eliminates human intervention in routine tasks, ensuring fast processing and reducing the chances of errors. This combination of AI and RPA not only improves the efficiency of the recommendation process but also makes the entire experience more engaging for the user.

In conclusion, the **Dress Recommendation Bot** represents a significant step forward in the application of AI and RPA in the fashion industry. By automating the recommendation process and providing personalized insights, the system enhances the shopping experience, saves time, and simplifies the decision-making process for users. With its robust functionality, the system has the potential to be further enhanced and expanded to incorporate additional features such as real-time trend analysis and integration with e-commerce platforms.

APPENDICES

USER INPUT FORM

The user input form is designed to gather the necessary information from the user to provide personalized dress recommendations. The form includes the following fields:

- **Age**: To understand the age group and recommend age-appropriate clothing.
- **Body Type**: To personalize the clothing recommendations based on the user's body shape and size.
- **Preferred Style**: A selection of clothing styles (casual, formal, etc.) for the system to focus on.
- **Occasion**: Information about the event or occasion for which the clothing is being selected (e.g., casual outing, wedding, office wear).
- **Preferred Colors**: Optional color preferences to fine-tune the rec

SYSTEM ARCHITECTURE DIAGRAM

- ommendations. The system architecture diagram illustrates the high-level components and their interactions in the Dress Recommendation Bot. It includes the following key components:

1. **User Interface (UI)**: Collects user input such as age, body type, style preferences, etc.
2. **Robotic Process Automation (RPA) Engine**: Automates the data collection, validation, and workflow execution.
3. **AI Engine (GPT-3.5 Turbo)**: Analyzes user data to generate personalized clothing recommendations based on input.
4. **Email Integration**: Sends the generated recommendations via email to the user's provided email ID.
5. **Database**: Stores the user inputs and generated recommendations for future reference (optional).

SYSTEM FLOW CHART

A flowchart showing the major steps involved in the recommendation process:

1. **Start**: The user is prompted to enter their information.
2. **Input Validation**: The system validates the entered data for correctness and completeness.
3. **AI Processing**: The validated data is sent to the AI engine to generate personalized clothing recommendations.
4. **Email Automation**: Recommendations are sent to the user's email address.

ADDITIONAL FEATURES AND FUTURE WORK

Future versions of the system can include:

- **Integration with E-commerce Platforms**: The system could allow users to directly purchase the recommended items from partnered e-commerce platforms.
- **Real-time Trend Analysis**: Integrating live data from fashion trend sources could allow the system to recommend trendy outfits based on the latest fashion updates.
- **User Feedback Loop**: Allow users to rate their recommendations, which could be used to refine the AI model for better future suggestions.

REFERENCES

1. **UiPath Documentation**: Official documentation for Robotic Process Automation with UiPath.
2. **OpenAI Documentation**: Resources for understanding and using the GPT-3.5-turbo AI model for personalized applications.
3. **Fashion Industry Reports**: Insights into trends in personalized recommendations and AI in the fashion sector.

REFERENCES

[1] https://docs.uipath.com/ai-center/automation-cloud/latest/user-guide/out-of-the-box-packages
[2] https://platform.openai.com/docs

[3] https://docs.uipath.com/studio

[4] https://docs.uipath.com/activities/docs/send-email

[5] https://cloud.google.com/speech-to-text/docs

[6] https://docs.uipath.com/robot