CAREER PATH PREDICTION BOT

A MINI-PROJECT REPORT

Submitted By

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BONAFIDE CERTIFICATE

Certified that this project report **"CAREER PATH PREDICTOR"** is the Bonafide work of

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ABSTRACT

"The Career Path Predictor" project is designed to automate the process of offering personalized career guidance based on a user's profile, leveraging the power of Robotic Process Automation (RPA) and Artificial Intelligence (AI). The system takes user inputs such as age, qualifications, and skills through interactive dialogs, validating the data for completeness and correctness. Once validated, the system uses OpenAI's GPT-3.5-turbo model to analyze the data and generate personalized career path recommendations, making use of natural language processing to suggest relevant career options based on the user's experience and preferences.The project is implemented using UiPath Studio for automating the workflow, ensuring that the process from data collection to recommendation delivery is seamless and efficient. After the career suggestions are generated, the system not only displays them to the user but also sends the recommendations via email using an SMTP server, allowing the user to access and review the suggestions at their convenience. This end-to-end automation streamlines the process, reduces the time spent in career exploration, and enhances the overall user experience.The system incorporates error handling to ensure that invalid or incomplete user inputs are detected and corrected, making the entire process robust and user-friendly. By combining the capabilities of UiPath for automation, OpenAI's GPT-3.5-**turbo** for AI-driven analysis, and email integration for communication, the Career Path Predictor provides a scalable, accurate, and efficient solution for individuals seeking personalized career guidance. The project represents a step forward in using AI to enhance decision-making processes and provide actionable insights to users, making career path exploration more accessible, efficient, and tailored to individual needs.

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LIST OF ABBREVIATIONS

Abbreviation	Full Form
SMTP	Simple Mail Transfer Protocol
RPA	Robotic Process Automation
GPT	Generative Pre-trained Transformer
API	Application Programming Interface
XML	Extensible Markup Language
JSON	JavaScript Object Notation
ML	Machine Learning

CHAPTER - 1

INTRODUCTION

1.1 GENERAL

The Career Path Predictor project utilizes Robotic Process Automation (RPA) to streamline the process of gathering user information, analyzing it using artificial intelligence, and delivering personalized recommendations. The workflow begins with a series of input dialogs that prompt users to provide their age, qualifications, and skills. These inputs are processed using UiPath's GenAI activity with the GPT-35-Turbo model to generate customized insights about the user's career path. Additionally, the workflow includes an email automation step, which collects the user's email address and sends them a tailored email containing the generated recommendations. This project highlights the integration of RPA with AI to enhance user engagement, simplify data handling, and automate personalized communication efficiently.

1.2 OBJECTIVE

The primary objective of the **Career Path Predictor** project is to automate the process of collecting user information, analyzing their data using artificial intelligence, and providing personalized career recommendations in a seamless and efficient manner.

1. **Automate User Data Collection**: Streamline the process of collecting user information such as age, qualifications, and skills through intuitive input dialogs to reduce manual effort and ensure accuracy.
2. **Leverage AI for Personalized Insights**: Utilize AI models to analyze user-provided data and generate tailored career path recommendations, enhancing the relevance and value of the insights.
3. **Simplify Communication with Automation**: Automate the process of sending personalized emails containing career recommendations, ensuring timely and efficient communication with users.
4. **Integrate RPA and AI for Efficiency**: Demonstrate the effective integration of Robotic Process Automation and artificial intelligence to improve productivity, reduce errors, and deliver an engaging user experience.

1.3 EXISTING SYSTEM

In traditional systems, career path recommendations are often provided through manual processes, such as career counseling sessions or static online questionnaires. These systems have several limitations, including:

1. **Manual Effort**: Users need to fill out extensive forms or engage in one-on-one sessions, which can be time-consuming and inefficient.

2. **Lack of Personalization**: Most existing systems provide generic advice based on limited predefined options, failing to offer tailored recommendations based on an individual's unique qualifications, skills, and interests.

3. **Delayed Communication**: In manual processes, receiving feedback or recommendations can take a significant amount of time due to human involvement and processing delays.

4. **Limited Integration**: Traditional systems do not leverage advanced technologies like artificial intelligence or RPA, resulting in a lack of dynamic analysis and automation.

These limitations highlight the need for an automated, AI-driven system that can collect user data, analyze it intelligently, and provide personalized recommendations efficiently and effectively.

1.4 PROPOSED SYSTEM

The **Career Path Predictor** project proposes a modern solution that integrates **Robotic Process Automation (RPA)** with **Artificial Intelligence (AI)** to automate the career recommendation process. The system aims to overcome the limitations of existing systems by offering a streamlined, personalized, and efficient approach. Key features of the proposed system include:

1. **Automated Data Collection**: Through a series of input dialogs, the system will automatically collect user information such as age, qualifications, and skills, eliminating the need for manual data entry.

2. **AI-Powered Personalization**: The system uses the **GPT-35-Turbo** AI model to analyze the user's data and generate personalized career path recommendations based on their skills, qualifications, and age, offering insights tailored to the individual.

3. **Efficient Communication**: After generating personalized insights, the system will automatically send the user an email containing the career recommendations, ensuring prompt communication without human intervention.

4. **Seamless Integration of RPA and AI**: By combining RPA for automation with AI for intelligent data analysis, the system provides a fully integrated solution that reduces errors, saves time, and enhances user engagement.

This proposed system aims to improve the career recommendation process by making it more efficient, personalized, and accessible, ultimately providing a better user experience compared to traditional methods.

CHAPTER - 2
LITERATURE REVIEW

2.1 GENERAL

The integration of Robotic Process Automation (RPA) and Artificial Intelligence (AI) has brought transformative changes across various domains, including career guidance. Career prediction systems have evolved from basic forms and consultations to more intelligent, data-driven solutions. This literature review discusses the application of RPA and AI in career guidance, highlighting key studies, technologies, and their impact.

1. Robotic Process Automation (RPA) in Career Guidance

Robotic Process Automation (RPA) is a technology that automates repetitive tasks, reducing human effort and increasing operational efficiency. In the context of career guidance, RPA has been applied to automate administrative tasks such as data collection, form filling, and report generation.RPA enhances the speed and accuracy of these processes, freeing up human counselors for more personalized interactions. It also ensures consistent data management and improves the efficiency of career counseling platforms.

RPA's application in career guidance allows users to provide personal information such as qualifications and skills through automated input forms, which are processed faster and with fewer errors compared to manual methods

2. Artificial Intelligence in Career Path Prediction

AI has been widely used to provide personalized career path recommendations based on an individual's skills, qualifications, and interests. These AI-driven systems offer more accurate and tailored advice compared to traditional methods, as they consider a broader range of variables and adjust recommendations based on evolving market trends.

AI models, including **GPT-3** (used in the Career Path Predictor project), can understand natural language input, making the system more interactive and personalized.

3. Integration of RPA and AI for Enhanced Career Guidance

Integrating RPA and AI provides a comprehensive solution that combines the strengths of both technologies. RPA can automate the collection and organization of data, while AI models analyze this data to generate personalized insights.RPA ensures that data is processed quickly and accurately, while AI provides intelligent recommendations based on a deeper analysis of the user's profile.

The Career Path Predictor project exemplifies this integration by using RPA to gather user information and AI to generate personalized career recommendations. This integration enhances the speed, accuracy, and relevance of the recommendations, providing users with a more efficient and engaging career counseling experience.

4. Chatbots and Natural Language Processing (NLP) in Career Counseling

AI-powered chatbots are becoming increasingly popular in career guidance platforms due to their ability to interact with users in real-time and provide personalized recommendations. These chatbots can ask users targeted questions to understand their skills, qualifications, and career preferences, and based on the responses, offer relevant career paths.

When combined with RPA, chatbots can further automate the process of data collection and response generation. This results in a more efficient and interactive system where users receive immediate and personalized career advice.

5. Challenges in Existing Career Prediction Systems

Despite advancements, traditional career prediction systems still have limitations. Many of these systems rely on basic questionnaires and static algorithms that do not offer personalized or dynamic recommendations.

Additionally, these systems often require substantial human intervention, leading to delays and inefficiencies. The introduction of RPA and AI addresses these issues by automating data collection, analysis, and communication, providing users with quicker, more personalized career insights.

6. Emerging Trends in AI-Driven Career Guidance

The future of career guidance lies in the continued integration of AI, big data analytics, and deep learning. These systems will be able to offer even more precise recommendations, taking into account a wider array of factors such as geographic location, emerging industry trends, and personal preferences.

The use of Augmented Reality (AR) and Virtual Reality (VR) in career exploration is also gaining traction, allowing users to experience various professions through immersive simulations. These technologies, when combined with AI-driven career advice, will provide users with a comprehensive and engaging experience.

CHAPTER – 3

SYSTEM DESIGN

3.1 SYSTEM FLOW DIAGRAM

The system flow diagram for the Career Path Predictor project outlines the essential steps involved in providing personalized career guidance. The process begins with the user entering their age, qualifications, and skills through an input dialog. The system validates the user inputs, ensuring that all necessary information is provided. The valid data is then sent to an AI model (GPT-3.5-turbo) for career analysis, where it generates appropriate career suggestions based on the provided information. These career recommendations are then displayed to the user for review. The system further prompts the user to provide an email ID, which is used to send the career recommendations via email using an SMTP server. The integration of RPA and AI ensures that the entire process is automated, efficient, and user-friendly, delivering accurate career guidance to the user.
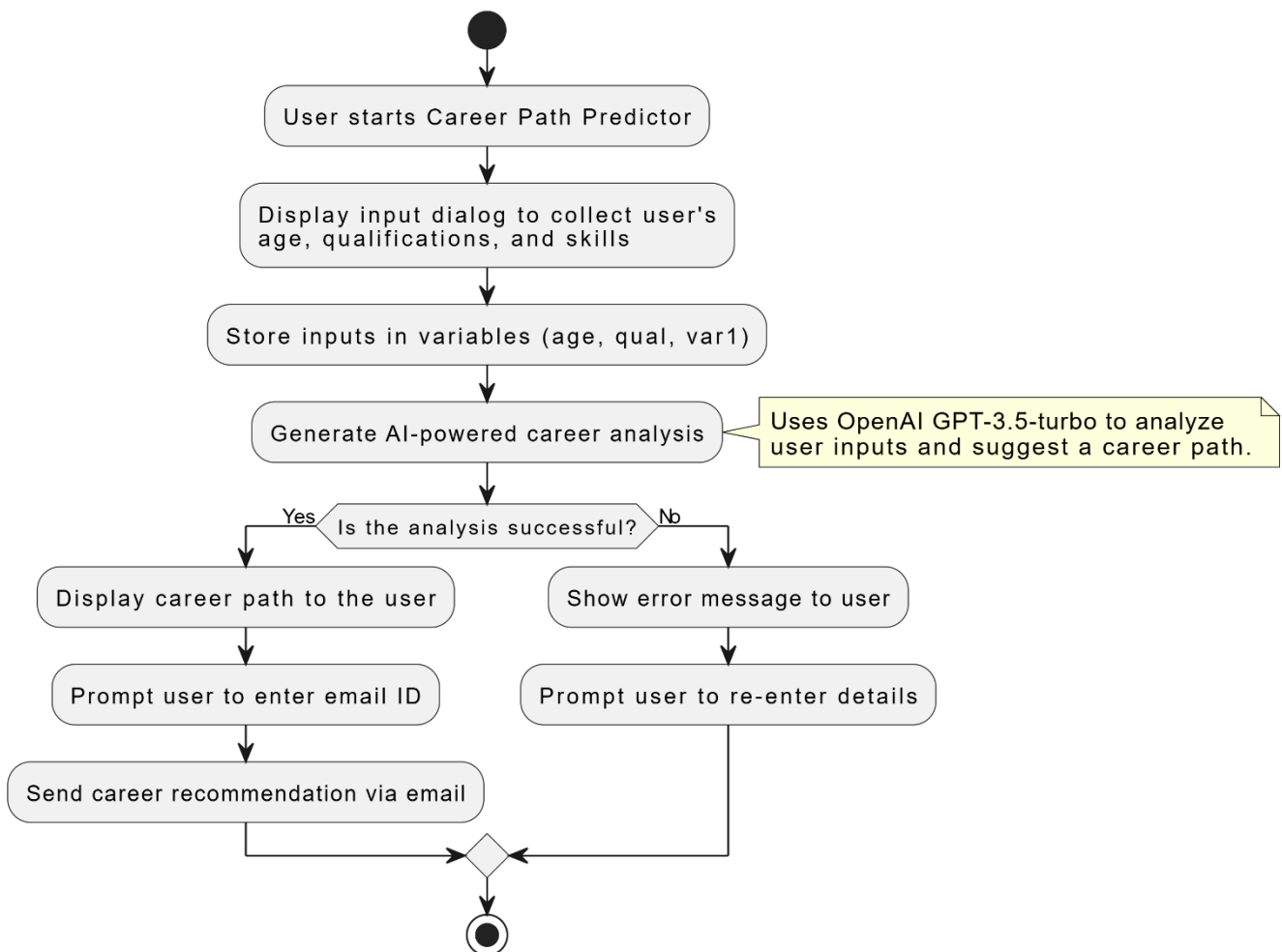
Figure 1 SYSTEM FLOW DIAGRAM

3.2 ARCHITECTURE DIAGRAM

The architecture diagram illustrates the automated career path prediction workflow:

1. **Input:** The user provides their age, qualifications, and skills through interactive input dialogs.
2. **Data Processing:** The system collects the user inputs and validates the data.
3. **AI Analysis:** The validated data is sent to OpenAI's GPT-3.5-turbo for career analysis and suggestions based on the user's profile.
4. **Recommendation Display:** The career recommendations are displayed to the user for review.
5. **Email Integration:** The user is prompted to enter an email ID, and the recommendations are sent via email using an SMTP server.
6. **Error Handling:** The system checks for missing or invalid inputs and notifies the user to provide complete and valid data.

This architecture efficiently automates the process of providing personalized career guidance by integrating RPA, AI, and email communication to deliver accurate, timely recommendations to the user.
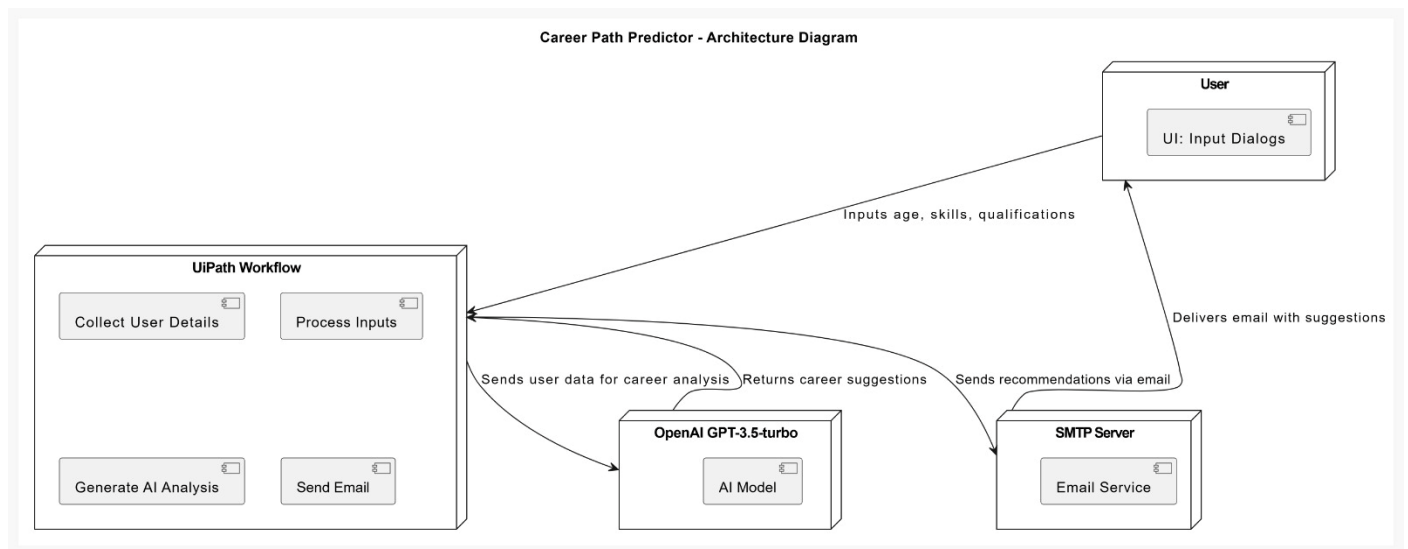
Figure 2 ARCHITECTURE DIAGRAM

3.3 SEQUENCE DIAGRAM

1. **User Interaction:**
   The user provides their age, qualifications, and skills through interactive input dialogs in the system.
2. **Input Validation:**
   The system checks the entered details for completeness and validity. If any information is missing or incorrect, the user is prompted to re-enter the required data.
3. **AI Analysis:**
   The validated user inputs (age, qualifications, skills) are sent to OpenAI's GPT-3.5-turbo model for career analysis. The model generates career recommendations based on the provided data.
4. **Recommendation Display:**
   The career suggestions generated by the AI are displayed to the user for review and consideration.
5. **Email Integration:**
   The user is prompted to enter their email address, and the career recommendations are sent to the provided email using an SMTP server.
6. **Error Handling:**
   The system checks for incomplete or invalid inputs and notifies the user if any errors are found, ensuring smooth execution of the process.
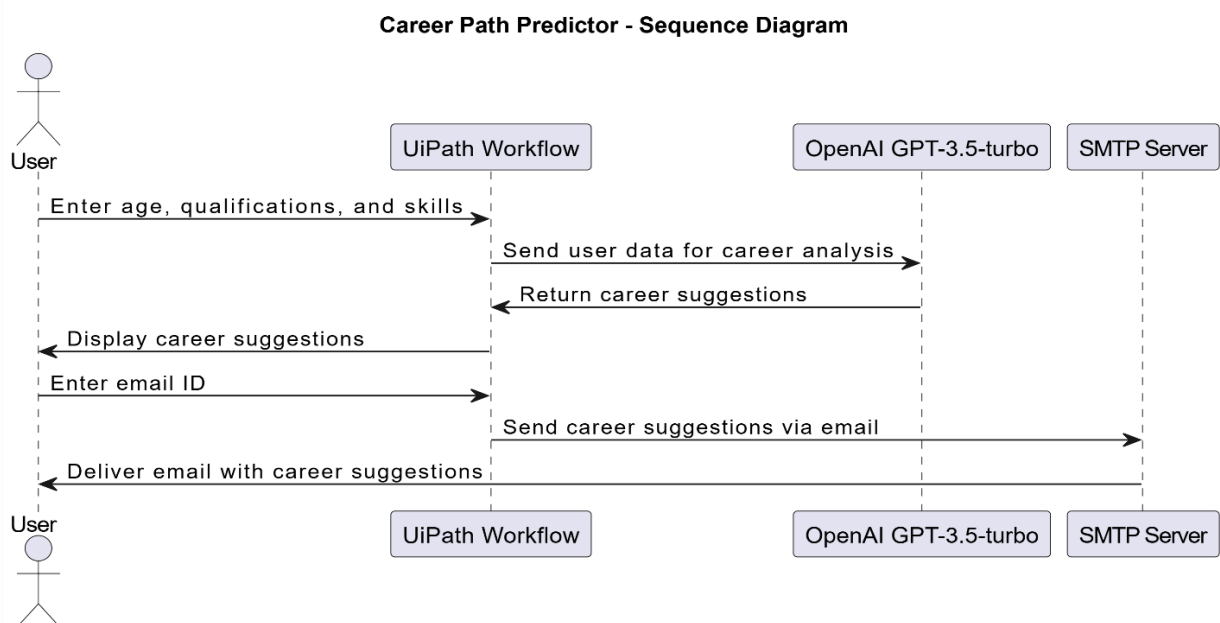
Figure 3 SEQUENCE DIAGRAM

CHAPTER – 4

PROJECT DESCRIPTION

4.1 METHODOLOGIES

This project combines advanced technologies to automate the process of providing personalized career guidance. It consists of three main modules: data collection, AI-powered career analysis, and email communication. The user inputs their age, qualifications, and skills, which are validated before being sent to an AI model (OpenAI GPT-3.5-turbo) for career analysis. The AI generates suitable career recommendations, which are displayed to the user. Finally, the user's email address is collected, and the career suggestions are sent via email.

4.1.1 MODULES

1. **Data Collection and Validation**

    • **Tool: UiPath RPA**
    • **Process:** The first module focuses on gathering user input, including their age, qualifications, and skills. The data is entered through interactive input dialogs within UiPath. Once the user provides the necessary details, the system validates the inputs for completeness and correctness. If any data is missing or invalid, the user is prompted to provide the correct information. This ensures that only accurate and complete data is used for generating career recommendations.

2. **AI-Powered Career Analysis**
    • **Tool:** OpenAI GPT-3.5-turbo
    • **Process:** After the user inputs their information, the validated data is sent to OpenAI's GPT-3.5-turbo model for analysis. This model uses natural language processing to understand the user's qualifications, skills, and experience, then generates personalized career path recommendations. The AI model is designed to process the inputs and provide suggestions that align with the user's profile, ensuring highly relevant and tailored career guidance.

3. **Email Notification**
    • **Tool:** SMTP Server
    • **Process:** Once the career recommendations are generated, the system prompts the user to enter their email address. The career suggestions are then sent to the provided email using an SMTP server. This module ensures that the user receives the recommendations in a timely and efficient manner. By automating email communication, this step allows the system to provide easy access to the personalized guidance and ensures the user can reference the recommendations later.

These modules work together to deliver an automated and personalized career path prediction system, combining the strengths of UiPath RPA for automation, OpenAI's AI capabilities for analysis, and SMTP for seamless communication

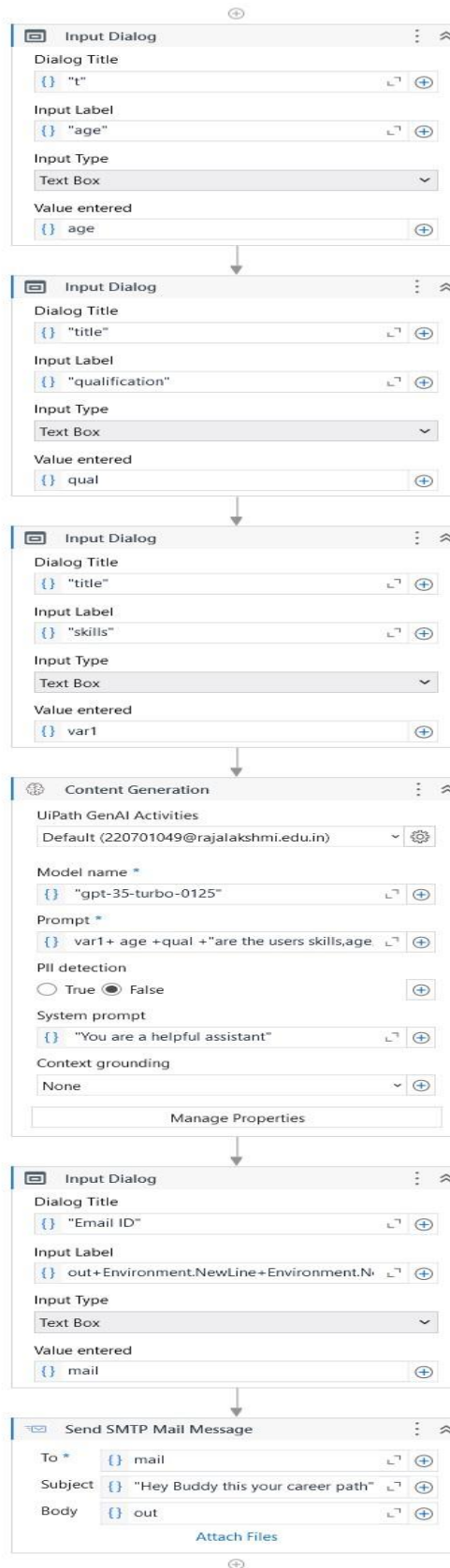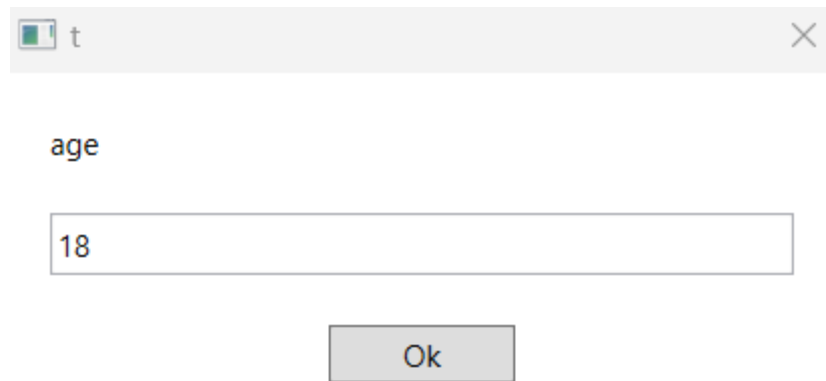# CHAPTER – 5

OUTPUT SCREENSHOTS

5.1 IMPLEMENTATION WORKFLOW
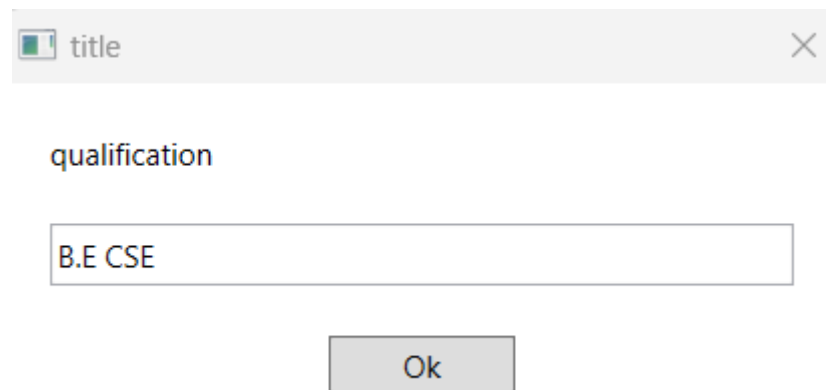

Figure 4.1 IMPLEMENTATION WORKFLOW

5.2 INPUTTING AGE

Figure 4.2 INPUTTING AGE
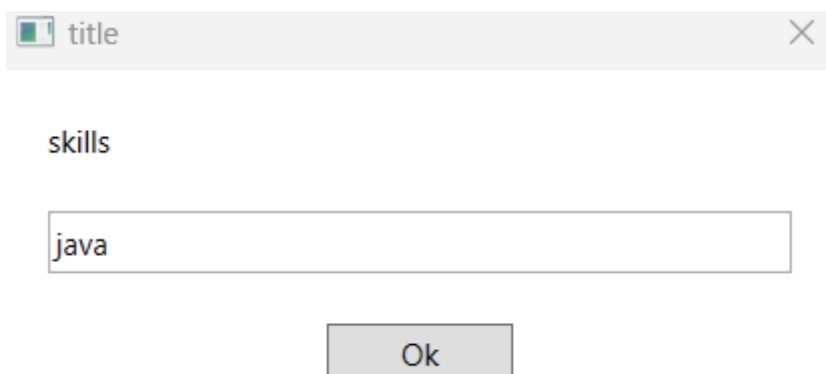
5.3 INPUTTING QUALIFICATION

Figure 4.3 INPUTTING QUALIFICATION

5.4 INPUTTING SKILLS

Figure 4.4 INPUTTING SKILLS

5.5 INPUTTING EMAIL-ID

Figure 4.5 INPUTTING EMAIL-ID

5.6 OUTPUT CAREER PATH THROUGH MAIL

Figure 4.6 OUTPUT CAREER PATH THROUGH MAIL

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CONCLUSIONS

6.1 GENERAL

The Career Path Predictor project is an innovative system that integrates Robotic Process Automation (RPA) with Artificial Intelligence (AI) to provide personalized career guidance. Built using UiPath, the project automates the process of collecting user inputs such as age, qualifications, and skills through interactive dialog boxes, and then utilizes the advanced capabilities of OpenAI's GPT-3.5-turbo model to analyze the inputs and generate tailored career recommendations.

The results are seamlessly delivered to users via email using SMTP integration, ensuring efficient communication and accessibility. The project showcases the powerful synergy between automation and AI, demonstrating its potential to save time and provide precise, data-driven recommendations. Challenges such as accurate user input validation, AI integration, and reliable email communication were effectively addressed during the development process, reinforcing key technical skills in workflow design and system integration. Future enhancements could include adding more user attributes, incorporating real-time labor market data for dynamic recommendations, and expanding communication channels to reach a broader audience. The Career Path Predictor serves as a robust foundation for building intelligent career guidance systems, highlighting the potential of automation and AI in solving real-world problems.

APPENDICES

Appendix A: *Workflow Design*

This section includes the design and workflow of the Career Path Predictor process. The steps are as follows:

1. **User Interaction:** The user inputs their age, qualifications, and skills through interactive input dialogs in the system.

2. **Input Validation:** The system validates the user inputs for completeness and correctness. If any data is missing or incorrect, the user is prompted to re-enter the necessary details.

3. **AI Analysis:** The validated user inputs are sent to OpenAI's GPT-3.5-turbo for career analysis. The AI model processes the data and generates personalized career suggestions.

4. **Recommendation Display:** The career recommendations are displayed to the user for review.

5. **Email Integration:** The user is prompted to provide their email address, and the career recommendations are sent via email using an SMTP server.

6. **Error Handling:** The system checks for missing or invalid inputs and notifies the user of any errors to ensure smooth execution.

Refer to the system flow diagram and sequence diagram in the report for detailed representations of the process.

Appendix B: *Tools and Technologies Used*

1. **UiPath Studio:** Used for designing and automating the workflow, managing user inputs, and sending emails.

2. **OpenAI GPT-3.5-turbo:** Used for analyzing the user's data and generating personalized career recommendations.

3. **SMTP Server:** Used for sending career recommendations to the user's email.

4. **File System:** Used for managing and validating user input data during the workflow.

Appendix C: *System Requirements*

1. **Software:**

    o   UiPath Studio (Version 24.10.5 or above)

    o   Python 3.7 or above (if additional Python integration is needed)

    o   OpenAI GPT-3.5-turbo (API Access)

2. **Hardware:**

    o   Processor: Intel i3 or above

    o   RAM: 4 GB minimum

    o   Disk Space: 500 MB for tools and dependencies

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