Project Report AI Virtual Career Counsellor

Abstract

Choosing the right career is one of the most critical decisions in a student's life. Many students struggle to identify suitable career paths due to lack of guidance and awareness. This project, **AI Virtual Career Counsellor**, aims to provide an intelligent chatbot that recommends career options based on user interests using Natural Language Processing (NLP). The system uses Rasa for intent recognition, NLTK for text preprocessing, and Streamlit for building an interactive frontend. The chatbot understands user inputs related to interests in technology, arts, or commerce and suggests appropriate career paths accordingly. This solution provides an accessible, user-friendly, and scalable approach to career guidance.

Introduction

Career guidance plays a vital role in shaping an individual's future. Traditional counseling methods often require human experts, which may not always be accessible to everyone. With advancements in Artificial Intelligence and NLP, chatbots can simulate human-like conversations and provide instant guidance.
The **AI Virtual Career Counsellor** is designed to assist students by analyzing their interests and recommending suitable career options. The chatbot interacts with users through natural language and provides personalized career suggestions. The project focuses on building an intelligent, rule-based recommendation system using Rasa and deploying it through a Streamlit web application.

Tools Used

1. **Python** – Core programming language used for development
2. **Rasa** – Used to build and train the conversational AI chatbot
3. **NLTK (Natural Language Toolkit)** – Used for text preprocessing such as tokenization and stop-word removal
4. **Streamlit** – Used to create an interactive and user-friendly web interface
5. **GitHub** – Version control and project hosting
6. **Streamlit Cloud** – Used for deployment of the application

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Steps Involved in Building the Project

1. Intent Definition

Career-related intents such as **Technology**, **Arts**, and **Commerce** were defined. Sample user queries were created for each intent to train the chatbot.

2. Text Preprocessing

NLTK was used to clean user input by converting text to lowercase, removing stop words, and tokenizing sentences. This improves intent recognition accuracy.

3. Rasa Chatbot Training

The Rasa framework was used to train the chatbot using NLU data, stories, and rules. The domain file defined intents, responses, and actions.

4. Career Recommendation Logic

Keyword-based logic was implemented to map user interests to relevant career paths. For example, interests in coding or software lead to technology careers.

5. Frontend Development

A Streamlit application was developed to provide a simple chatbot interface where users can enter their interests and receive career recommendations.

6. Testing

The chatbot was tested with real user inputs to ensure accurate intent detection and meaningful career suggestions.

7. Deployment

The final application was deployed using Streamlit Cloud, making it accessible online.

Conclusion

The **AI Virtual Career Counsellor** successfully demonstrates how NLP and conversational AI can be used for career guidance. The chatbot provides instant and personalized career recommendations based on user interests. This project highlights the practical application of AI in education and guidance systems. Future improvements may include machine learning-based recommendations, integration of personality tests, and support for more career domains. The project serves as a strong foundation for intelligent career counseling solutions.