AI-Driven Book Recommendation System

Leveraging Emotion and Context for Personalized Recommendations

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Introduction

Aim:
To develop an intelligent book recommendation system that provides personalized book suggestions based on user emotions and contextual queries.

Vision:
To enhance reading experiences by recommending books that resonate with users' current emotions and interests, making reading more engaging and therapeutic.

Problem Statement

Challenges:

- Finding the right book can be overwhelming, especially when users seek something that resonates with their current mood or specific interests.
- Current recommendation systems often lack the ability to factor in the emotional state of the user, leading to less personalized and impactful suggestions.

Solution Overview

Our Solution:

- An AI-driven system that combines emotion detection with query understanding to provide highly personalized book recommendations.
- The system integrates a Weaviate database and a Large Language Model (LLM) to analyze user input and suggest books that align with both the user's emotions and specific interests.

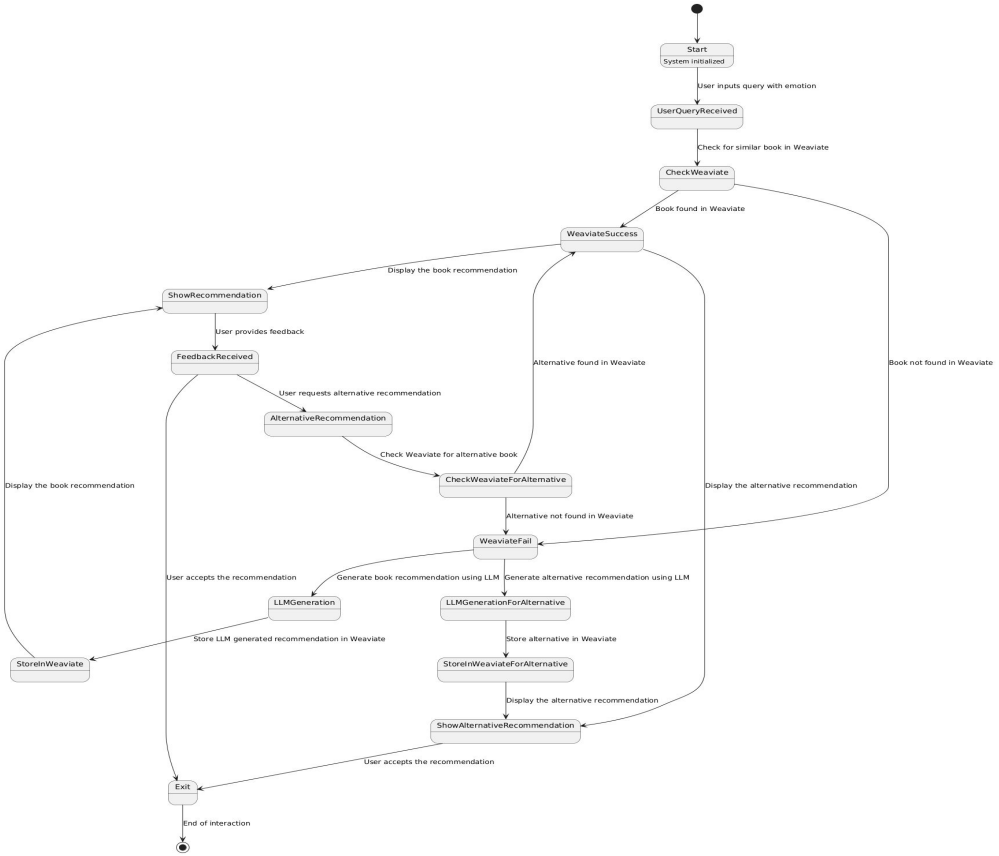
Use Case

Scenario:

- **User Input:** "I'm feeling sad and need a book to lift my spirits."
- **System Response:** The system detects the emotion and recommends a book that matches the mood and context.
- **Feedback:** If the user has already read the book or doesn't like it, the system provides an alternative suggestion.

Flowchart:

Flow Chart:


Start
System initialized
User inputs query with emotion
UserQueryReceived
Check for similar book in Weaviate
CheckWeaviate
Book found in Weaviate
Book not found in Weaviate
WeaviateSuccess
Display the book recommendation
ShowRecommendation
User provides feedback
FeedbackReceived
User requests alternative recommendation
AlternativeRecommendation
Check Weaviate for alternative book
CheckWeaviateForAlternative
Alternative found in Weaviate
Display the book recommendation
Display the alternative recommendation
Alternative not found in Weaviate
WeaviateFail
User accepts the recommendation
Generate book recommendation using LLM
Generate alternative recommendation using LLM
LLMGeneration
LLMGenerationForAlternative
Store LLM generated recommendation in Weaviate
Store alternative in Weaviate
StoreInWeaviate
StoreInWeaviateForAlternative
Display the alternative recommendation
ShowAlternativeRecommendation
User accepts the recommendation
Exit
End of interaction

Architecture Overview

System Architecture:

- **Emotion Detection:** Identifies the user's current emotional state.
- **Weaviate Database:** Stores user interactions and book data for quick retrieval.
- **LLM Integration:** Generates book recommendations based on emotion and context.
- **Feedback Mechanism:** Allows the system to refine recommendations based on user feedback.

Technologies Used

Core Technologies:

- **Python:** The backbone of the application, handling logic and data processing.
- **Weaviate:** A powerful vector search engine for storing and retrieving user data.
- **Transformers:** Utilized for emotion detection and language processing.
- **Streamlit:** Provides an interactive web interface for users to interact with the system.

Features

Key Features:

- **Personalized Recommendations:** Tailored to the user's emotional state and query context.
- **Feedback Loop:** Ensures the system can adapt and provide alternative suggestions when needed.
- **User Interaction History:** Enhances future recommendations by learning from past interactions.

Future Scope

Expanding Horizons:

- **External API Integration:** Enriching data with sources like Goodreads or Amazon for more comprehensive recommendations.
- **Multi-Media Recommendations:** Extending the system to recommend movies, music, or other media.
- **Advanced NLP Models:** Continuous improvement of recommendation accuracy with cutting-edge NLP techniques.
- **Commercial Deployment:** Potential use in online bookstores, libraries, or e-commerce platforms.

Conclusion

Summary:

- Our AI-driven book recommendation system revolutionizes how users find books by considering both emotion and context.
- It has the potential to significantly impact users' reading habits and emotional well-being.

Closing:
Thank you for your attention. I’m happy to take any questions you might have.