AUDIBLE INSIGHTS: INTELLIGENT BOOK RECOMMENDATIONS

Project Overview

This project aims to build a book recommendation system that enhances user experience by recommending books based on their preferences. The system integrates NLP and clustering techniques, implements multiple recommendation models, and provides interactive EDA visualizations. The final application is deployed using Streamlit and AWS.

Features

- **Personalized Book Recommendations** (Content-Based, Cluster-Based, and Hybrid Models)
- **Dynamic Filtering** (Genre → Author → Book)
- **Exploratory Data Analysis (EDA)**
    - Distribution of Ratings
    - Top 10 Most Popular Genres
    - Top Authors with Most Books
    - Word Cloud of Book Titles
- **Interactive UI** built with Streamlit
- **Deployment on AWS**

Exploratory Data Analysis (EDA)

Distribution of Ratings

- A histogram is used to visualize the rating distribution.
- Most books have ratings between 3.5 and 4.5, with fewer books rated below 3.0.

Top 10 Most Popular Genres

- The most common genres are displayed.
- A bar chart displays the top 10 genres based on the number of books available.

Top Authors with Most Books

- Authors with the most books.
- A horizontal bar chart presents the top authors with the highest number of published books.

Word Cloud of Book Titles

- A word cloud is generated to display the most frequently occurring words in book titles.
- Common words like "success," "habits," "life," and "mindset" appear frequently.

Recommendation Models

Content-Based Filtering

- Uses TF-IDF to extract text features from book descriptions and genres.
- Recommends books based on similarities with the user's selected book.

Clustering-Based Recommendations

- Uses K-Means clustering on book features to group similar books.
- Recommends books from the same cluster as the user's preferred selection.

Hybrid Model

- Combines Content-Based Filtering with Clustering-Based Recommendations.
- Selects books based on genre similarity, description, and user behavior.

Deployment Process

Streamlit Application

- The recommendation system is built as an interactive Streamlit web app.
- Users can search books, filter by genre, and view recommendations.

AWS Hosting

- The app is deployed on AWS EC2.
- Ensures scalability and availability.

Project Evaluation Metrics

- Data Cleaning Process
- Model Performance
- Application Functionality
- Deployment Quality

How to Run the Project

Prerequisites

- Install Python (>=3.8)
- Install dependencies: **pip install -r requirements.txt**
- Running the Application **streamlit run recomm_app.py**

Folder Structure

datasets

- Audible_Catalog.csv
- Audible_Catalog_Advanced_Features.csv

src code

- clean_ds.py #pre-processing of data
- model.py #recommendation

Deliverables

- recomm_app.py # Streamlit application
- README.md # Documentation
- requirements.txt # Dependencies

Future Enhancements

- Improve recommendation accuracy using Deep Learning.
- Integrate user feedback loops for refining recommendations.
- Expand dataset to include user reviews and interactions.
