Movie Recommendation System using chatbots (Conversational Movie Recommender System)

Problem Formulation :

The problem addressed in this paper is the lack of support for dynamically changing user preferences in conversational recommender systems. Existing dialogue systems and recommender systems do not effectively handle the evolving nature of user preferences during multi-turn interactions. Additionally, most domain-specific recommender systems are closed-source commercial products, limiting accessibility and reusability for researchers.

The main objective is to create a reusable development framework for conversational recommender systems, specifically in the movie domain, that supports multi-turn interactions, captures and represents user preferences, and offers transparent and scrutable recommendations.

Methodology :

- Natural Language Processing (Libraries like NLTK, spaCy, TextBlob and Gensim)
- Natural Language Generation
- Natural Language Understanding
    - Intent detection
    - Slot filling

- Dialogue Manager (Libraries like ParlAI, DeepPavlov, ChatterBot and Dialogflow)
- Content based filtering (Libraries like scikit-learn, TensorFlow, Keras and Pandas)
- Conversation AI and Chatbot Development

Data Description and Data Sources :

These files contain metadata for all 45,000 movies listed in the Full MovieLens Dataset. The dataset consists of movies released on or before July 2017. Data points include cast, crew, plot keywords, budget, revenue, posters, release dates, languages, production companies, countries, TMDB vote counts and vote averages. This dataset also has files containing 26 million ratings from 270,000 users for all 45,000 movies. Ratings are on a scale of 1-5 and have been obtained from the official GroupLens website.

This dataset consists of the following files : movies_metadata.csv, keywords.csv, credits.csv, links.csv, links_small.csv, ratings_small.csv

The Full MovieLens Dataset consisting of 26 million ratings and 750,000 tag applications from 270,000 users on all the 45,000 movies in this dataset can be accessed here.

Evaluation Methods :

User Feedback: Gather feedback from users who interact with the chatbot.

Accuracy Metrics: Compare the recommended movies with the user's preferences and assess the percentage of correct recommendations.

Diversity of Recommendations: Measure the diversity of recommendations using metrics such as coverage (the proportion of unique movies recommended) and novelty (the proportion of unfamiliar movies recommended).

A/B Testing: Conduct A/B testing by comparing the performance of the movie recommendation chatbot against a baseline or alternative system.

Long-term User Retention: A high retention rate indicates that users find the recommendations valuable and continue using the chatbot over time.

Results Expectations :

Model presented MovieBot, an open-source conversational recommender system for movies. The user experience has been designed to cater for dynamically changing preferences. According to the feedback we have received from users, MovieBot has proved to be successful in understanding their preferences, helping them to grasp their options during various stages of the conversation, and ultimately recommending a good movie.