Movie Recommendation System

BS in Artificial Intelligence



Department of Software Engineering

Faculty of Computer Science & Information Technology

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| Type (Nature of project) | | | [ ü ] **D**evelopment [ ] **R**esearch [ ] **R**&**D** | | |
| Area of specialization | | | AI | | |
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\*The candidates confirm that the work submitted is their own and appropriate credit has been given where reference has been made to work of others

### **Introduction**

The **Movie Recommendation System** is a personalized application designed to enhance the movie selection experience for users. It leverages machine learning and APIs to suggest movies similar to a user-selected title. By integrating data from The Movie Database (TMDb) and torrent platforms like YTS, the system provides a comprehensive overview of recommended movies, including posters, summaries, release dates, ratings, and download links. The user-friendly interface, built with Streamlit, ensures accessibility for movie enthusiasts looking to explore and enjoy tailored recommendations.

### **Key Features**

1. **Movie Recommendation**:
   1. Suggests top 5 movies similar to the selected title using precomputed similarity metrics.
2. **Comprehensive Details**:
   1. Displays key movie details, including:
      1. Poster.
      2. Overview.
      3. Release date.
      4. Viewer rating.
      5. Torrent links to download the movie
3. **Torrent Integration**:
   1. Provides links to torrents for recommended movies (if available) using YTS.
4. **Interactive User Interface**:
   1. Enables users to browse a curated list of movies and retrieve recommendations with a single click.

### **Imported Libraries**

The project employs the following Python libraries:

1. **pickle**:
   1. For loading preprocessed data such as movie lists and similarity matrices.
2. **streamlit**:
   1. A framework for building interactive web applications.
   2. Used for the graphical user interface, including dropdowns, buttons, and multimedia displays.
3. **requests**:
   1. For making HTTP requests to external APIs (TMDb and YTS) to fetch movie data and torrents.
4. **json**:
   1. For parsing JSON responses from the APIs.

### **Implementation Details**

#### **Backend Components:**

1. **TMDb API**:
   1. Fetches movie metadata such as posters, overviews, release dates, and ratings.
2. **YTS API**:
   1. Provides torrent links for movie downloads.
3. **Data Structures**:
   1. movies\_list.pkl: Contains movie metadata.
   2. similarity.pkl: Stores precomputed similarity matrices for recommendations.

#### **Frontend Components:**

* **Streamlit Interface**:
  + A dropdown menu for movie selection.
  + Buttons and image placeholders for an interactive experience.

#### **Functions:**

1. **fetch\_movie\_details(movie\_id)**:
   1. Retrieves metadata for movies using the TMDb API.
2. **fetch\_torrents(movie\_title)**:
   1. Fetches torrent download links for movies via YTS API.
3. **recommend(movie)**:
   1. Identifies and retrieves details for the top 5 similar movies.

### **Execution Instructions**

1. **Dependencies**:
   1. Install required libraries using pip:

pip install streamlit requests

1. **Setup**:
   1. Place the movies\_list.pkl and similarity.pkl files in the Artifacts directory.
   2. Configure API keys for TMDb.
2. **Run the Application**:
   1. Execute the following command in terminal:

streamlit run app.py

1. **Usage**:
   1. Select a movie from the dropdown and click "Show Recommendation" to view similar movies.
   2. Review recommendations with detailed metadata and torrent links.

### **Future Improvements**

* Enhance the recommendation algorithm by incorporating user preferences.
* Support multiple languages using TMDb's localization features.
* Add ratings and reviews submitted by users to improve recommendation accuracy.
* Expand torrent search functionality across more platforms.
* Add the ability to stream the movie.