Movie Recommendation System Project Concept

Pennsylvania State University

SWENG 894 Capstone

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Team Member: Everything will be designed and made by myself.

1. Concept of Operations (CONOPS)

Purpose

The purpose of this project is to develop a movie recommendation system using collaborative filtering algorithms. This system will enhance the user experience by providing personalized movie recommendations based on users' preferences and ratings.

Product Scope

- Problem to solve: More and more movies are coming out, most of the time, users have no idea about how to find a movie they might be interested in. And sometimes they do not know what exactly type of movie they are looking for when they are free. They could also share their own perspective with other audiences.
- Target audience: Movie viewers.
- Relevance: As the entertainment industry continues to grow, personalized recommendation systems become more and more important for users to get better experience.

Product Description

The movie recommendation system will include the following main features:

1. User registration and login system
2. Personal preference settings
3. Movie browsing and searching

4. Rating and reviewing system
5. Personalized movie recommendations
6. Similar movie suggestions
7. Popular movie recommendations
8. Recommendation filtering options

2. Domain Model

Entities

1. User
    - Attributes: ID, username, password, email, preferences
    - Relationships: Has many Ratings, has many Recommendations
2. Movie
    - Attributes: ID, title, genre, director, actors, release year, description
    - Relationships: Has many Ratings, belongs to many Recommendations
3. Rating
    - Attributes: ID, score, comment, timestamp
    - Relationships: Belongs to User, belongs to Movie
4. Recommendation
    - Attributes: ID, timestamp
    - Relationships: Belongs to User, has many Movies

Rationale

This domain model captures the core entities and their relationships in the movie recommendation system. It shows the user preferences, movie details, user ratings, and the generation of personalized recommendations.

3. Programming Languages

- Python: Main backend language for implementing recommendation algorithms and server-side logic
- JavaScript: For frontend interactivity and dynamic content loading
- HTML/CSS: For structuring and styling the user interface

Reasoning: Python was chosen because it has rich machine learning libraries, which are important for implementing collaborative filtering algorithms. JavaScript, HTML, and

CSS are standard choices for creating interactive web interfaces.

4. Toolset

a) Django3: Web framework for backend development
   i. Rationale: It can provide great foundation for building a web application with Python.
b) MySQL: Database management system
   i. Rationale: It has excellent performance and reliability for handling large datasets.
c) Git: Version control system
   i. Rationale: It will help developers to save and updates codes.
d) PyCharm: Integrated Development Environment (IDE)
   i. Rationale: It provides powerful tools for Python.

This toolset provides a comprehensive environment for developing, testing, and deploying the movie recommendation system throughout the project lifecycle.