

# WatchWise: Mood-Based Movie Recommendation System

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# Table of Contents

- 1 Introduction
- 2 Literature Review
- 3 Project Proposal
- 4 Benefits and Use-Cases
- 5 System Architecture
- 6 Software Requirement Specification
- 7 Software Design Document
- 8 Screenshots
- 9 Conclusion
- 10 Future Scope

# Introduction

# Introduction

- WatchWise is a web app for mood based movie recommendation system.
- The objective of this presentation is to showcase our innovative solution for providing personalized movie recommendations based on users' moods, through intelligent mood analysis and tailored suggestions.

## How WatchWise Works

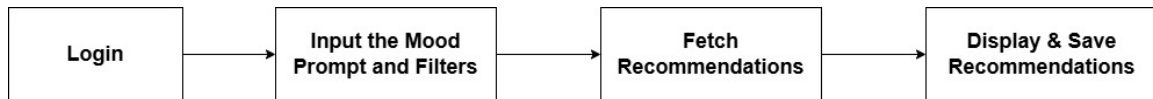


Figure: Flow diagram

# Literature Review

# Literature Review

Year	Methodology	Disadvantage
2024	Sentiment analysis is performed on reviews and cosine similarity algorithm calculates similarity between movies.	Results in over-specialization and fails to explore diverse options.
2024	Euclidean distance for movie recommendations, focusing on genre-specific user preferences.	Lower accuracy compared to hybrid approaches, limited scalability for larger datasets.
2024	Collaborative Filtering combined with Opinion Mining using MF, SVD++, Transnets, and MTER for movie recommendations.	Data sparsity, cold-start issues, higher computational costs, privacy concerns with review mining, and overfitting risks leading to biased recommendations.

# Literature Review

Year	Methodology	Disadvantage
2023	Integration of knowledge graphs, graph traversal algorithms (e.g., PageRank), graph neural networks.	Less recognition for new movies, challenges in handling inactive users, high complexity in ranking.
2023	Hybrid approach combining collaborative filtering, critique-based feedback, LDA, TF-IDF.	High computational demand, reliance on active user engagement, potential bias in critique emphasis.
2023	Integration of SVD, content-based filtering, RNNs, and popularity-based methods for hybrid movie recommendations.	High computational complexity, overfitting risks with RNNs, interpretability challenges, and limited generalizability to other domains.



# Literature Review

Year	Methodology	Disadvantage
2021	Python-based recommendation system using collaborative filtering and web crawlers.	High dependency on user history, inability to handle real-time feedback effectively.
2018	Ranks movies for recommendations using the inner product of user and movie vectors.	Limited performance with incomplete or noisy metadata.

# Project Proposal

# Problem Statement

In the age of endless streaming options, users often face challenges in selecting movies that align with their current mood. The lack of systems that understand and cater to individual emotions makes it:

- Hard to decide on a movie due to overwhelming choices.
- Difficult to find movies that match their current emotional state.
- Time-consuming to search for suitable movies, reducing the overall enjoyment of the experience.

This highlights the need for a mood-based movie recommendation system that simplifies and personalizes the movie selection process.

# Proposed Solution

- Our project, the mood-based movie recommendation system aims to personalize movie suggestions based on the emotional state of the user.
- By combining mood detection with collaborative filtering (user ratings), this hybrid system ensures more accurate and emotionally aligned recommendations.
- The system will use two primary components: content-based filtering (mood) and collaborative filtering (user ratings), with the results fused to provide an optimal movie list for the user.

# Key Features and Approach

The system detects the user's mood based on explicit user input.

- **Hybrid Approach:** The recommendation system uses a hybrid model, combining content-based filtering and collaborative filtering to generate a comprehensive list of movie recommendations.
- **Content-Based Filtering:** This component analyzes the user's mood and suggests movies that match the emotional tone. For example, if the user is feeling joyful, the system will recommend comedies or uplifting genres.
- **Collaborative Filtering:** This method considers the ratings of other users who have similar emotional states, viewing history, or mood preferences.

# Key Features and Approaches

- **User Feedback Loop:** The system includes an option for users to rate the recommended movies or provide feedback on how well the movie matched their mood. This feedback will be continuously fed into the system, allowing it to improve the recommendations over time.
- **Diversity in Recommendations:** The system will ensure diversity in movie recommendations by offering a mix of genres and emotional tones, avoiding repetitive suggestions, and introducing users to new movies that they might enjoy based on their mood.

## Benefits and Use-Cases

# Benefits

The WatchWise mood-based movie recommendation system offers several benefits, including:

- Personalized Movie Suggestions based on user mood, ensuring a tailored viewing experience.
- Time-saving by eliminating the need to browse through countless options manually.
- Enhanced entertainment experience by discovering movies that match emotions and preferences.
- User feedback integration for continuous improvement of recommendations.



# Use-Cases

- Casual viewers can quickly find movies that match their current mood without searching manually.
- Stress-relief and mental wellness by suggesting uplifting or relaxing movies after a tough day.
- Film enthusiasts can explore hidden gems based on their emotions and preferences.
- Parents & kids can receive family-friendly movie recommendations suited for different moods.

# System Architecture

# System Architecture

WatchWise is structured into four core modules that ensure seamless functionality:

- **User Module:** Enables users to interact with the system, receive recommendations, search for movies, and provide feedback.
- **Mood Analysis Module:** Uses Gemini API to analyze user text input and detect emotional states.
- **Recommendation Engine:** Employs content-based filtering, collaborative filtering, and hybrid techniques to provide personalized movie suggestions.
- **Feedback Learning Module:** Collects user ratings and feedback to dynamically enhance recommendation accuracy over time.

# User Login

- User authentication enables access to personalized recommendations and saved preferences.
- The login system ensures secure user data handling and account protection.
- Logged-in users can save movies to their watchlist and receive better recommendations over time.

# Mood-Based Movie Recommendation Process

- Users interact with chatbot, which determines their mood through a conversational approach.
- Based on the detected mood, the system filters movies using predefined genres and languages.
- The user is presented with a selection of movies, including trailers and key details.
- Users can approve or reject recommendations, helping the system improve over time.

## Saving Movies To Watchlist

- Users can add movies to their watch-later list for future viewing.
- The system securely stores saved movies linked to the user account.
- Users can access their saved recommendations anytime and refine their preferences.

# Software Requirement Specification

# Functional Requirements

- User Input and Mood Analysis
- Personalized Movie Recommendations
- Manual Search and Advanced Filters
- User Ratings and Feedback Mechanism
- Continuous Learning and Preference Updates



# Non-Functional Requirements

- Accuracy
- Performance
- Privacy and Security
- User Experience

# Software Design Document

# ER Diagrams

Defines the database schema and relationships among users, movies, and feedback.

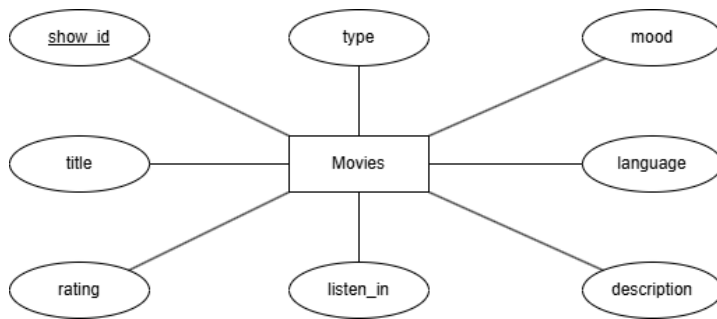


Figure: ER Diagram - 1

# ER Diagrams

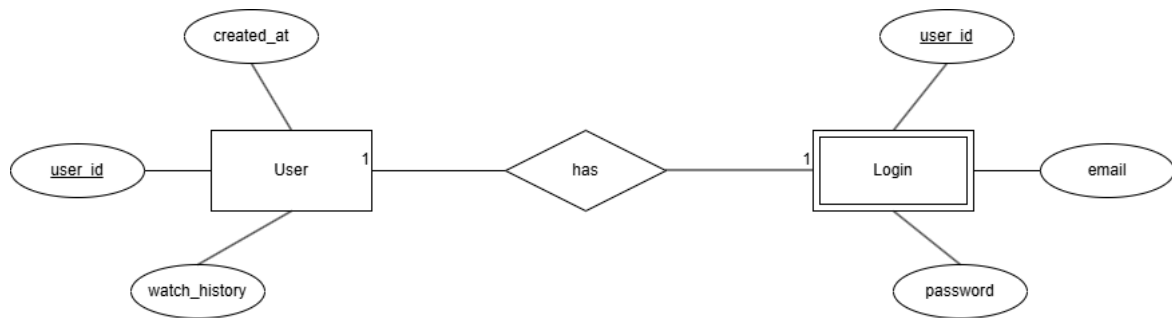


Figure: ER Diagram - 2

# ER Diagrams

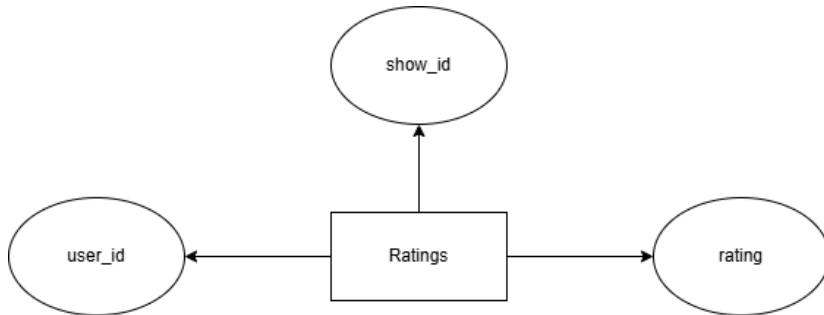


Figure: ER Diagram - 3

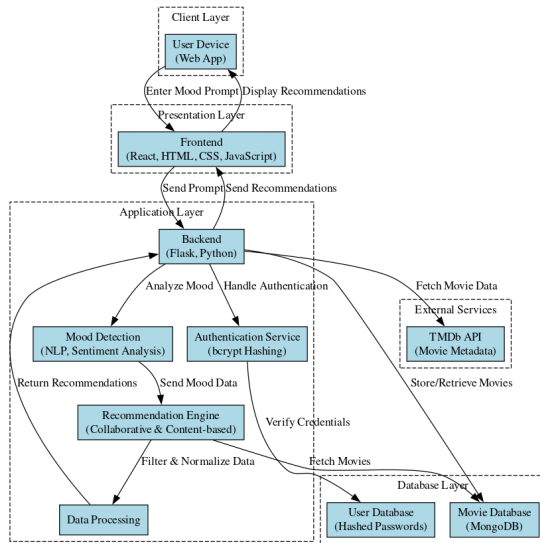


Figure: Architecture Diagram

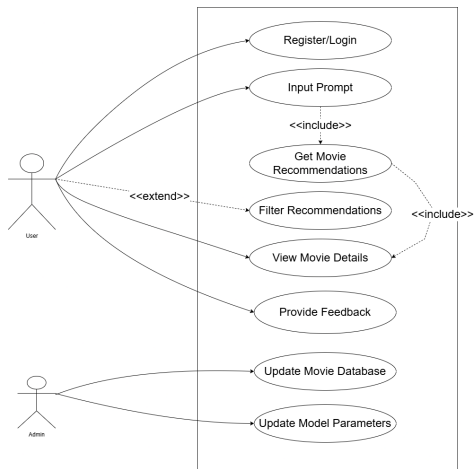


Figure: Use Case Diagram

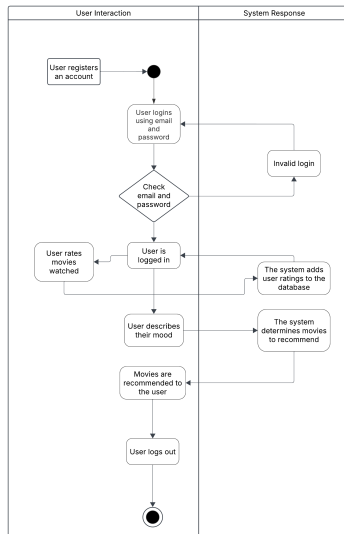


Figure: Activity Diagram



# Data Flow Diagram Level 0

Represents the high-level data flow between major system components.

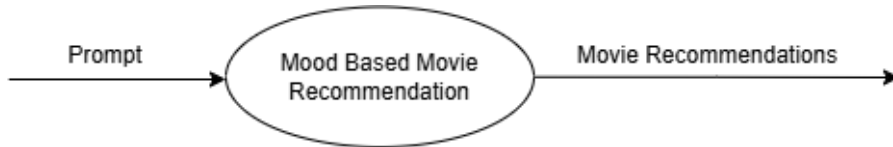


Figure: DFD Level 0 Diagram

# Data Flow Diagram Level 1

Provides a detailed view of how data is processed at different stages.



Figure: DFD Level 1.1 Diagram



Figure: DFD Level 1.2 Diagram

## Data Flow Diagram Level 2

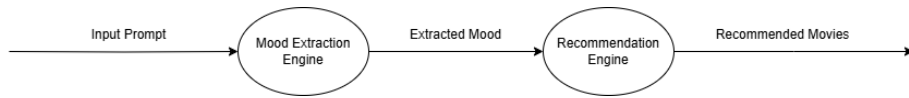


Figure: DFD Level 2.1 Diagram



Figure: DFD Level 2.2 Diagram

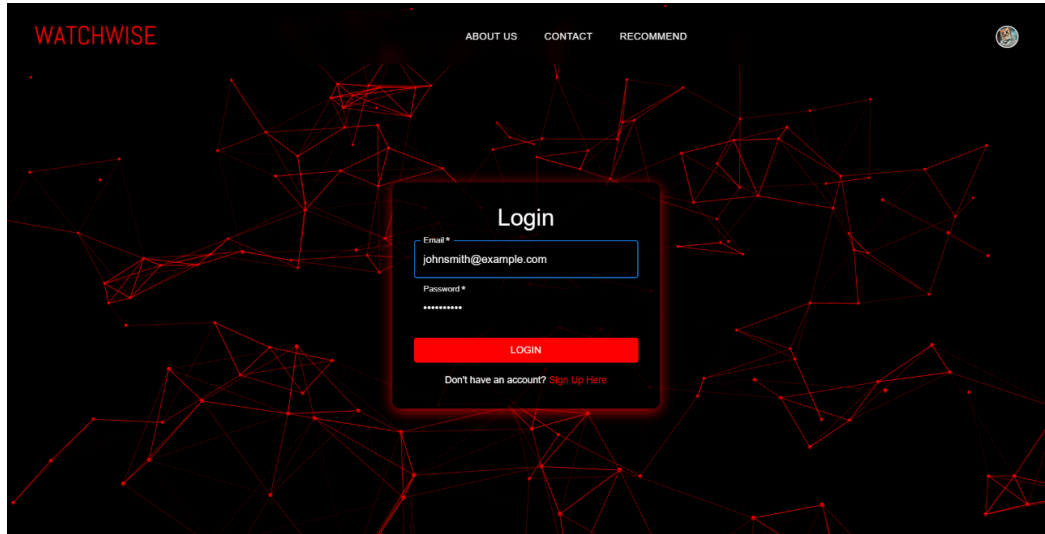
## Screenshots

# Screenshots



images/screenshots/Home.png

# Screenshots



# Screenshots



images/screenshots/about.png

# Screenshots

The screenshot displays the WATCHWISE web application interface. The header includes the logo "WATCHWISE" and navigation links: "ABOUT US", "CONTACT", and "RECOMMEND". A user profile for "John Smith" is featured on the left, with a circular profile picture and buttons for "Watchlist" (0 items) and "History" (0 items). The main content area shows "Profile Details" with a larger profile picture, "Personal Information" (Name: John Smith, Email: johnsmith@example.com, Bio: An enthusiastic cinephile), and a "Recently Watched" section displaying three movie posters: "Cars", "Titanic", and "Hansan".

**WATCHWISE**

ABOUT US CONTACT RECOMMEND

**John Smith**

0 Watchlist 0 History

Profile

Watchlist

History

**Profile Details**

**Personal Information**

Name: John Smith Email: johnsmith@example.com

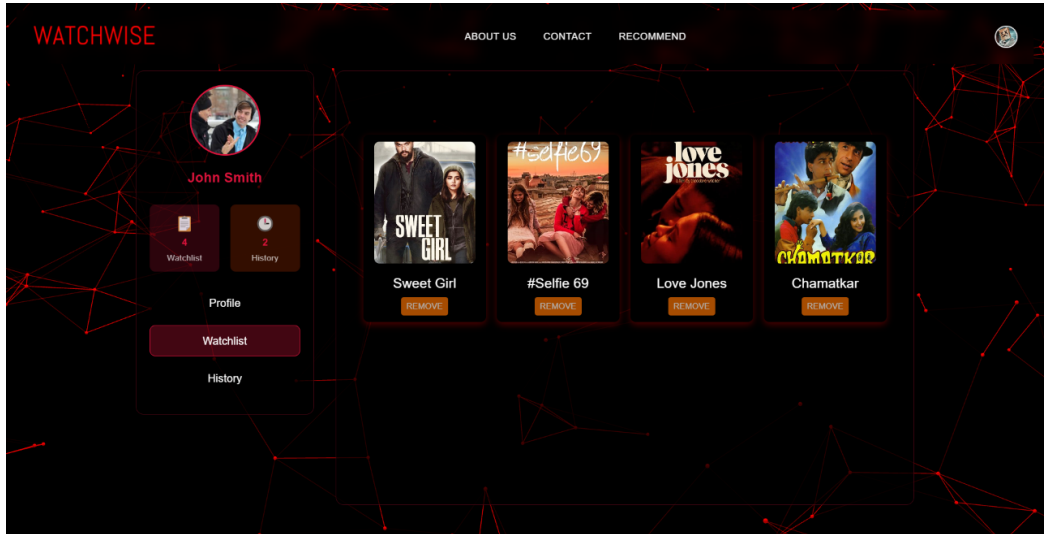
Bio: An enthusiastic cinephile

**Recently Watched**

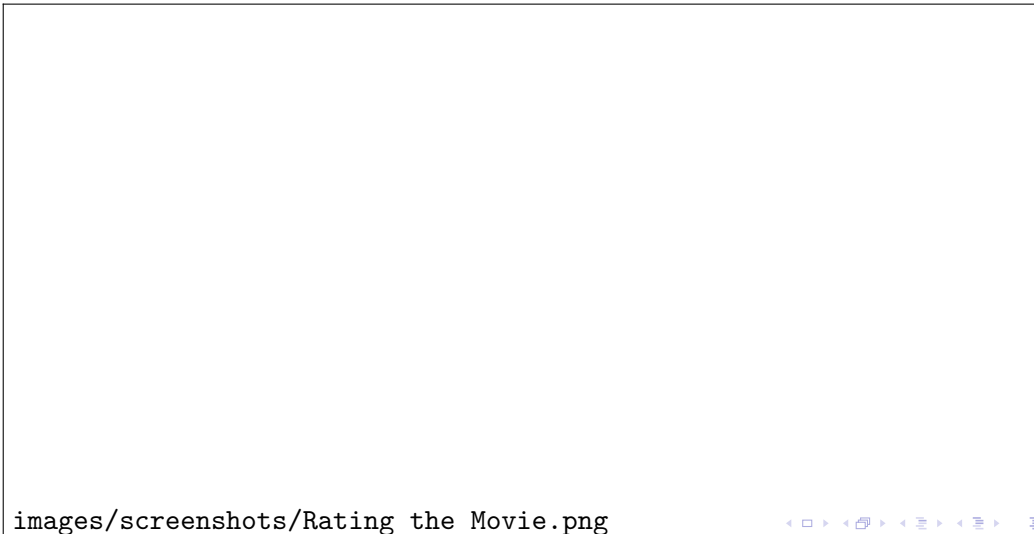
Cars Titanic Hansan



# Screenshots

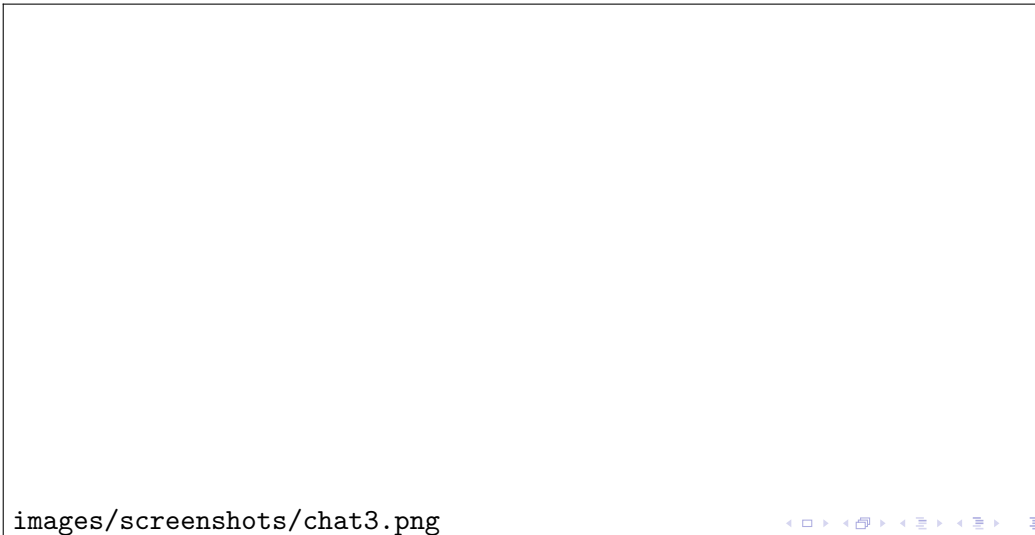


# Screenshots

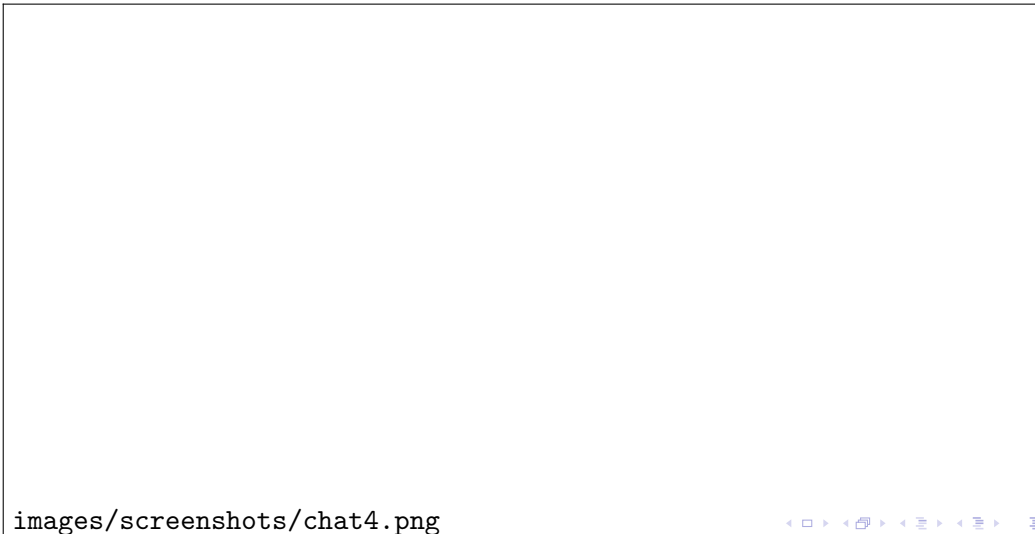


images/screenshots/Rating the Movie.png

# Screenshots

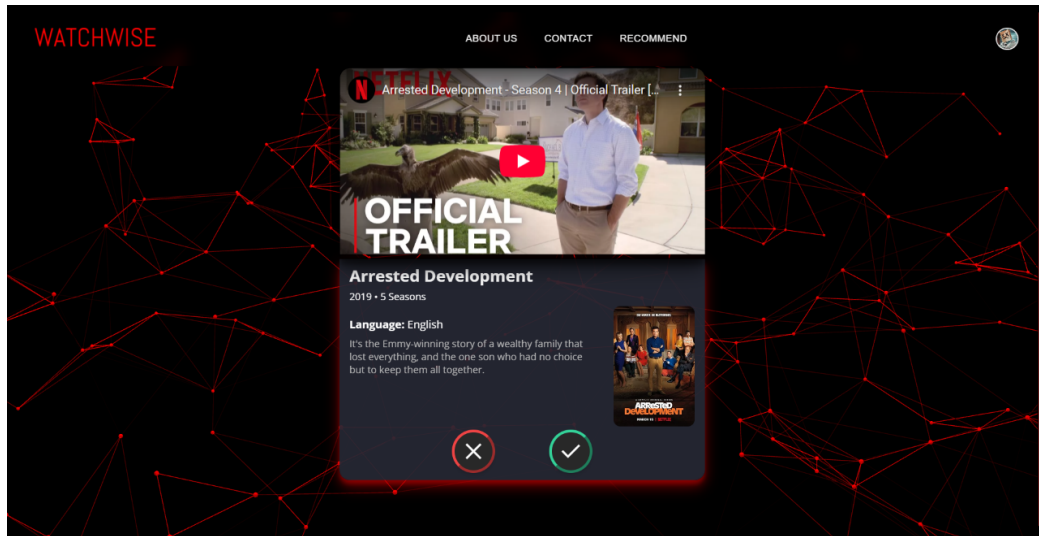


# Screenshots



images/screenshots/chat4.png

# Screenshots



# Conclusion

# Conclusion

- In conclusion, WatchWise provides highly relevant and personalized movie recommendations to its users based on the user's described mood.
- It also allows them to provide ratings to better cater to their specific tastes.

## Future Scope



# Future Scope

- **Aggregating Movies from Multiple Streaming Services:** Instead of being limited to one platform, the system can recommend movies across Netflix, Prime Video, Disney+, Hulu, YouTube, and regional platforms.
- **One-Click Streaming Redirection:** Users can directly access the recommended movie on the relevant platform without searching manually.
- **Mood-Based Movie Sharing:** Users can share their current mood and the movie they are watching with their friends, fostering a social entertainment experience.
- **Friend Activity Feed:** Users can view what their friends are watching and their recent moods, making it easier to discover new content.
- **Mood-Based Movie Clubs:** Users can join or create clubs based on their favorite genres, moods, or themes (e.g., "Feel-Good Comedy Lovers," "Thriller Addicts").

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