

# MOOD -BASED MOVIE RECOMMENDATION SYSTEM

Gauri Sangar, Kshitij Mane, Somnath Killedar, Shambhunath Dhavan,

Miss. Vaishnavi Patil

<sup>1</sup>Student, Computer Engineering Dr. D. Y. Patil Polytechnic, Kolhapur, India

<sup>2</sup> Student, Computer Engineering Dr. D. Y. Patil Polytechnic, Kolhapur, India

<sup>3</sup> Student, Computer Engineering Dr. D. Y. Patil Polytechnic, Kolhapur, India

<sup>4</sup>Student, Computer Engineering Dr. D. Y. Patil Polytechnic, Kolhapur, India

<sup>5</sup> Professor, Computer Engineering Dr. D. Y. Patil Polytechnic, Kolhapur, India

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**Abstract** - In recent years, personalized recommendation systems have become increasingly important in digital entertainment platforms. Traditional movie recommendation systems primarily rely on user history, ratings, and preferences; however, they often fail to consider the real-time emotional state of users, which significantly influences content selection. This paper presents a Movie Recommendation System Using Facial Expression Detection to provide emotion-based personalized suggestions. The proposed system captures facial expressions through a webcam and identifies emotions such as happiness, sadness, anger, and neutrality using facial recognition techniques. Based on the detected emotion, relevant movie recommendations are generated to enhance user engagement. The system is implemented using React.js for the frontend and Node.js for the backend, ensuring a fast, responsive, and user-friendly interface. This approach improves recommendation accuracy and delivers a more satisfying user experience compared to traditional methods.

**Key Words:** Mood Detection, Movie Recommendation, Facial Expression Recognition, React, Node.js, Personalization

## 1. INTRODUCTION

In today's digital era, online streaming platforms have significantly increased the consumption of movies and entertainment content. Movie recommendation systems play a vital role in helping users find suitable content quickly. Traditional recommendation systems mainly depend on user history, ratings, and preferences. Although these

methods are useful, they do not consider the real-time emotional state of users.

Human emotions are dynamic and strongly influence decision-making, especially in entertainment choices. A user who is happy may prefer comedy movies, while a sad user may prefer emotional or motivational content. Therefore, there is a need for a system that can understand user emotions in real-time.

To address this issue, a Movie Recommendation System Using Facial Expression Detection is proposed. The system captures the user's facial expressions using a webcam and detects emotions using facial recognition techniques. Based on the detected emotion, the system provides personalized movie recommendations, improving both accuracy and user satisfaction.

## 2. LITERATURE SURVEY

Various research studies have explored different approaches for movie recommendation systems. The most commonly used techniques include collaborative filtering, content-based filtering, and hybrid recommendation systems. Collaborative filtering recommends movies based on similar user behavior, while content-based filtering suggests movies based on features like genre, actors, and storyline. Recent advancements in computer vision and artificial intelligence have introduced facial expression recognition (FER) systems. These systems use image processing and machine learning techniques to detect human emotions by analyzing facial features such as eyes, lips, and eyebrows. Tools like OpenCV, TensorFlow, and face-api.js are widely used for implementing such systems.

Despite these advancements, existing systems still have several limitations. Most recommendation systems rely heavily on historical data and do not consider real-time emotions. Additionally, complex machine learning models require large datasets and high computational power. These limitations highlight the need for a simple, efficient, and real-time emotion-based recommendation system.

### 3. PROPOSED SYSTEM

The proposed system aims to provide personalized movie recommendations based on the user's real-time emotional state. The system uses a webcam to capture the user's facial image and applies facial expression detection techniques to identify emotions such as happiness, sadness, anger, and neutrality.

The working process begins when the user accesses the application. The webcam captures the facial image, and face detection is performed using libraries such as face-api.js. After detecting the face, the system extracts facial features and analyzes them to classify the user's emotion.

Once the emotion is identified, it is mapped to a predefined movie category. For example, happy emotions are mapped to comedy movies, while sad emotions are mapped to emotional movies. The system then displays a list of recommended movies accordingly.

The system is implemented as a web-based application using React for frontend development and Node.js for backend processing. It provides a simple, interactive, and user-friendly interface, ensuring a smooth user experience.

### 4. CASE-BASED REASONING

The proposed system follows a case-based reasoning approach, where predefined cases are used to generate recommendations. In this method, the system stores a set of known cases (emotion categories) and their corresponding solutions (movie types).

When a new user interacts with the system, their facial expression is analyzed, and the detected emotion is matched with one of the predefined cases. Based on this match, the system retrieves the corresponding movie category and recommends suitable movies.

For example:

If the detected emotion is "happy," the system selects the "comedy" case and recommends comedy movies.

If the emotion is "sad," the system selects emotional or motivational movies.

This approach simplifies the recommendation process, reduces computational complexity, and provides quick responses, making it suitable for real-time applications

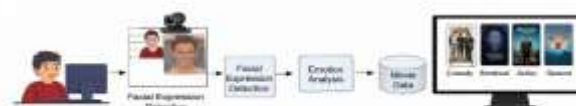


Fig - 1: Mood-Based Movie Recommendation System Overview

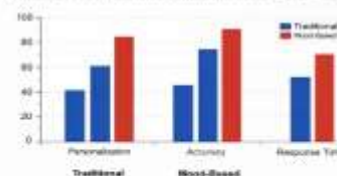


Chart - 1: Comparison of Traditional vs Mood-Based Recommendation System

This chart shows the comparison between traditional and mood-based movie recommendation systems using three main factors: personalization, accuracy, and response time. From the chart, we can see that the mood-based system performs better in all areas. It gives more personalized suggestions by understanding the user's current mood. It also provides more accurate recommendations because it uses real-time emotion data. In addition, the response time is faster, which means users get suggestions quickly. Overall, the mood-based system is more effective and user-friendly than the traditional system.

### 5. ADVANTAGES

The proposed system offers several advantages over traditional recommendation systems. It provides real-time personalized recommendations by analyzing the user's current emotional state rather than relying only on past data. This improves the relevance and accuracy of recommendations.

The system saves time by automatically suggesting suitable movies, reducing the need for manual searching. It is designed with a user-friendly interface, making it easy to use even for non-technical users.

Additionally, the system is cost-effective as it does not require a complex database or large datasets. It is easy to implement, maintain, and suitable for academic as well as small-scale applications. The integration of facial expression detection also makes the system innovative and interactive

## 6.CONCLUSION

The proposed Movie Recommendation System Using Facial Expression Detection introduces an innovative approach to personalization in entertainment platforms. By integrating emotion recognition with recommendation techniques, the system effectively bridges the gap between user mood and content selection. Unlike traditional systems that rely solely on historical data, this model considers real-time emotional input, resulting in more relevant and engaging recommendations. The implementation demonstrates that combining facial expression analysis with modern web technologies can significantly enhance user satisfaction and interaction. Future enhancements may include advanced deep learning models, voice-based emotion detection, and integration with mobile applications to further improve accessibility and performance.

## REFERENCES

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