Movie Recommendation System using Artificial Intelligence techniques

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*Abstract*— This paper presents the design and development of a personalized movie recommendation system utilizing state-of-the-art Artificial Intelligence (AI) techniques. The proposed system integrates collaborative filtering, content-based filtering, and hybrid recommendation strategies to generate movie suggestions tailored to individual users' preferences. Machine learning algorithms and Natural Language Processing (NLP) are employed to analyze user viewing histories, preferences, and movie metadata, enabling more accurate recommendations. Additionally, deep learning techniques are explored to further enhance the system’s performance and recommendation accuracy. The system is evaluated using real-world datasets, demonstrating its effectiveness, scalability, and potential for enhancing the user experience in digital media platforms.

Keywords— Artificial Intelligence, Deep Learning, User Preferences, Scalability, Personalization

# Introduction

In today’s digital age, where users are inundated with an overwhelming amount of information, the need for effective content recommendation has become essential for improving user engagement on digital platforms. Movie recommendation systems are a key feature of popular streaming services like Netflix, Amazon Prime, and Hulu, playing a vital role in enhancing user experience by offering tailored movie suggestions. These systems not only boost user satisfaction but also increase platform interaction and retention.

Traditional approaches to recommendation, such as collaborative filtering and content-based filtering, have been widely used to predict user preferences. However, collaborative filtering, which relies on user-item interaction data, often encounters challenges like the "cold start" problem and data sparsity. Meanwhile, content-based filtering, which suggests movies based on their metadata, struggles to capture complex and dynamic user preferences.

With advancements in Artificial Intelligence (AI) and machine learning, more sophisticated methods for developing recommendation systems have emerged. AI-driven systems, incorporating machine learning and deep learning techniques, can now provide more accurate and dynamic movie recommendations by analyzing user profiles, viewing habits, and contextual factors. Additionally, Natural Language Processing (NLP) can enhance recommendation accuracy by interpreting unstructured data such as user reviews and movie descriptions.

This paper introduces the development of a movie recommendation system that integrates collaborative filtering, content-based filtering, and hybrid models through AI technologies. By leveraging machine learning and deep learning algorithms, the proposed system aims to deliver more accurate recommendations and address issues like cold starts and evolving user preferences. Performance evaluations using real-world datasets demonstrate the system’s scalability and effectiveness in improving the user experience.

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##### Acknowledgment *(Heading 5)*

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##### References

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