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Movie Recommendation System Using Machine Learning

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Abstract: *In the modern era, recommendation systems have revolutionized digital content discovery, offering intelligent solutions for suggesting personalized items. In particular, movie recommendation systems assist users in identifying films that match their tastes from a vast pool of available options. This paper introduces a hybrid recommendation model that integrates content-based and collaborative filtering approaches to overcome the limitations of each. While content-based techniques rely on movie features and user profiles, they often suffer from the cold-start and overspecialization problems. Collaborative filtering, which identifies preferences by analyzing patterns from similar users, faces issues of data sparsity and scalability. The proposed model incorporates both K-Nearest Neighbor (KNN) algorithms and clustering techniques to offer improved performance. We also explore matrix factorization and deep learning frameworks for enhancing recommendation precision. This comprehensive study includes a robust literature review, detailed methodology, implementation framework, and evaluation of performance. Results indicate that the hybrid system surpasses traditional recommendation techniques in terms of user satisfaction and accuracy.*

Keywords: Movie recommendation, Recommender system, Collaborative filtering, Content-based filtering, KNN, Clustering, Machine Learning