

CYBERGENAI'26 CONFERENCE PROCEEDINGS

CHENNAI RAMAPURAM



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on

CYBER SECURITY & GENERATIVE
ARTIFICIAL INTELLIGENCE
(CyberGenAI'26)

IN ASSOCIATION WITH



MULTIMEDIA UNIVERSITY, MALAYSIA

&



MAJAN UNIVERSITY COLLEGE, OMAN

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OMAN**

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CINEBAYES: AN NLP-BASED NAÏVE BAYES ALGORITHM FOR MOVIE RECOMMENDATION SYSTEMS

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ABSTRACT

The fast development of online-to-the-top (OTT) movie streaming has become a major factor of users relying on online reviews to make a choice of a movie. These reviews capture the feelings, thoughts, and experiences of viewers and are therefore a good source of upgrading movie recommendation systems. Nevertheless, the traditional methods of recommendations used through numerical ranks or collaborative filtering methods do not reflect the rich sentimental background of textual reviews and give less personalized and even inaccurate recommendations. Objective: The goal of the research is to come up with an effective sentiment-based movie recommendation system which can effectively categorize movie reviews as either positive or negative sentiments which will enhance the reliability of the recommendations as well as the ability of the system to capture the emotional preferences of the user better than the traditional rating-based approach. Methods: A new sentiment classification model is suggested, which is referred to as CineBayes algorithm, founded on the Naïve Bayes probabilistic learning model. The paper provides a comparative study of three variants of Naive Bayes that are Gaussian, Bernoulli and Multinomial on a dataset of movie reviews. Pre-processing of textual reviews is done and converted into feature representations and each classifier is tested in terms of standard performance measures to determine the effectiveness and scalability of sentiment prediction on large datasets. Findings: The experimental results reveal that Gaussian Naive Bayes does not work well with a high-dimensional and a sparse text data with the least accuracy of 0.670. The Bernoulli and Multinomial Naïve Bayes have moderate performances with the accuracy of 0.784 and 0.764 respectively. Conversely, proposed CineBayes algorithm performs better than all the baseline models in terms of the accuracy, recall, precision, and specificity of 0.826 with the lowest error rates, false positive, and false negative rates.

Keyword: Naïve Bayes Algorithm, Natural Language Processing, Text Classification, Movie Recommendation Systems.