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**e-commerce product recommendation system**

PREDICTIVE ANALYSIS PRESENTATION



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Link for Github - **https://github.com/ShubhDulwani/PREDICTIVE**

## Abstract

In the rapidly evolving world of ecommerce, product recommendation systems have become essential for delivering a personalized shopping experience. This project focuses on developing a comprehensive recommendation system tailored for ecommerce platforms. By integrating sentiment analysis into traditional recommendation models, we aim to enhance recommendation accuracy and user satisfaction.  
The system utilizes collaborative and content-based filtering techniques to analyze user preferences and browsing behaviors. Sentiment analysis on customer reviews allows us to prioritize products with positive feedback and filter out those with negative sentiment. The implementation leverages Python, machine learning algorithms, and natural language processing libraries to create an efficient and scalable solution.  
This project addresses common challenges such as cold start and data sparsity while setting the stage for advanced enhancements like deep learning. Ultimately, our ecommerce recommendation system seeks to revolutionize online shopping by delivering more relevant and engaging product suggestions.

## Objectives

• Develop a recommendation system that personalizes product suggestions for ecommerce users.  
• Incorporate sentiment analysis to improve the relevance of recommendations by analyzing customer feedback.  
• Highlight products with positive sentiment and exclude those with unfavorable reviews.  
• Address challenges like cold start and data sparsity in recommendation systems.  
• Lay the groundwork for future enhancements, such as the integration of deep learning techniques.

## Methodology

The ecommerce product recommendation system involves the following steps:  
1. \*\*Building the Recommendation System\*\*  
 - Apply collaborative filtering and content-based filtering methods to analyze user-product interactions.  
 - Collect and process user-product rating data to train the recommendation model.  
 - Identify similar users or products based on browsing and purchasing behaviors.  
2. \*\*Integrating Sentiment Analysis\*\*  
 - Use customer reviews as a dataset for training sentiment analysis models.  
 - Implement machine learning and natural language processing (NLP) techniques to evaluate the sentiment of reviews.  
 - Assign weights to keywords using TF-IDF to determine their impact on sentiment.  
3. \*\*Combining Recommendations with Sentiment Analysis\*\*  
 - Generate product rankings using a combined scoring formula:  
 - Predicted ratings from the recommendation model.  
 - Normalized sentiment scores derived from customer reviews.  
 - Use these scores to display the most relevant products to users.

## Tools and Technologies

• Python  
• NumPy  
• Pandas  
• Scikit-learn  
• Natural Language Toolkit (NLTK)  
• Virtual Environments