Personalized Movie Recommendation System: Enhancing User Experience through Demographic Insights and Rating Analysis∗

**A Hybrid Approach Combining Collaborative Filtering, Content-Based Filtering, and Clustering Techniques**

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ABSTRACT

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*WOODSTOCK’18, June, 2018, El Paso, Texas USA*

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https://doi.org/10.1145/1234567890

KEYWORDS

***Recommendation System, Collaborative Filtering, Content-Based Filtering, Data Analysis, Data Visualization***

1 Introduction

In the current digital era, personalized recommendation algorithms are now a fundamental component of the user experience on websites like YouTube, Netflix, and Amazon. By assisting users in finding material that suits their interests, these systems increase user pleasure and engagement.

The goal of this project is to create a customized movie recommendation system that predicts movie preferences by using user ratings and demographic information. Investigating the effects of demographic traits (e.g., age and gender), movie information (e.g., genres, release years), and previous user ratings on user satisfaction is the aim of this study. Utilizing sophisticated analytical methods like clustering, collaborative filtering, regression analysis, and hybrid recommendation algorithms, the research seeks to assess and improve movie prediction accuracy.

This study is particularly significant in understanding user behavior across diverse demographic groups, exploring the relationships between genres and user preferences, and ultimately creating a robust recommendation system. The insights derived can inform improvements in content recommendation strategies, ensuring a more tailored user experience for audiences with varying tastes.

Provide an introduction of your topics. Make sure you include the following part. What’s your topic? Why is it important or interesting? What’s the current research/results in this area. Include necessary citation.

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2 Data

In this part, you should introduce your datasets.

2.1 Source of dataset

Where did you download it? Is it a credible source? When were the datasets generated? How were the datasets generated by the creator? If you create the datasets, how did you generate it?

Example: xxxx

2.2 Characters of the datasets

What’s the format and size of the datasets? What parameters/columns/rows/character and their units are included in this dataset. Use a table to explain this is recommended. Did you clean the data or convert any unit in the dataset? If so, what’s the formula/rule did you apply? Did you combine any datasets? If so, how do you combine them? Did you create any new category for analysis in the datasets? If so, what and how do you create?

3 Methodology

In this part, you should give an introduction of the methods/model. First, what’s the method/model. What’s the assumption of this method/model. What’s the advantage/disadvantage of this method/model. Why did you choose it. What Python module or function do you apply to apply this method/model. Any optional input/extra work did you adjust to make the results better. If you have multiple methods, feel free to use subsection 3.1, 3.2, 3.3, … to separate them.

3.1 Heading Level 2

3.2 Heading Level 2

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 (1)

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4 Results

In this part, you need to select a reasonable way to deliver the result of your topic. For example, equation or numerical results, or visualization of your result. You also need to provide a clear explanation of all results and how to understand the results. If there exist any unexpected results, please explain why or possible cause of this special result. You can use subsection 4.1, 4.2, … to separate your results.

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4. Expand **Alt Txt** option.
5. In the "Title:" and "Description:" text boxes, type the text you want to represent the picture, and then click "Close".

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5 Discussion

Every method/project has its shortage or weakness. Please discuss the unsatisfied results in your project. And discuss the feasible suggestions of future work to revise/improve your result.

6 Conclusion

In this part, you should summarize your project. What important results did you find for your topic and what’s the effect of this result on the real-world?

ACKNOWLEDGMENTS

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REFERENCES

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Conference Name:ACM Woodstock conference

Conference Short Name:WOODSTOCK’18

Conference Location:El Paso, Texas USA

ISBN:978-1-4503-0000-0/18/06

Year:2018

Date:June

Copyright Year:2018

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DOI:10.1145/1234567890

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Price:$15.00