

TITLE -3

11/3/24
(over write)

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~~Movie~~ Movie Recommendation using Matrix Factorization.

Introduction:

paragraph-1:

Definition:

Matrix factorization is a collaborative filtering technique that decomposes the user-item interaction matrix into two lower dimensional matrices representing users and items.

Importance:

Matrix Factorization plays a vital role in recommendation systems by efficiently handling sparse user-item interaction data.

Its ability to uncover hidden patterns allows for the provision of accurate and personalized song recommendations, contributing to enhanced user satisfaction.

Applications:

Image and video Compression

Face description.

Topic modeling in Text mining

Collaborative filtering

Healthcare data analysis.

Paragraph 2:

Number of Articles:

Google Scholar: 19

IEEE Explore: 25

Most Cited articles:

"[1] 2018 IEEE
Vikram and C. Khorba"

"Data cleaning through analysis and survey
on clustered data:"

"[2] 2017 IEEE

Ashraf Fahad Mazaed"

"Classifying Text-Based Emotions using
Logistic Regression"

"[3] 2016 IEEE

D. Anand Kumar "State of aggression in
sentences using CNN"

Best paper:

[1] 2019 IEEE

Y. Howard S. Lin.

"Research on Text classification Based on
CNN and LSTM"

para 2:

Testing Setup: Ryzen 7 with Nvidia GeForce RTX 3060 Graphics with 16GB RAM windows OS 64 Bit.

Testing Space: Code execution in Google Colabs.

Data Collection: Data set Netflix 1 million is collected.

para 3:

Test proceeding:-

1. Data preparation:

Collecting and preprocessing collected data in such a way that data is clean and in correct format.

2. Model Selection:

choosing the MF and SVD models and defining architecture of MF and SVD model.

3. Training:

Training SVD and MF on the training data

4. Validation:

Evaluating Model using Matrices

5. Comparison:

Comparing performance of SVD and MF

paragraph - 3:

Existing Algorithm:

Singular Value Decomposition (SVD) is foundational to Matrix Factorization and has been extensively used in collaborative filtering for recommendation systems.

It helps capture latent factors representing user preferences and item characteristics, enables "accurate predictions".

Aim of Study:

Through this study we aim to contribute insights of the potential implementations of Matrix Factorization for movie recommendation, evaluate the performance metrics, identify potential challenges and propose avenues for future improvements in the field of movie recommendation system.

Material and Methods.

Study Setting: Sreeetha School of Engineering

No. of groups: 2

Group 1: MF

Group 2: SVD

Sample size: 100.

Result and Discussion:

Experimental Setup:-

utilizing real world datasets ensures the relevance and practical applicability of the results.

Evaluation Metrics such as precision, recall and mean squared error (MSE) provide insights into Model's performance.

Comparative Analysis:-

Comparing matrix factorization with baseline models and other recommendation algorithms demonstrates its effectiveness.

Limitation:

It comes with two main limitations when dealing with scalability and cold start problem.

para 4:

Data Collection:

1. Define Data Requirement
2. Data Sources
3. Ethical Consideration
4. Data Collection Methods
5. Data Volume
6. Data Consistency
7. Documentation

Future Scope:

Incorporating temporal aspects:

Enhancing Matrix Factorization Model to incorporate temporal aspects, allowing them to adapt to evolving user preferences.

Investigating the integration of time sensitive factors and more dynamic recommendations.

Conclusion:

Matrix Factorization proves to be a valuable approach for movie recommendation, offering efficient handling of sparse data and providing accurate personalized suggestions. Continued research into optimizing Matrix Factorization for scalability and efficiency is crucial.