A
Major Project-II Report
On

TRUNCATED SVD WITH CONDITIONAL COLLABORATIVE FILTERING RECOMMENDER SYSTEM

Submitted in Partial Fulfillment of the Requirement for the
Degree of
MASTER OF TECHNOLOGY
In
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CERTIFICATE

This is to certify that Major Project-II Report entitled "**Truncated SVD with conditional Collaborative Filtering Recommender System**" submitted by **Manika Agarwal, Roll No. 2K14/SWE/10** for partial fulfillment of the requirement for the award of degree Master of Technology (Software Engineering) is a record of the candidate work carried out by her under my supervision.

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DECLARATION

We hereby declare that the major Project-I1 work entitled "**Truncated SVD with conditional Collaborative Filtering Recommender System**" which is being submitted to Delhi Technological University, in partial fulfillment of requirements for the award of degree of Master Of Technology(Software Engineering) is a bonafide report of Major Project-1I carried out by me. The material contained in the report has not been submitted to any university or institution for the award of any degree.

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ABSTRACT

Recommender Systems are designed to suggest personally to each of the users the items they are most likely to like. Sparsity of the User Matrix, cold-start and scalability of the algorithm to real world are the key issues that a good recommender system aims to address.

The collaborative filtering based recommendation systems are based on the classical Bayesian equation of conditional probability. They can be either item based or user based, depending on the strategy by which neighbourhood is found.

Singular Value decomposition is the matrix factorization technique, that aims at reducing the resource (memory) requirements with minimum possible information loss, measured by frobenius norm. Truncated SVD involves keeping only the significant eigen vectors and thus only their corresponding rows and columns.

The proposed Hybrid algorithm aims at combining, experimentally, the knowledge about the preferences of user from the truncated svd approach and the collaborative filtering. This essentially translates to the problem of determining the 2 constants which act as weights for the combination.

The accuracy calculation of the results can be inferred from the error rates computed from the results, thus we use several methods of computing error, so that the wholesome view. RMSE, MAE and REM are three of the error evaluation variations.

LIST OF ABBREVATIONS

CBR	Case Based Reasoning
CF	Collaborative Filtering
IBCF	Item Based Collaborative filtering
KNN	K- Nearest Neighbor
MAE	Mean Absolute Error
RE	Relative Error
RMSE	Root Mean Square Error
RS	Recommender System
PNCF	Propagated Neighborhood based Collaborative Filtering
SVD	Singular Value Decomposition
UBCF	User Based Collaborative Filtering

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