

# RECOMMENDER SYSTEMS TEXT MINING MINI PROJECT 2

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February 19, 2020

## Problem

For this mini project you need to build a recommender system using the techniques that have been taught to you. You are required to implement the following:

1. Item-Item Collaborative Filtering [6 marks]
2. Latent Factor Model [6 marks]

## Details

1. Use the movies dataset uploaded with the assignment statement.
2. For item-item collaborative filtering, you can refer to **surprise** library. Link has been provided below.
3. For latent factor model, you can use pre-built functions to get the SVD matrices but you need to code the latent factor implementation yourself.

## Instructions

1. A single python notebook should be submitted for this assignment.
2. Implement item-item CF using surprise in the first half of the notebook.  
Link: <https://surprise.readthedocs.io/en/stable/>  
Experiment with k values as 2,3 and 5 and consider **cosine** similarity for calculations.  
Report RMSE for these three predictions.
3. As second part, implement latent factor model. Experiment with number of factors as 5,7 and 10 and report RMSE for these three predictions.  
Note: The two matrices, P and Q are often initialized as follows:  
If  $M = U\Sigma V^T$ , then we can initialize P as U and Q as  $\Sigma V^T$ . This initialization reduces the number of iterations required for convergence.  
For more on latent factor model, you can refer to  
<https://towardsdatascience.com/introduction-to-latent-matrix-factorization-recommender-systems-8dfc63b94875>