## Online Movie Recommendation System (OMRES)

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### Introduction

- People seek information via words, recommendation letters, news reports etc.
- Recommendation systems imitate this social process to enable quick filtering of the information on the web

#### Problem Statement

- Providing related content out of relevant and irrelevant collection of items to users of online service providers [1]
- OMRES (Online Movie Recommendation System) aims to recommend movies to users based on user-movie (item) ratings

# Methodology

- Content Based Filtering
  - Selects items based on the correlation between the content of the items and the user's preferences
  - Compare user profile to content of each item
- Collaborative Filtering
  - chooses items based on the correlation between people with similar preferences.
  - Rate items based on ratings of the users that rated the same items

# Methodology (con't)

- Memory based Collaborative Filtering
  - Neighbour-based filtering
  - Item-based and user-based correlation
- Pearson Correlation for similarity
- Recommendation based on weighted sum of others' ratings
- Prediction for user a on item i [1]

Prediction (a, i) = Avg. Rating for a +  $\frac{\sum_{u \in U} (Rating of item i by u)*(weight between a and u)}{Sum of the total weights}$ 

### **Expected Results**

• Root Mean Square Error (RMSE) as evaluation measure

RMSE = 
$$\sqrt{\frac{1}{n} * \sum_{\{i,j\}} (p_{i,j} - r_{i,j})^2}$$

where n is the number of total ratings

 $\boldsymbol{p}_{i,j}$  is the prediction for user i on item j

 $r_{i,j}$  is the the actual rating

• Expect to reach RMSE smaller than 0,8567 on Neflix data which is the RMSE of the winning team of NeflixPrize Challenge in 2006 [2].

### Conclusion

- Recommendation systems provide content for us by taking what other people recommend as well as our selections into account
- Collaborative Filtering is a widely used solution for this problem which we will make use of in our project

#### References

- [1] Xiaoyuan Su and Taghi M. Khoshgoftaar, "A Survey of Collaborative Filtering Techniques," Advances in Artificial Intelligence, vol. 2009, Article ID 421425, 19 pages, 2009
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  - http://www2.research.att.com/~volinsky/netflix/Progre ssPrize2007BellKorSolution.pdf

## Questions

