“Recommendation System (RS)”

A NEW COLLABORATIVE FILTERING TECHNIQUE PROPOSED BASED ON A NEW HYBRID SIMILARITY AND MULTI ATTRIBUTE DECISION MAKING (MADM) METHOD.

by

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Outline

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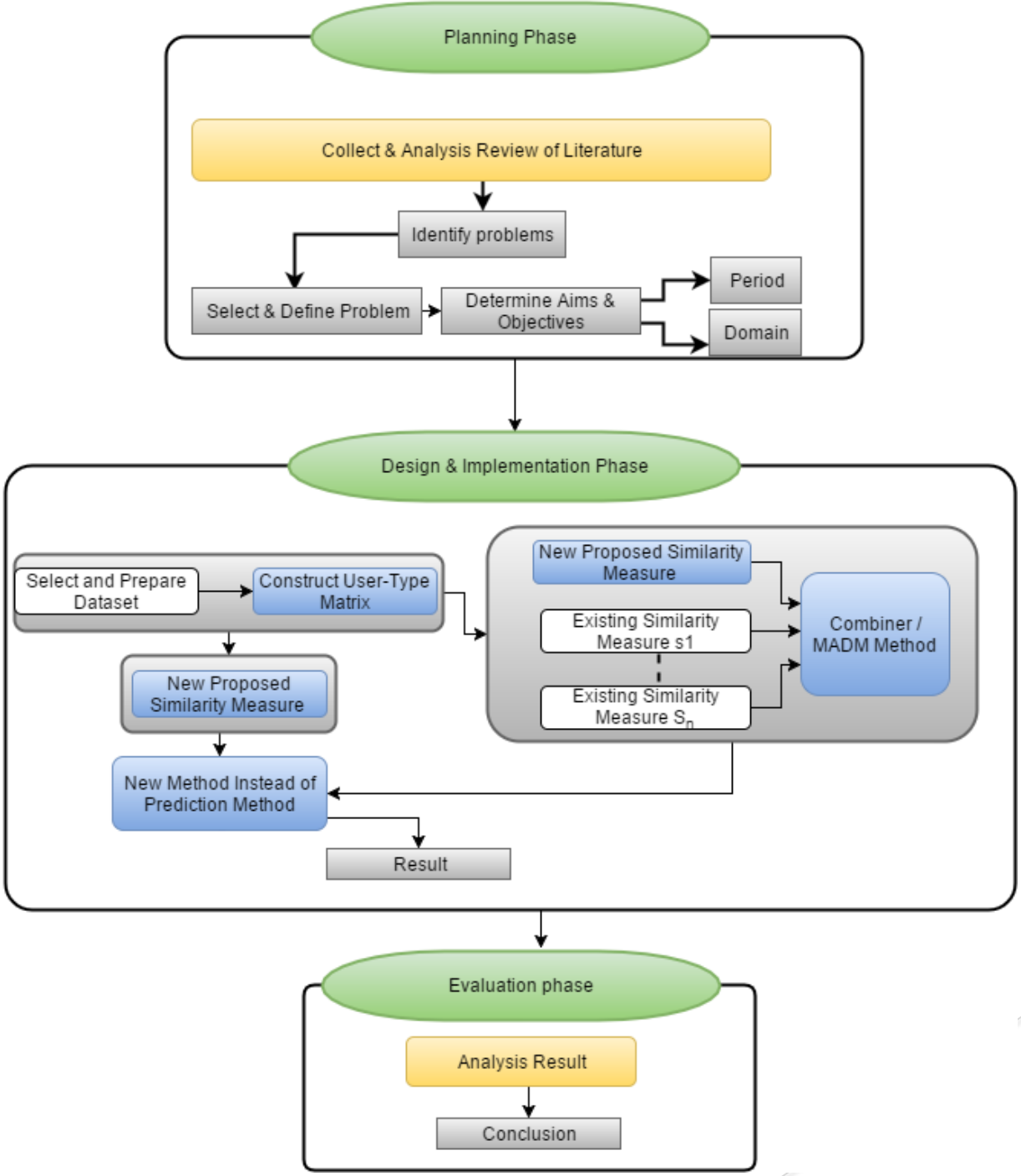
Introduction

This work introduced a new proposed technique in collaborative filtering recommender system which can lead to enhance the recommender system.

- To alleviate information overload
- To provide recommendations.
- To increase revenue

RESEARCH DESIGN AND METHODOLOGY



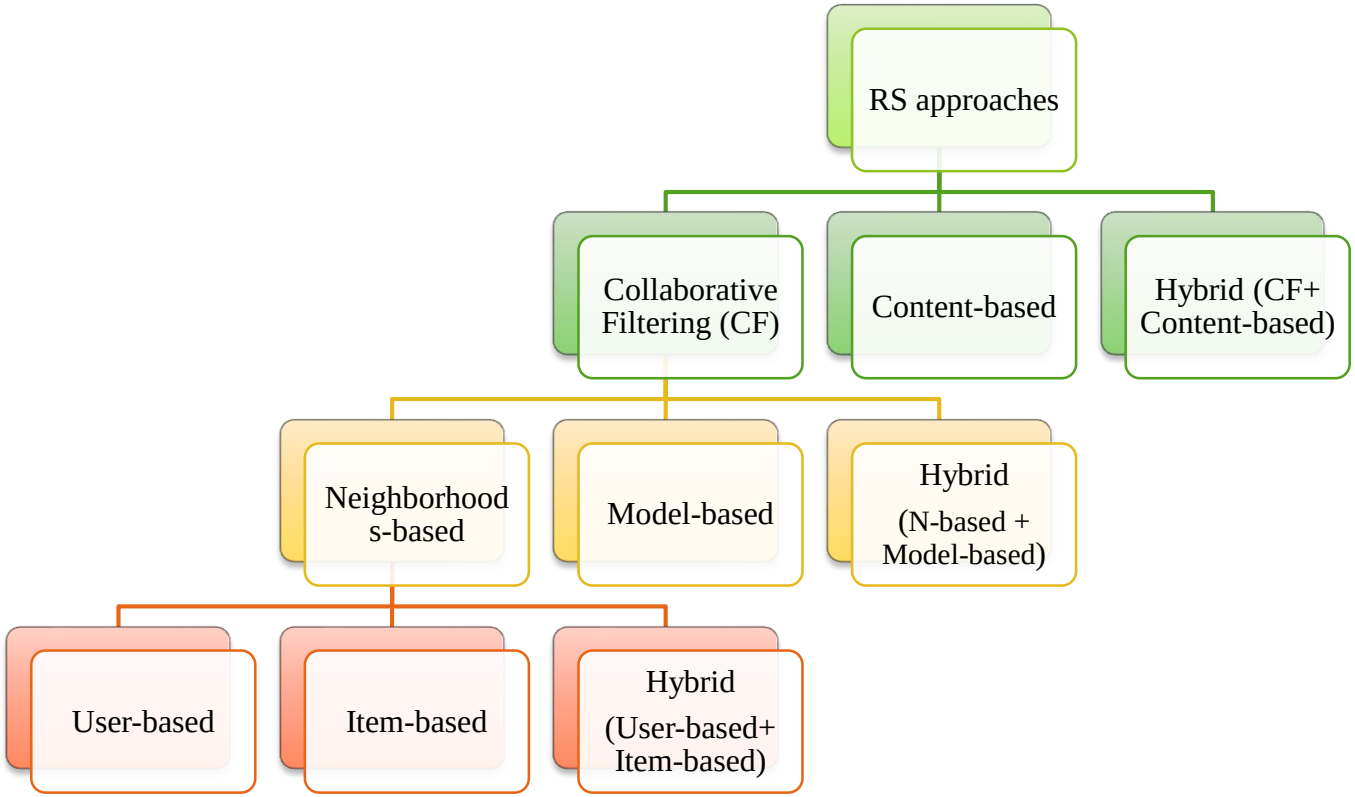
Background

- What is recommender system?
  - Computer-based tool
  - Subclass of information filtering system
  - Techniques that help us

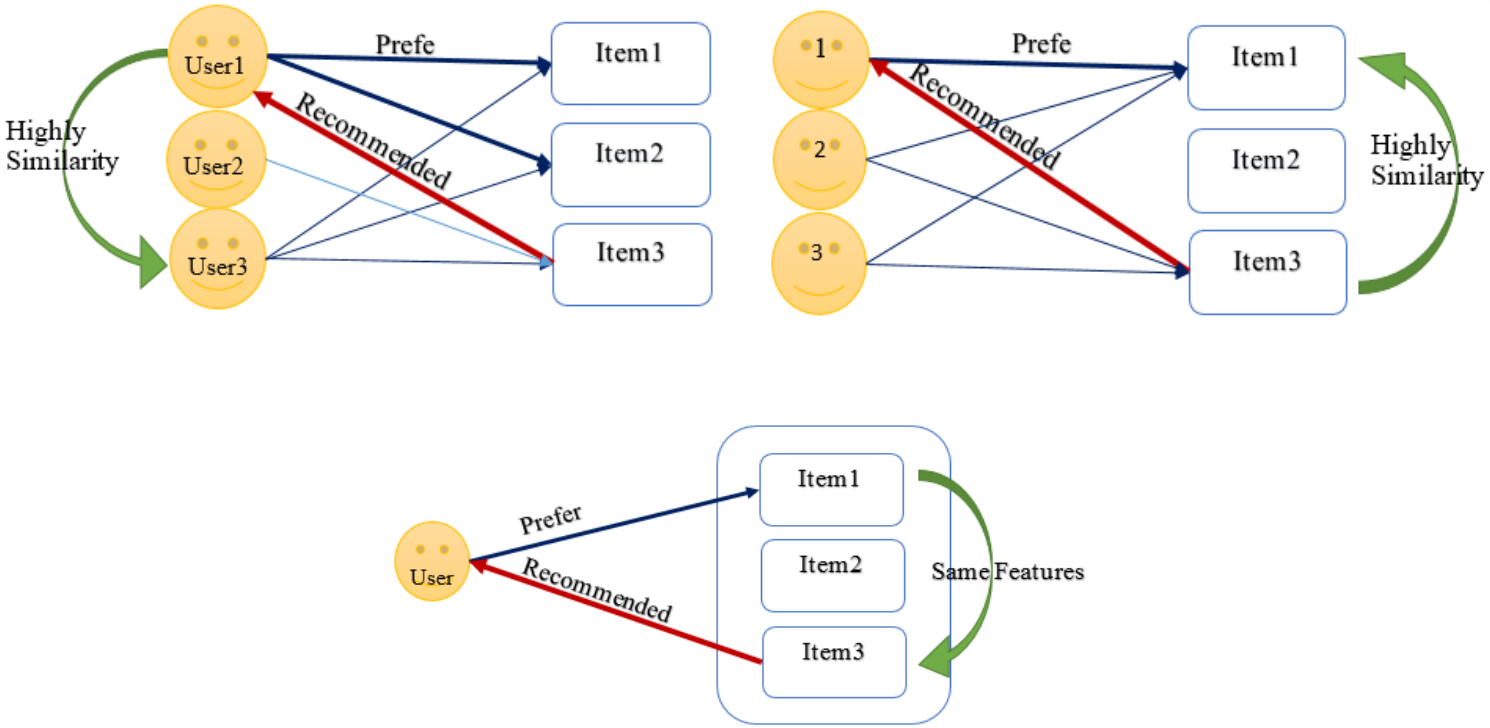
- Why recommender system?
  - Information overload
  - Revenues

- Where are recommender systems used?
  - Everywhere! (Well almost!)

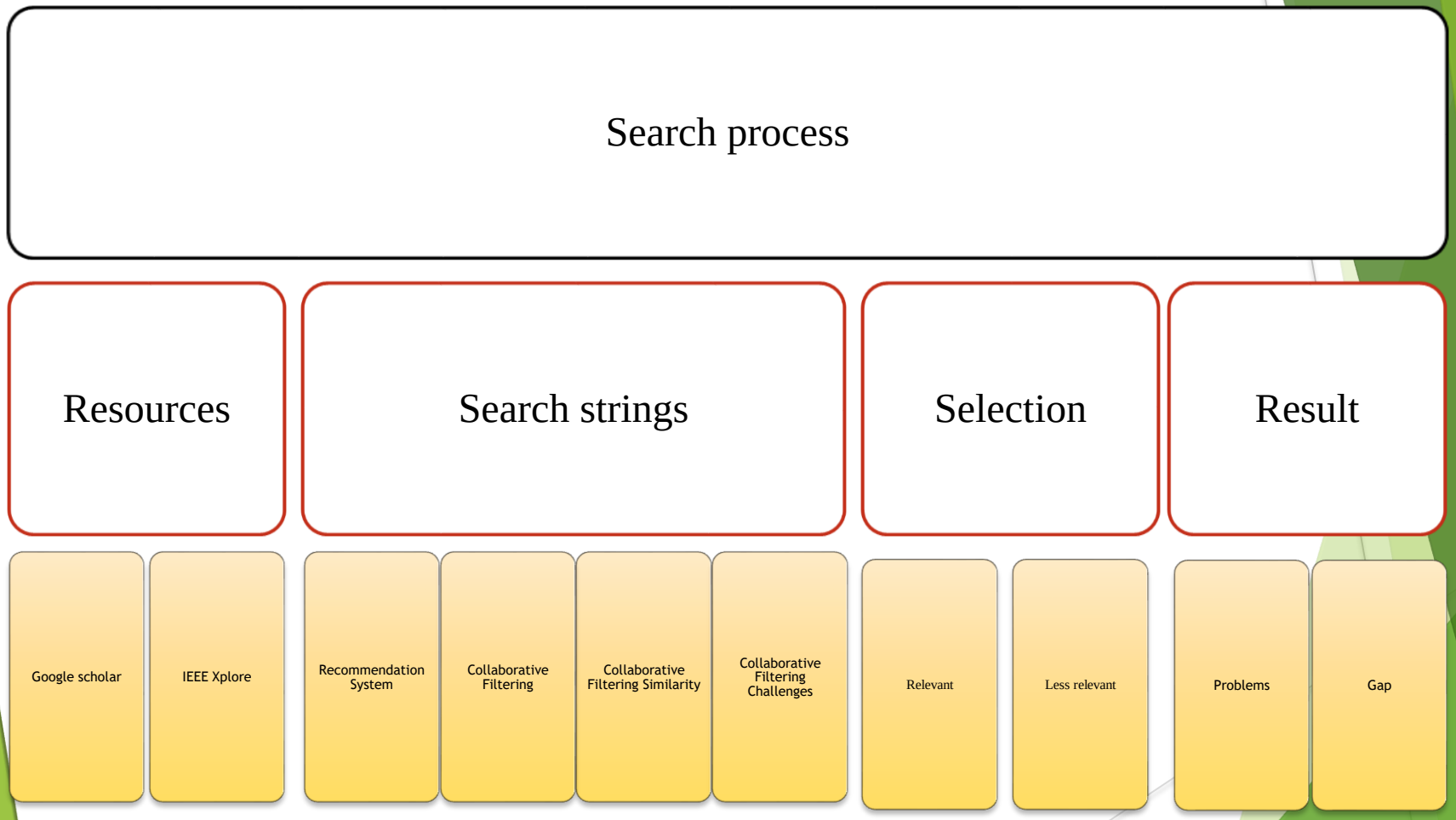
RS Approaches 1/2



RS Approaches 2/2



Literature Review (LR)



LR Finding

Similarity Method	Drawbacks
Pearson Correlation Coefficient (**PCC**) (Resnick et al., 1994)(Sarwar et al., 2001)	A, D, H
Constrained Pearson Correlation Coefficient (**CPCC**)(Shardanand and Maes, 1995)	A, H
Weighted Pearson Correlation Coefficient (**WPCC**)(Herlocker et al., 1999)(Ma et al., 2007)	H
Sigmoid Function Based Pearson Correlation Coefficient (**SPCC**)(Jamali and Ester, 2009)	B, D
Cosine similarity Measure (**COS**) (Balabanović and Shoham, 1997)	A, B,D
Adjusted Cosine Measure (**ACOS**) (Sarwar et al., 2001)	C, D
Jaccard (Koutrika et al., 2009)	F
Mean Squared Difference (**MSD**) (Shardanand and Maes, 1995)	E
PIP (Proximity-Impact-Popularity) (Ahn, 2008)	E, H
Jaccard And MSD (**JMSD**) (Bobadilla et al., 2010)	G
MJD (Mean–Jaccard– Difference) (Bobadilla et al., 2012)	H
PSS, JPSS, URP, NHSM (Liu et al., 2014)	I
Bhattacharyya Coefficient (**BCF**) (Patra et al., 2015)	

Major Drawbacks

A. It suffers from few co-rated item problem .
B. It outputs high similarity despite significant difference in ratings.
C. It cannot compute similarity if the number of users who rated both items is small.
D. It shows low (high) similarity regardless of similar (significant difference in) the ratings.
E. It ignores proportion of common ratings.
F. It does not take absolute value (rating) into account.
G. It suffers from local information and utilization of rating problems.
H. Not consider the global information about the preference of the user behavior.
I. Utilization of ratings.

Problem statement

- The sparsity of data is an issue face CF recommender systems, which is clearly has effect on quality of system. (Jaina et al., 2015, Arekar et al., 2014, Revankar and Haribhakta, 2015, Sharma and Gera, 2013).
- Improving the main mechanisms of CF.
  - Feedback: transform the data rating to a new data which may be more accurate. (Jawaheer et al., 2010, Hu et al., 2008)
  - Formulating the similarity measure. (Huang and Dai, 2015, Cheng et al., 2015, Kai and Peng-yu, 2014, Cai et al., 2014, Zha and Zhai, 2013, Wu and Zheng, 2010, Liu et al., 2014, Choi and Suh, 2013, Polatidis and Georgiadis, 2016, Bobadilla et al., 2012b).
  - Improve prediction method. (Cai et al., 2014, Zhang et al., 2014).

Research Objectives & Scope

1. To investigate the traditional collaborative filtering methods.
2. To propose a new technique for the traditional collaborative filtering method.
3. To implement and evaluate the performance of the proposed technique to ensure the correctness.

Contribution & Significance of Research

Contribution:

- Contribution to the body of knowledge.
- Enhancing CF in Recommender System.

Significance:

- Alleviate information overload
- User usefulness.
- Supplier revenue.

Conclusion

- **Problem statement:**

  Sparsity of data matrix, data type feedback, similarity measure, and predication method

- **Objectives:**

  - To investigate the traditional collaborative filtering methods.
  - To propose a new technique for the traditional collaborative filtering method.
  - To evaluate the proposed technique.

- **Expected results:**

  Will lead to get better result.

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Thank you
Terima Kasih
Q & A