

FACEBOOK FRIEND RECOMMENDATION

BASED ON

Individual Project :

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Introduction

A recommendation system is a subclass of data mining systems that tries to predict the "ratings" or
liking of items by the users, the recommending item is typically selected from the most similar items to the

Collaborative filtering says that, if your past behaviour/preferences were similar to some other users, then your future behaviour may be as well. As a concrete example, suppose that you like John, Paul, and George, and other people like John, Paul, George, and Ringo. Then it stands to reason that you will like Ringo as well, even if you had never previously heard of him. The recommender system does not have to understand anything about what “John”, “Paul”, “George”, and “Ringo” are — they could even be brands of toilet paper, and the algorithm would work identically.

Content-based filtering considers the characteristics of the things you like, and it recommends similar sorts of things. For instance, if you like “Billie Jean”, “Crazy Train”, and “Don't Stop the Music”, then you might like other songs in the key of F- sharp minor, such as Rachmaninoff's “Piano Concerto No. 1”, even if no one else has ever had that particular set of favourite songs before.

Objective

In this project, I am implementing a collaborative filtering recommendation system for suggesting friends to new users. The system uses a matrix of user-item ratings to find similar users and recommend items they have not yet rated. The system is implemented in Python using the NumPy and pandas libraries.

Innovation component in the project

In this project, the main focus is the calculation of the total energy of the system. The total energy is the sum of the kinetic energy and the potential energy. The kinetic energy is calculated using the formula $E_k = \frac{1}{2}mv^2$, where m is the mass and v is the velocity. The potential energy is calculated using the formula $E_p = mgh$, where m is the mass, g is the acceleration due to gravity, and h is the height. The total energy is then calculated as $E_{total} = E_k + E_p$.

Implementation

Hardware Requirements: Any computer with Anaconda installed would work.

Methodology:

The methodology of this projection consists of two core methods of recommendation. The first one is the

Recommend by common friends:

free friend. If your friend's friend then makes Y a bad friend, the best friend person Y is the friend of
free friend. Which you have the largest number of mutual friends. The best friend person Y is the friend of

Recommend by influence:

Consider the following hypothetical situation.

Two of X's friends are Y and Z. Y has only 1 friend (X and one other person). Z has 7 billion friends. Y and Z have friends in common (besides X).

Algorithm steps

1. Two nodes are chosen at random.

2. Their friendship is removed from the graph.

3. Friend recommendations for F1 and F2 are computed.

- Rank of E_1 in EP list of recommended friends is calculated.
- Rank of E_2 in EP list of recommended friends is calculated.
- Average of both ranks computed and is called.
- Rank of E_1 in EP list of recommended friends is calculated.

5. Friendship is put back to the graph.

6. For example, if F_1 and F_2 are the first recommendations for F_1 and F_2 and the first system, the average rank should be small, indicating a good recommendation.

7.

8. Datasets used

9.

10. Data taken from GNA2 (Stanford Network Analysis Project). Think about the 'Factor of kind' and 'Factor of time' made real in the data, and how to deal with a new value of data has been changed by replacing the value of the data with a new value.

11.

12.Results and discussion

14.Recommendations for node 1222:

16.Recommendations by Method 1:

17. [(1516, 87), (1638, 81)], (1746, 88), (993, 86), (1390, 86), (1391, 83), (1714, 83), (1059, 81),

19.Recommendation by Method 2:

20. $((157, 1.507157553651050)), ((188, 1.07459638245822)), ((163, 1.06125883756284)),$

21. Average Rank of Method 1:

22.4.0

23. **Average rank of Method 2:**

24.0

25. I conclude by stating that the method of reconstruction by itself is better and more efficient than any other method, and is possible and is dependent on the influence of the current

27. References

28. <https://courses.cs.washington.edu/courses/cse140/12su/homework/hw4/homework4.html> [2]

30. <https://arxiv.org/abs/2015/10/A-FRIEND-RECOMMENDATION-SYSTEM-FOR-SOCIAL-NETWORKS>

