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DATA.ML.360-2021-2022-1 Recommender Systems
Sequential Group Recommendation

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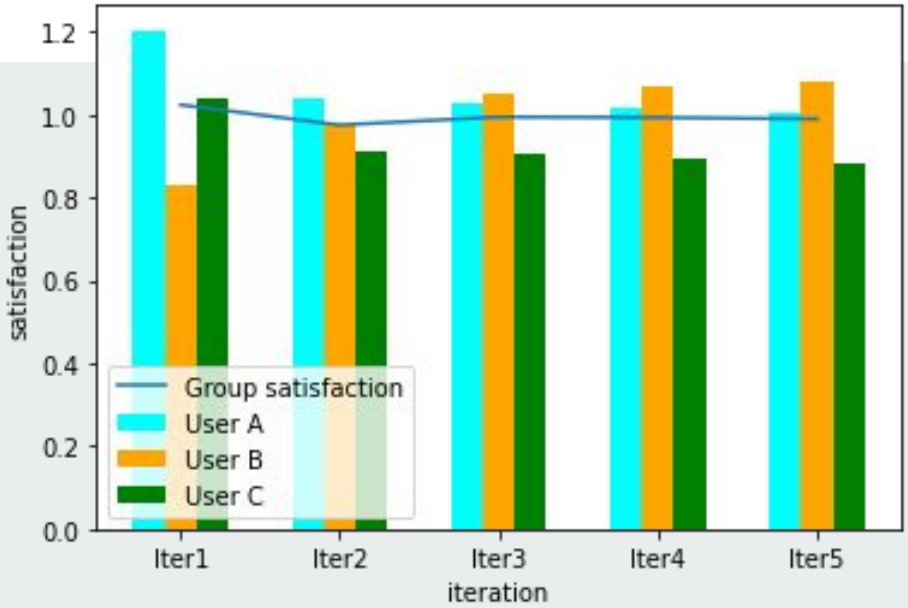
Sequential Group Recommendation

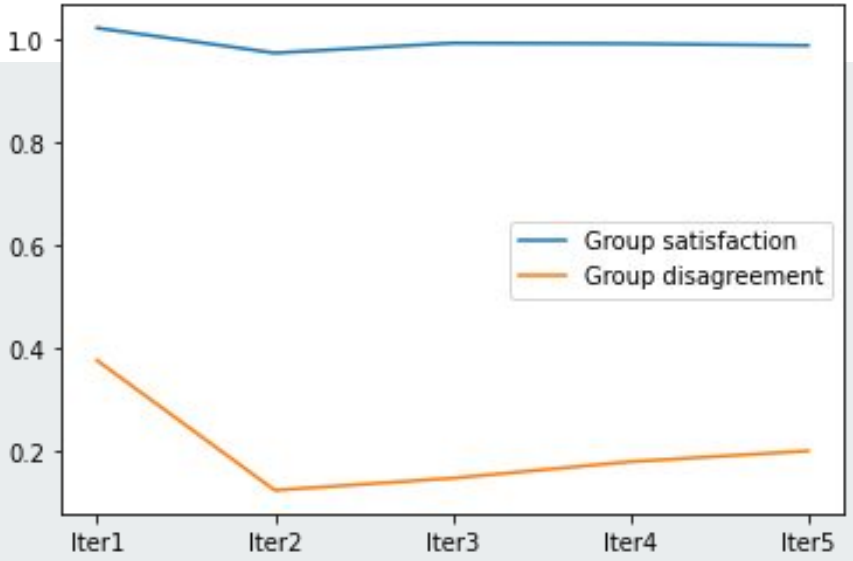
- In sequential group recommendation, the evaluation of group recommendation is taken into consideration for the next iteration. The experiment is based on the method implemented in “Fair Sequential Group Recommendations” paper.
- To balance the two well established aggregation method, this experiment implements **Hybrid Sequential Group Recommendation** technique.
- Variable α is used as a balancing variable between these two aggregation methods.
- I am interested to tweak the methods of obtaining the α value in our experiments
- I keep the same group of users for all our methods. I pick one random user (a) and the other two users who are similar to user A using pearson correlation coefficient ($r > 0.8$)

Calculating α

Method 1:

- Method 1 is using an example that is shown in the paper
- Count each user's satisfaction against group recommendation at iteration J
- Count group disagreement which is the difference between the highest and lowest user's satisfaction at iteration J
- **α is taken from group disagreement**





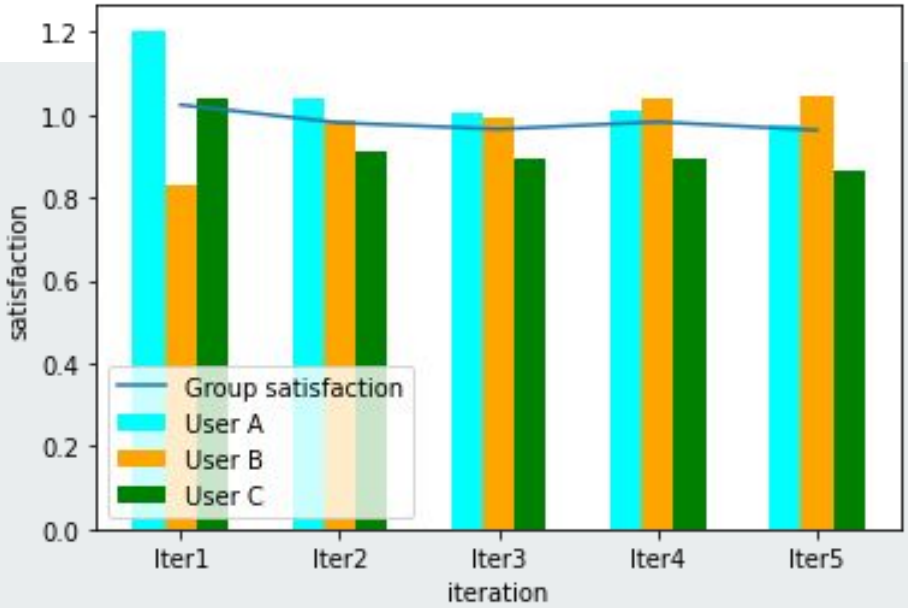
User Satisfaction chart (left) and Group disagreement (right)

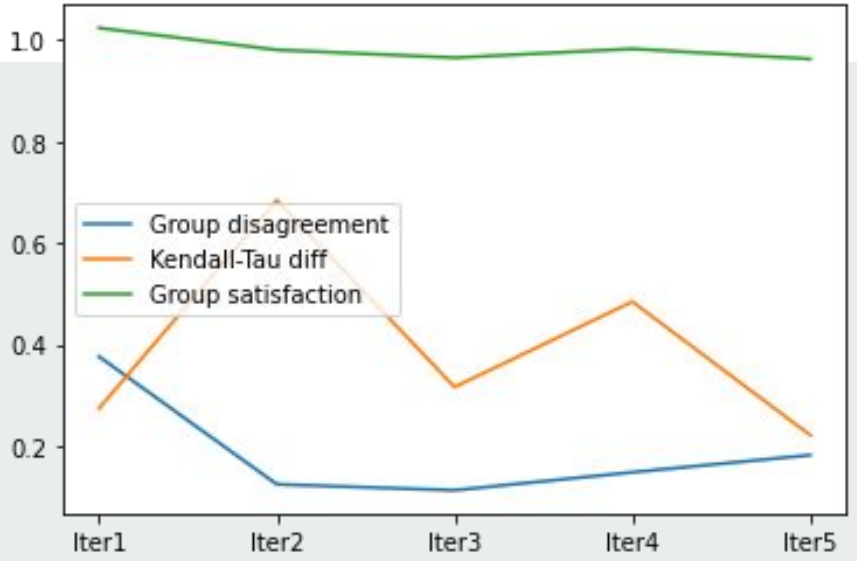
- Overall user satisfaction from 5 iteration 2.9860547962443187
- Average group disagreement is: 0.2045619776384245

Calculating α

Method 2:

- Count each user's satisfaction against group recommendation at iteration J
- Count group disagreement which is the difference between the highest and user's satisfaction
- To generate the α value, I use scipy library to calculate kendall-tau correlation for each user against the group recommendation and **defining α as the difference between the highest and lowest Kendall-Tau coefficient between users at iteration J**





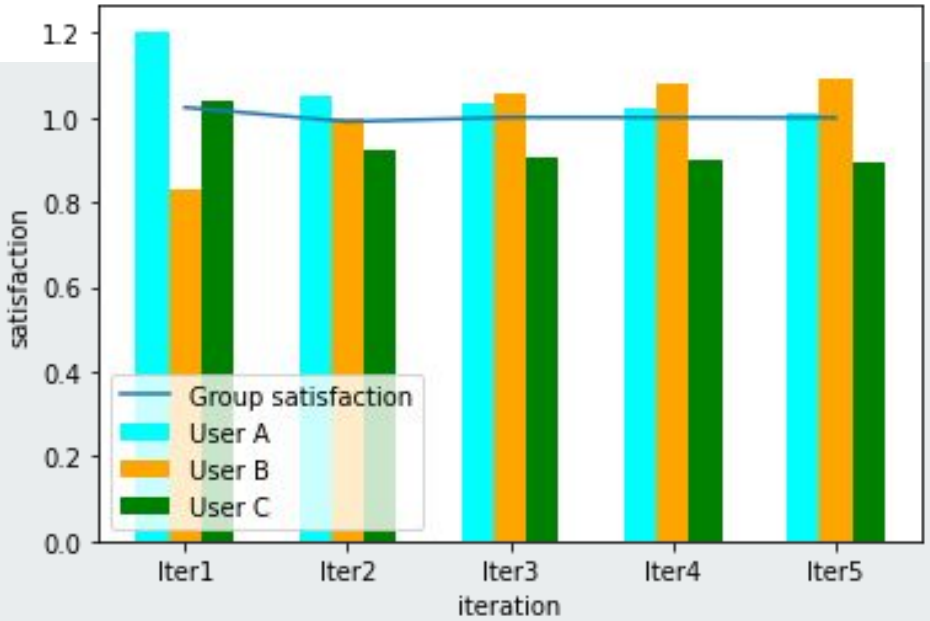
User Satisfaction chart (left) and Group disagreement (right)

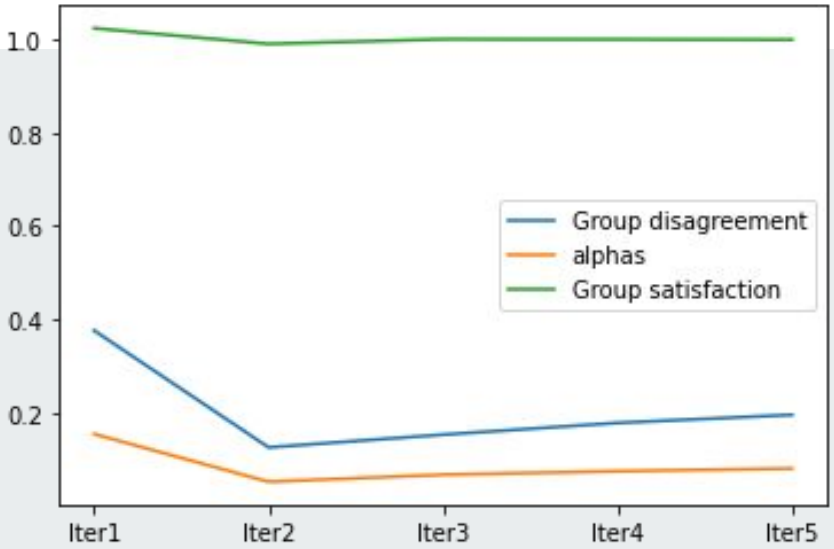
- Overall user satisfaction from 5 iteration 2.9492429555077626
- Average group disagreement is: 0.1882572122550074

Calculating α

Method 3:

- Count each user's satisfaction against group recommendation at iteration J
- Count group disagreement which is the difference between the highest and lowest user's satisfaction
- **Variable α takes value from the standard deviation between user's satisfaction score at iteration J**





User Satisfaction chart (left) and Group disagreement (right)

- Overall user satisfaction from 5 iteration 3.0085601765720322
- Average group disagreement is: 0.2052587024459882

Conclusion

Regarding disagreement, method 2 provides the lowest average group disagreement. The third method gives the highest overall satisfaction compared to two other methods. The difference is not that big and further experiment can be done with a bigger dataset that has more variation of timestamp.

But overall, all methods successfully decrease the Group disagreement compared to the first iteration