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Lab 5 Report

1. Methods and Questions

We implemented the following methods: KNN items, KNN users, adjusted weighted sum, and mean utility.

- Which KNN method would perform better?
- What is the improvement in performance from a method that doesn't take into account the users' opinions (mean utility) and a method that does (adjusted weighted sum)?
- Which method had produced values closest to the actual values (MAE)
- Given a user and a joke which method is the best for classifying if we should recommend the joke (binary recommender)

2. Experiments

- In order to determine the effectiveness of each method, we generated test dataset which was a constant dataset to test each method

3. Results

	method	true_positives	false_positives	true_negatives	false_negatives	precision	recall	f1_score	Accuracy	standard_deviation	mean_absolute_error
0	weighted_sum	10	6	142	42	0.625	0.192	0.294	0.760	4.304	3.530
1	mean_utility	0	0	148	52	0.000	0.000	0.000	47.000	4.874	4.108
2	knn_item	13	4	144	39	0.765	0.250	0.377	0.785	4.062	3.298
3	knn_user	13	6	142	39	0.684	0.250	0.366	0.775	4.149	3.353

4. Conclusion

- Based on the results of running the different methods on the test dataset, the best method for binary recommendation is "knn_item". Since knn_item had the performed the best out of all of the methods based on the different metrics; this could mean that jokes that are similar to the joke being predicted are a good indicator for if the joke in question should be recommended.
- In addition, We found that weighted_mean performs better than mean_utility indicating that it is better to take into account a user's opinions when recommending a joke.
- Finally, the KNN item method produced values closest to the actual values getting the lowest MAE of 3.298