

1. Reading Prediction

Model Description:

The model I used is a simple similarity-based recommender system with the implementation of Jaccard similarity, cosine similarity, and a popularity threshold. I calculated the Jaccard similarity and cosine similarity of the other books that a pair of users had read the same certain book, and also the similarity of the reader of the certain book. I set the popularity threshold as $1/1.4747$ of the most popular books and the similarity threshold of 0.04735 for the sum of Jaccard similarity and cosine similarity.

2. Rating Prediction

Model Description:

I used a simple latent-factor model for the recommender system. I built some utility data structures to store the variables and predict using a global offset, a user offset and an item offset. Then I calculated the MSE of a certain theta for optimization and finally use the gradient descent to obtain the optimized MSE for the best performance of $\lambda (= 0.000014)$.