

Product Recommender for online stores.

Capstone Project

Data Science Career Track, Springboard

Thanks to mentor Julian Jenkins III

With the Surprise library, I used below algorithms

BaselineOnly:Algorithm predicting the baseline estimate for a given user and item.

KNNBaseline:A basic collaborative filtering algorithm taking into account a *baseline* rating.

NMF:A collaborative filtering algorithm based on Non-negative Matrix Factorization.

Co-clustering:A collaborative filtering algorithm based on co-clustering.

SVD:When baselines are not used, this is equivalent to Probabilistic Matrix Factorization, it is as popularized by [Simon Funk](#) during the Netflix Prize

Metrics used are rmse and mae. And here is the result.

	test_rmse	test_mae	fit_time	test_time
Algorithm				
BaselineOnly()	1.291117	1.018094	5.764257	2.878079
SVD()	1.295390	1.018963	52.802452	3.046659
CoClustering()	1.445493	1.115695	83.513256	2.960003

BaselineOnly algorithm has given the best rmse. So I used this model to get the product recommendation based on ratings.

Top 10 best predictions

	reviewerId	productId	ratings	predicted Ratings	itemsCounts_byReviewer	reviwerCounts_forItem	err
107286	AUQKQ2Q0N5N79	B005DB6NG6	3.0	2.999966	1	27	0.000034
277341	A1JFEP3BI48Q33	B0094Z6N9Y	3.0	3.000041	0	176	0.000041
242103	A2AKFOQKKC1M2G	B0094Z6N9Y	3.0	3.000041	0	176	0.000041
307506	A1WQ0YSLJ06KFT	B0094Z6N9Y	3.0	3.000041	0	176	0.000041
202183	AOAVQTTWYP8C0	B0094Z6N9Y	3.0	3.000041	0	176	0.000041
40597	A2TQCR6GN8XSP6	B0094Z6N9Y	3.0	3.000041	0	176	0.000041
302422	A1CKWE4BW40LLG	B0094Z6N9Y	3.0	3.000041	0	176	0.000041
175043	AC5GLGVJXDEFV	B000IF51UQ	4.0	4.000056	2	512	0.000056
9586	AMIWD0PA1H1YB	B000HGDMF8	4.0	4.000077	5	26	0.000077
66049	A2SZZB6Y5X9T8M	B0028E1E2Y	4.0	4.000124	1	41	0.000124

The above are the top 10 best Predictions. The product 'B000HGDMF8','B000IF51UQ' and 'B0028E1E2Y' are rated best with ratings 4.

Top 10 worst predictions

	reviewerId	productId	ratings	predicted Ratings	itemsCounts_byReviewer	reviwerCounts_forItem	err
119632	A195EZSQDW3E21	B004J3V90Y	1.0	4.870298	19	1221	3.870298
8116	A227IMN9BB71BO	B0019EHU8G	1.0	4.880704	2	9265	3.880704
299570	AGR1V15L6FLMA	B007WTAJTO	1.0	4.894745	16	10683	3.894745
293699	A2QIX73WKLLDRV	B004Z4FBE2	1.0	4.902412	3	1154	3.902412
167309	ARXYNHFIXEYO2	B00BEW8MVC	1.0	4.909606	3	172	3.909606
333029	A1D9V11QUHXENQ	B004LSNF04	1.0	4.926395	6	1448	3.926395
241191	AC8YM4BB5LVOM	B0045JCFLY	1.0	4.954445	6	109	3.954445
168002	A6KL17KKN0A5L	B000JE7GPY	1.0	4.970054	11	1462	3.970054
311480	A3S3R88HA0HZG3	B008Q3CCZE	1.0	4.974388	7	152	3.974388
64010	A1Z16630QMH8Q6	B000E8BGCE	1.0	5.058453	13	164	4.058453

Cross checking with productId B007WTAJTO, this has predicted rating 4.89 and 10k reviewers rated this.

