

Improving Book Recommendations

By Unshackled LLC

Unshackled LLC Team



Brendan Bruno

Education:	Cornell University 2014
Previous Employment:	Nielsen Ratings Kings and Generals (YouTube Channel)
Technical Skills:	Python, Microsoft Office, Bloomberg Terminal

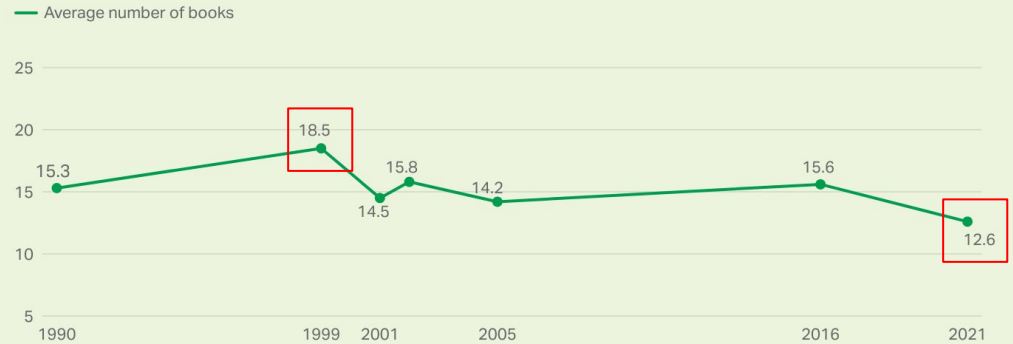
The Challenges

- Americans Reading Less Books
- Declining Reading Scores



Americans Reading Fewer Books, on Average

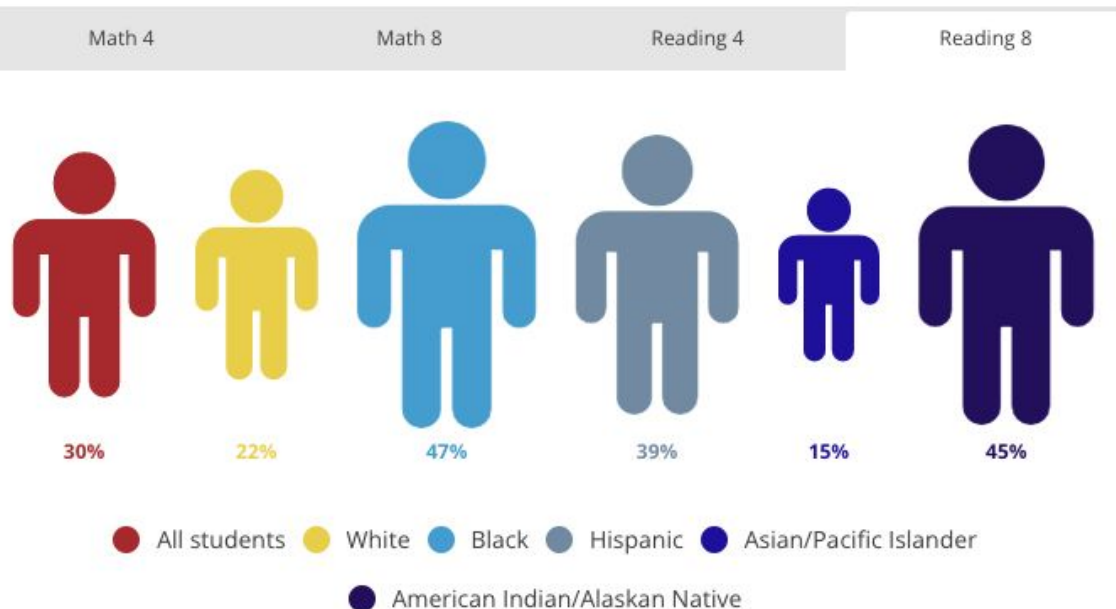
During the past year, about how many books did you read, either all or part of the way through?



GALLUP®

The Challenges (Cont.)

How Many Students Don't Meet Basic Benchmarks?



SOURCE: National Assessment of Educational Progress (NAEP) 2022 School Survey, Institute of Education Sciences

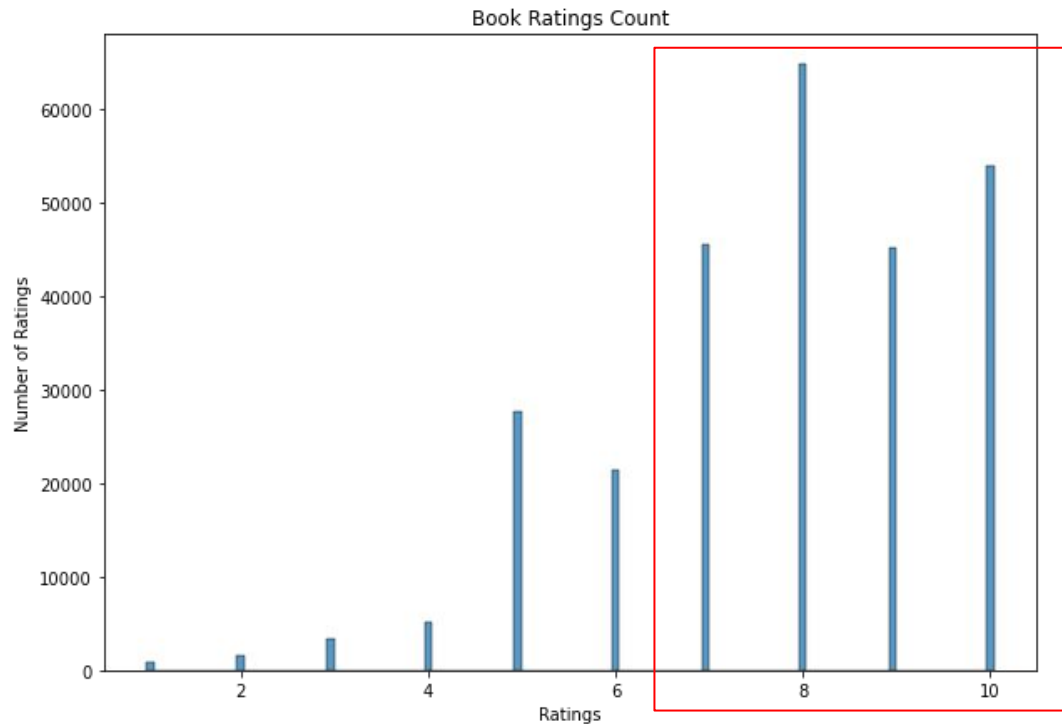
Our Solution

- Improved Recommendations!
- Newfound Love for Reading!
- A “Tik-Tok” for Books!



Data Exploration: Size

- Data Source: Kaggle
- 40,500+ Users
- 270,000 Ratings
- Majority of Ratings > 6



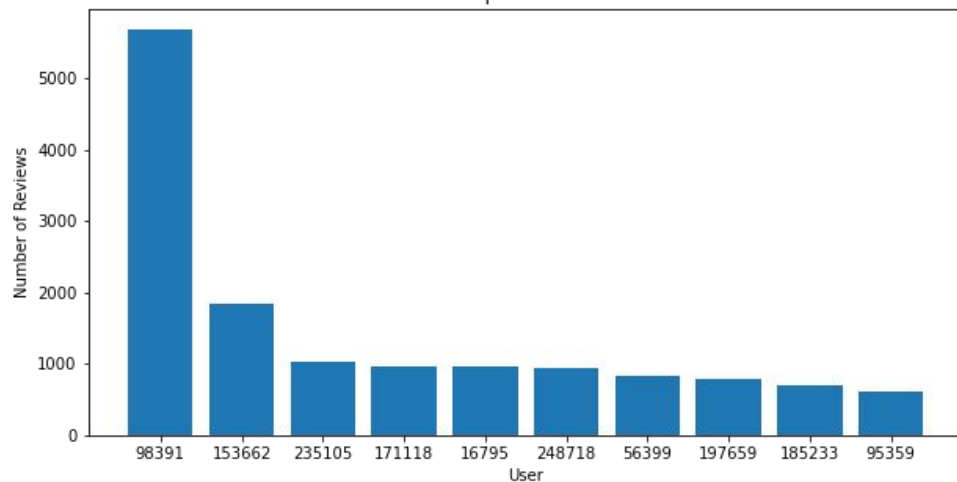
Data Exploration: Super Users



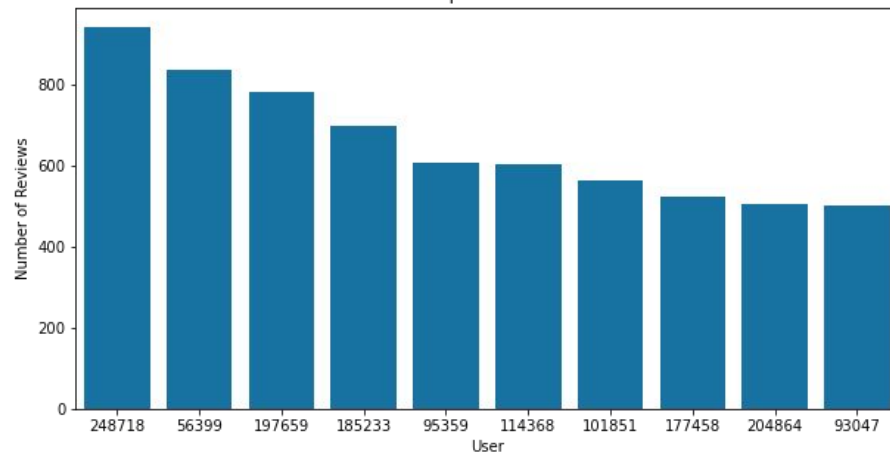
Before

After

Top 10 Users



Top 10 Users



Best Measurements

- SVD Collaborative Filtering Model
- Root Mean Squared Error RMSE = 1.68
- Sample Size, Processing, and Run Time

	test_rmse	fit_time	test_time
Algorithm			
SVD	1.678101	2.599840	0.153930
BaselineOnly	1.681681	0.257920	0.107569
KNNBaseline	1.685746	37.508069	0.907801
SVDpp	1.691896	4.751643	0.268334
KNNBasic	1.816260	38.645313	0.776364
CoClustering	1.916306	3.751720	0.090993
KNNWithMeans	1.917621	42.936576	0.566995
KNNWithZScore	1.923453	39.927913	0.652976
SlopeOne	1.926064	7.248795	0.162993
NMF	2.354061	5.463283	0.107131
NormalPredictor	2.453634	0.059252	0.109642

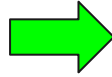
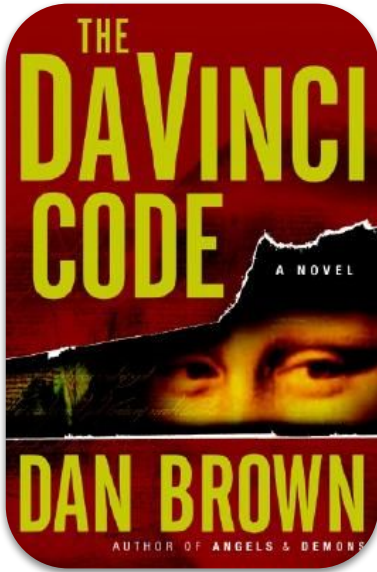
Real World Example

Meet Samantha!

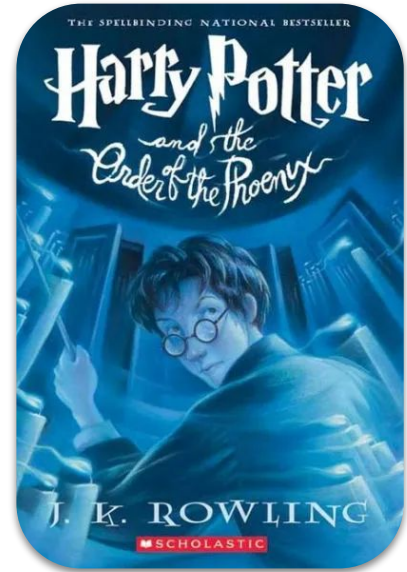
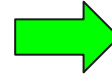
- AKA User 777
- She's in 8th Grade!
- She Wants to Read More



Samantha's Story



9 + Additional
Book Choices &
Ratings from
Samantha

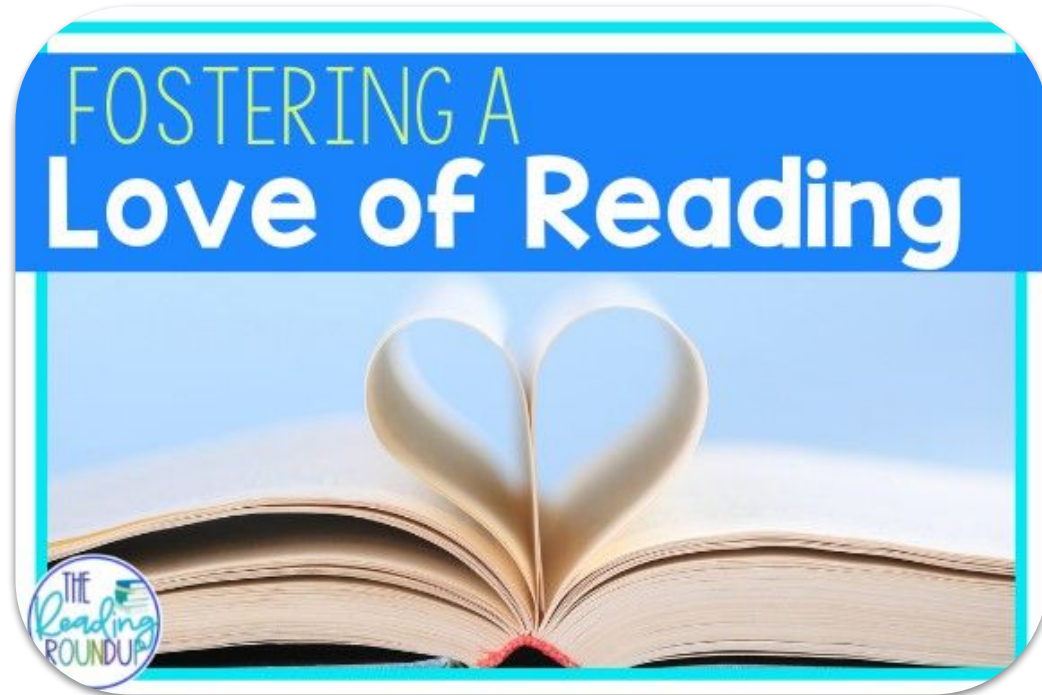


Our Predicted Rating: 10
Samantha's Rating: 9

Predicted - Actual =
1.68 RMSE

Conclusion

- A Recommendation System for Literary Encouragement
- Use an SVD Collaborative Model



Future Exploration

- Accuracy Variations Based on Sample Sizes
- User - to - User Recommendations Based on Similar Book Tastes
- Expansion into Non-Literary Media
- Sample App for Smartphones
- User Reward System



Contact Details



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Questions?

(Please use Q&A chat box)



Thank You!

Appendix



- <https://news.gallup.com/poll/388541/americans-reading-fewer-books-past.aspx>
- <https://www.edweek.org/leadership/two-decades-of-progress-nearly-gone-national-math-reading-scores-hit-historic-lows/2022/10#:~:text=Nationwide%2C%20the%20average%20reading%20score,10%20percent%20of%204th%20graders>
- https://www.voyagersopris.com/images/default-source/default-album/reading-intervention17c3119c03e64427da3423a41d0df49c2.png?sfvrsn=9248741b_2
- https://scontent-lga3-1.xx.fbcdn.net/v/t1.6435-9/52598999_10157854492548132_8654424835914465280_n.jpg?stp=cp0_dst-jpg_e15_p640x640_q65&nc_cat=105&ccb=1-7&nc_sid=8024bb&nc_ohc=x9fLBKNLVTAAX-zPBFa&nc_ht=scontent-lga3-1.xx&oh=00_AfBM6D4E5FlIJ3y70WEk7KbecJMoCoWyYE1Hdj_F0hlUcg&oe=639DCB2B
- https://prodimage.images-bn.com/lf?set=key%5Bresolve.pixelRatio%5D,value%5B1%5D&set=key%5Bresolve.width%5D,value%5B600%5D&set=key%5Bresolve.height%5D,value%5B10000%5D&set=key%5Bresolve.imageFit%5D,value%5Bcontainerwidth%5D&set=key%5Bresolve.allowImageUpscaling%5D,value%5B0%5D&set=key%5Bresolve.format%5D,value%5Bwebp%5D&source=url%5Bhttps://prodimage.images-bn.com/pimages/9780439358071_p0_v4_s600x595.jpg%5D&scale=options%5Blimit%5D,size%5B600x10000%5D&sink=format%5Bwebp%5D

Appendix (Cont.)



- <https://images-us.bookshop.org/ingram/9780385504201.jpg?height=500&v=v2>
- <https://thereadingroundup.com/wp-content/uploads/2022/01/fostering-a-love-of-reading-for-your-students-header-the-reading-roundup.jpeg>
- https://youthtoday.org/wp-content/uploads/sites/13/2018/12/OP-ED_Kansas-City-Program-Shows-How-Collaboration-Can-Boost-Summer-Learning5.jpg
- <https://www.kaggle.com/datasets/arashnic/book-recommendation-dataset?select=>