

Beer Recommendation Engine Project Report

Justin Bates
March 1st, 2021

Hello!



My name is Justin Bates

I am a Data Scientist for ProductOps

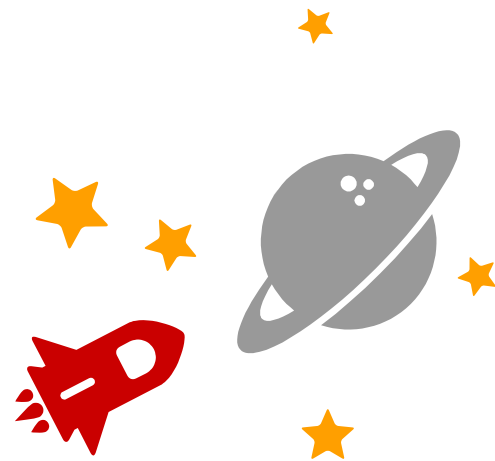
I am here to show you my work on a
beer recommendation engine

Big concept

What is a recommendation system?

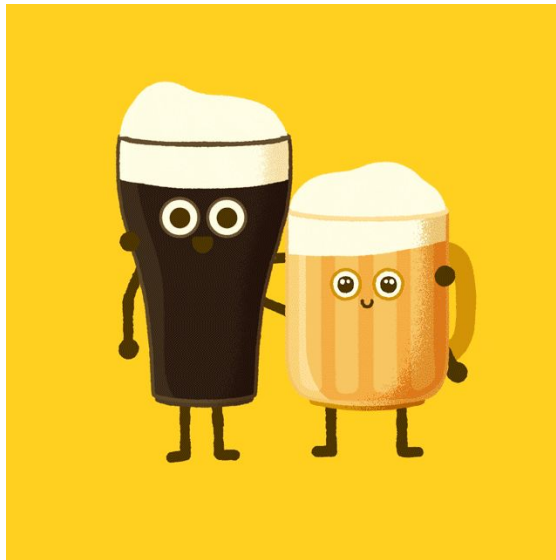
It's a system that recommends things.

- Products
- Services
- Anything really.



“

In this case we want to recommend...



Now Lets Begin

Web Scrapping



BeautifulSoup

Beeradvocate[®]



 **35,552**

That's a lot of user.

Users

 **10,465**

And a lot of beer.

Beers

 **4,026,233**

Sooooo many ratings.

Ratings

EDA



review_count
32,505,546

30.44%

rating_count
106,782,459

Average Beer Rating

3.7934

Beer Count

11,267

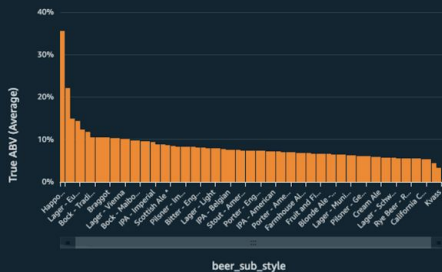
Brewery Count

2,243

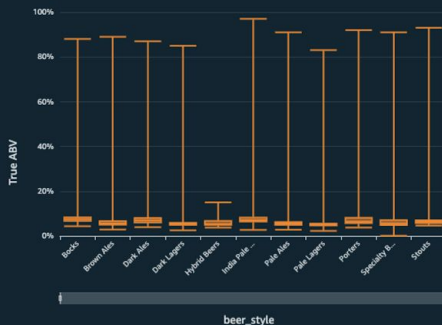
User Count

29,859

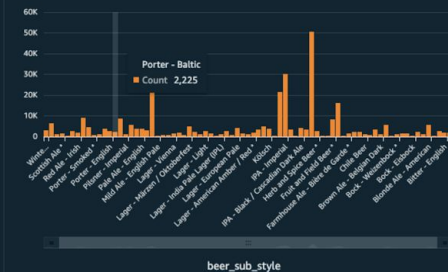
Average of ABV by Beer Styles



Average of ABV by Beer Styles



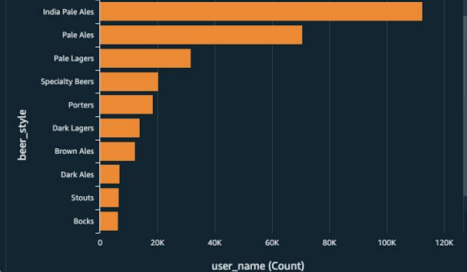
Beer Count by Beer Styles



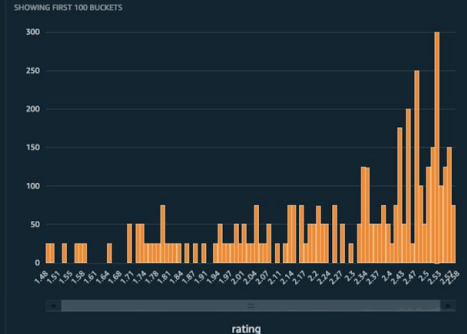
Rating by Beer Styles



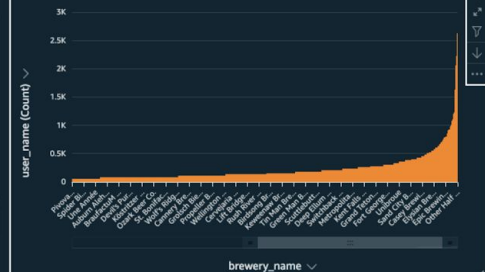
User Count by Beer Styles



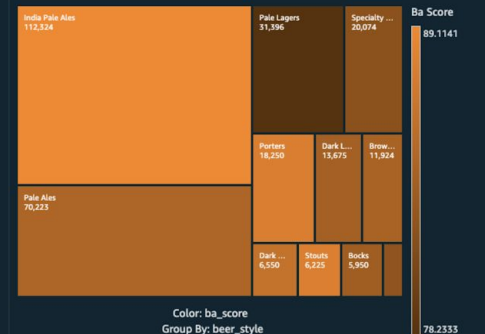
Average of ABV by Beer Styles



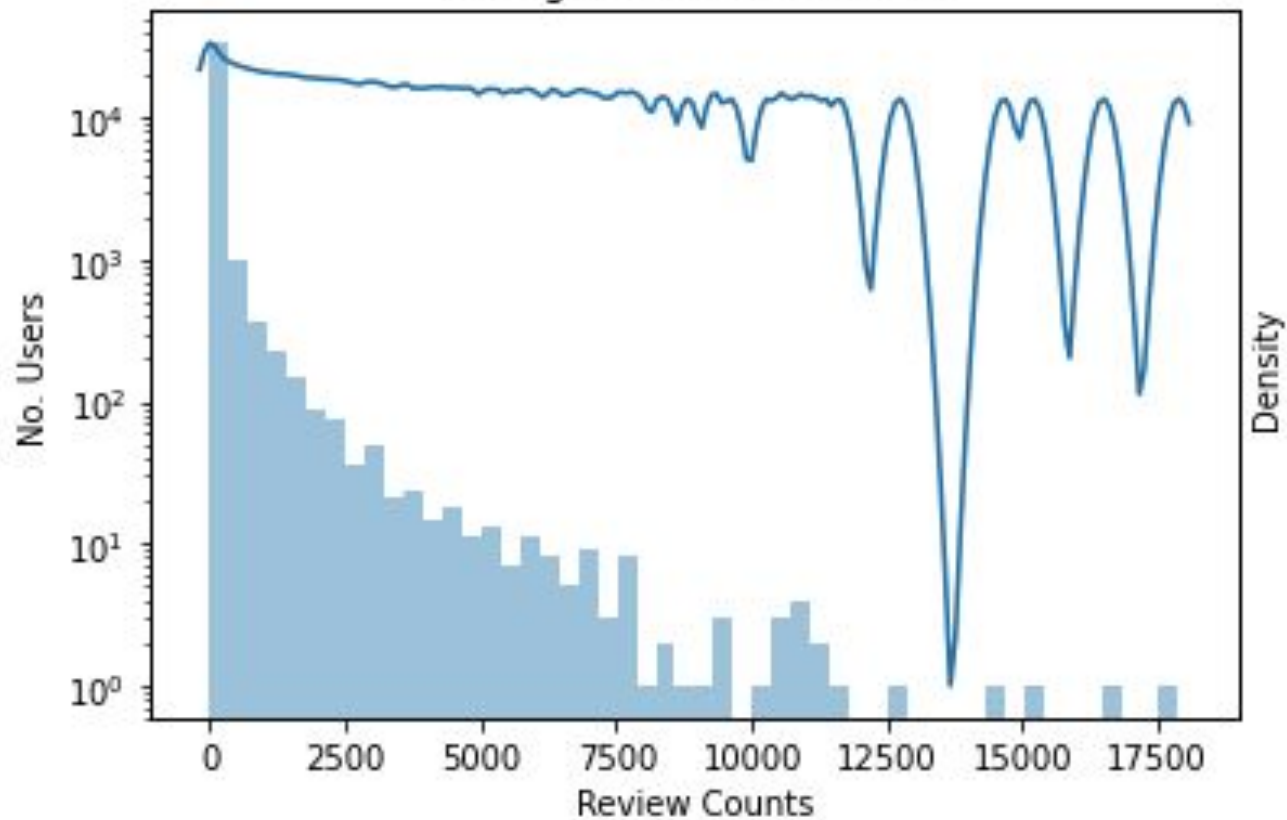
User Count by Brewery

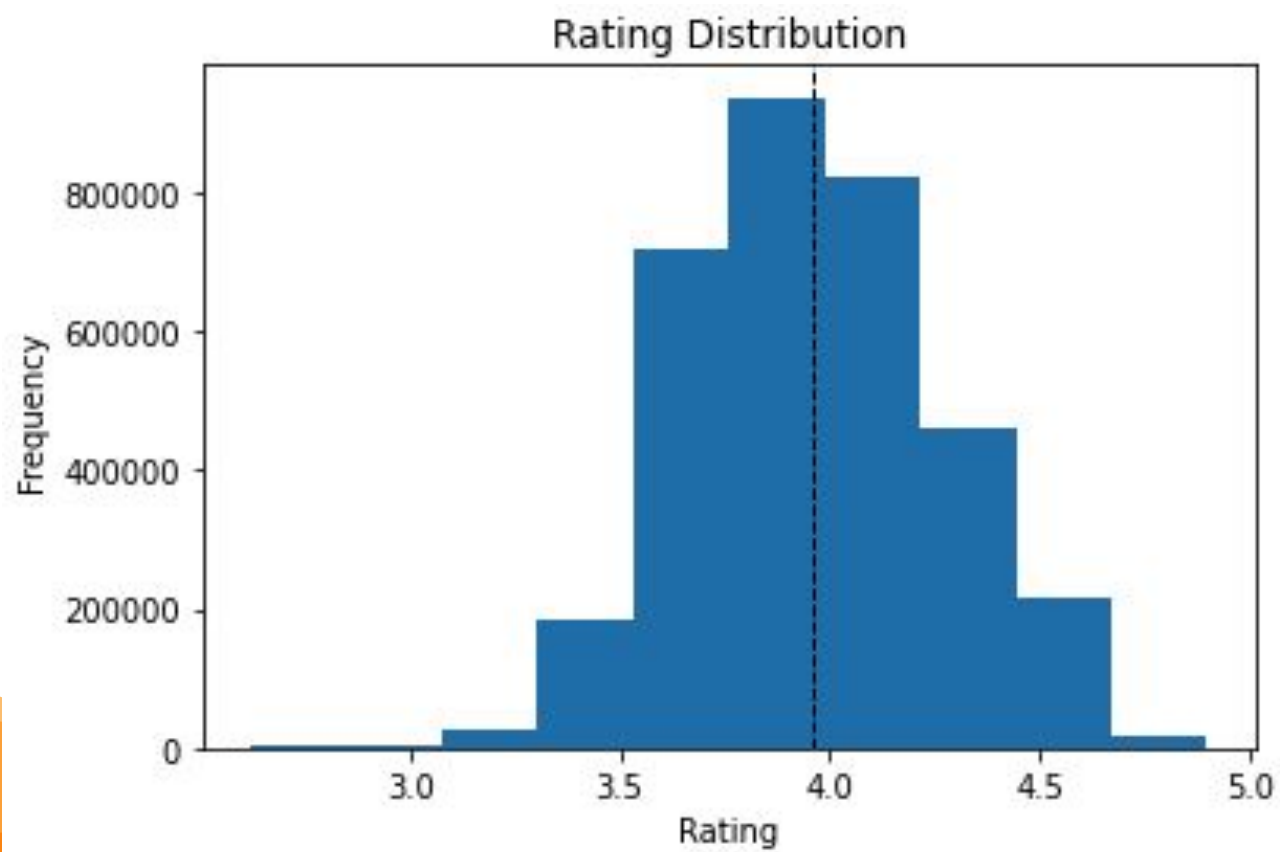


User Count by Brewery



Histogram of User Counts







surprise

Models - Via Surprise

KNN

Nearest Neighbors Approach

- A basic collaborative filtering algorithm taking into account a baseline rating.

SVD

Latent Factors Approach

- When baselines are not used, this is equivalent to Probabilistic Matrix Factorization.

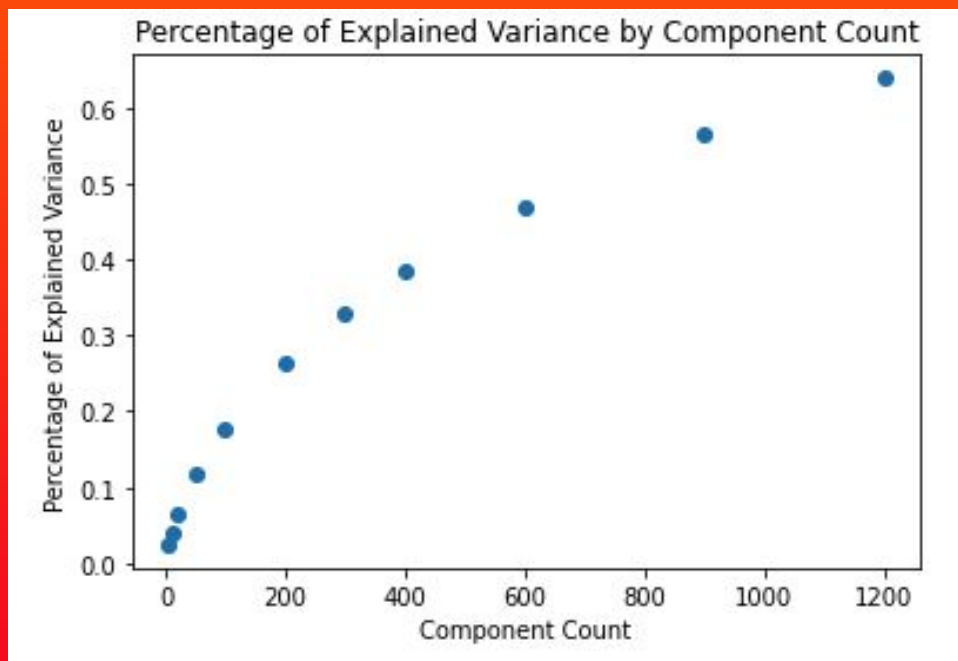
Models - KNN

5-Fold Cross Validation

	Fold 1	Fold 2	Fold 3	Fold 4	Fold 5	Mean	Std
RMSE	0.1319	0.1321	0.1314	0.1316	0.1315	0.1317	0.0003
MAE	0.0548	0.0549	0.0546	0.0547	0.0547	0.0547	0.0001

Models - SVD

Explained Variance



Models

Similarities

```
1 get_top_n('Samuel Adams Boston Lager', 40)
```

```
['Nugget Nectar',  
'The Abyss',  
'Three Philosophers',  
'Punkin Ale',  
'Traditional Lager',  
"Dragon's Milk",  
'Bomb!',  
'Orval Trappist Ale',  
'Samuel Adams Summer Ale',  
"#9",  
'Ayinger Celebrator',  
'Péché Mortel',  
'Maudite',  
'Mirror Pond Pale Ale',  
'Leffe Blonde',  
'Kellerweis',  
'Raging Bitch',  
'Hop Head Red Ale',  
'Vitus',  
'Old Stock Ale',  
'Banana Bread Beer',  
'Troegenator',  
'The Sixth Glass Quadrupel Ale',  
'Best Brown Ale',  
'Hopback Amber Ale',  
'Flipside Red IPA',  
'Warlock',  
'Tap 9 Aventinus Eisbock',  
'Gonzo',  
'East IPA',  
'London Porter',  
'Red Chair NWPA',  
'Pannepot',  
'Blushing Monk',  
'La Trappe Quadrupel (Koningshoeven / Dominus)',  
'Skull Splitter',  
'Ayinger Bräuweisse',  
'Raspberry Tart',  
'Chainbreaker White IPA',  
'India Ale']
```

```
1 svd900_top_n('Samuel Adams Boston Lager', 40)
```

```
['Fat Tire Amber Ale',  
'Negra Modelo',  
'Samuel Adams Oktoberfest',  
'Hoegaarden Original White Ale',  
'Goose IPA',  
'Anchor Porter',  
'Traditional Lager',  
'Dead Guy Ale',  
'Guinness Foreign Extra Stout',  
'Kalamazoo Stout',  
'Anchor Steam Beer',  
'Snowdrift Vanilla Porter',  
'Samuel Adams Cold Snap',  
'Samuel Adams Winter Lager',  
'Born Yesterday',  
'Pilsner Urquell',  
'Hofbräu Original',  
'Blue',  
'Baltimore Blonde',  
'Edmund Fitzgerald',  
'Ten FIDY',  
'Bigfoot',  
'Solid Gold',  
'Hazelnut Brown Nectar',  
'Smithwick's Imported Premium Irish Ale',  
'Sublimely Self-Righteous Black IPA',  
'Midnight Lager',  
'Boddingtons Pub Ale',  
"Dragon's Milk",  
'Erdinger Weissbier (Hefe-Weizen)',  
'Xocoveza',  
'Blue Moon Harvest Pumpkin Wheat',  
'Samuel Adams Summer Ale',  
'Taddy Porter',  
'Black Butte Porter',  
'Samuel Adams Alpine Lager',  
'Hefe-Weissbier Naturtrüb',  
'Dirty Bastard',  
'Grolsch Premium Lager',  
'Prima Pils']
```


Questions

