Capstone Project-3

Product Recommendation Engine

Building Product Recommendation Model

- Exploring Dataset
- Exploratory Data Analysis and Handling Null values
- Feature Engineering
- Model Building and Finding The Best Model
- Recommend Products based on the Best Model.

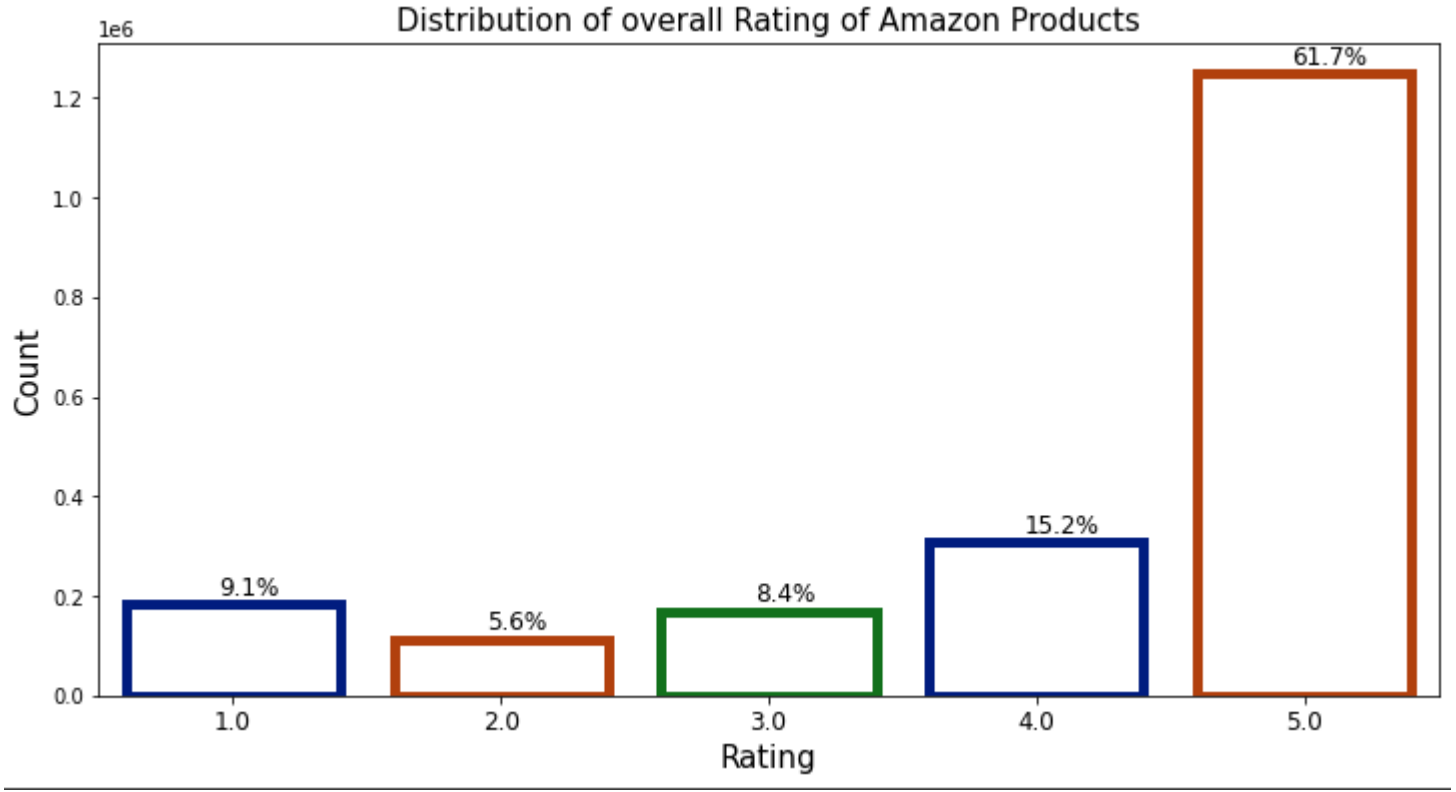
Brief Description of Dataset

- Dataset related to over 2 Million customer reviews and ratings of Beauty related products sold on amazon website.
- Dataset Contains:
  - ❖ unique UserId (Customer Identification),
  - ❖ The product ASIN (Amazon's unique product identification code for each product),
  - ❖ Ratings (ranging from 1-5 based on customer satisfaction) and
  - ❖ Timestamp of the rating (in UNIX time)

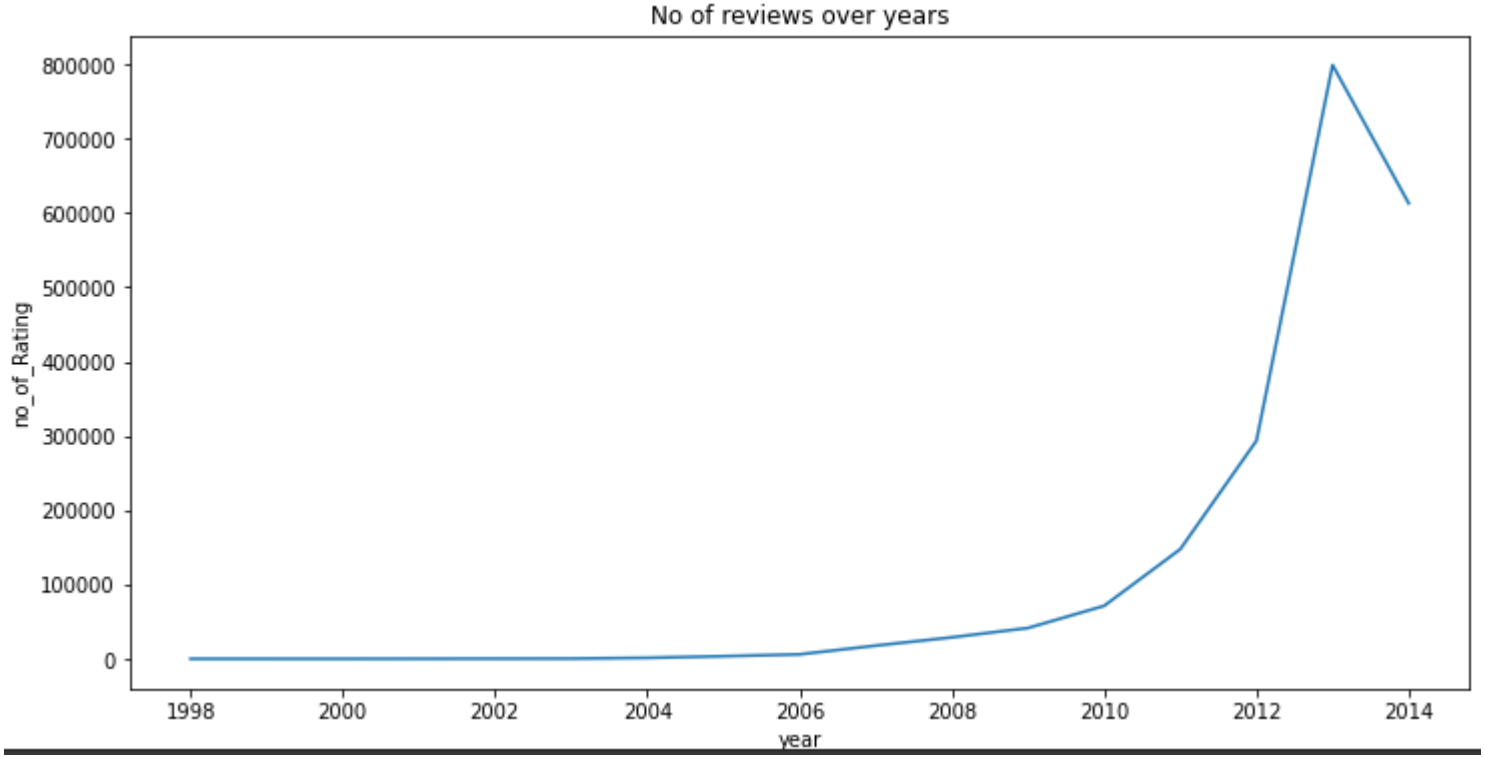
Exploratory Data Analysis

- Dataset contains 2023070 Records and 4 Variables
- Dataset doesn’t contain any null values
- Minimum rating is 1 while the Maximum rating is 5.
- Only 25% of the dataset falls between 1 to 4 rating
- 75% of the dataset is in the Range 4 to 5 rating
- Total number of Unique Users are 1210271
- Number of Unique Products are 249274

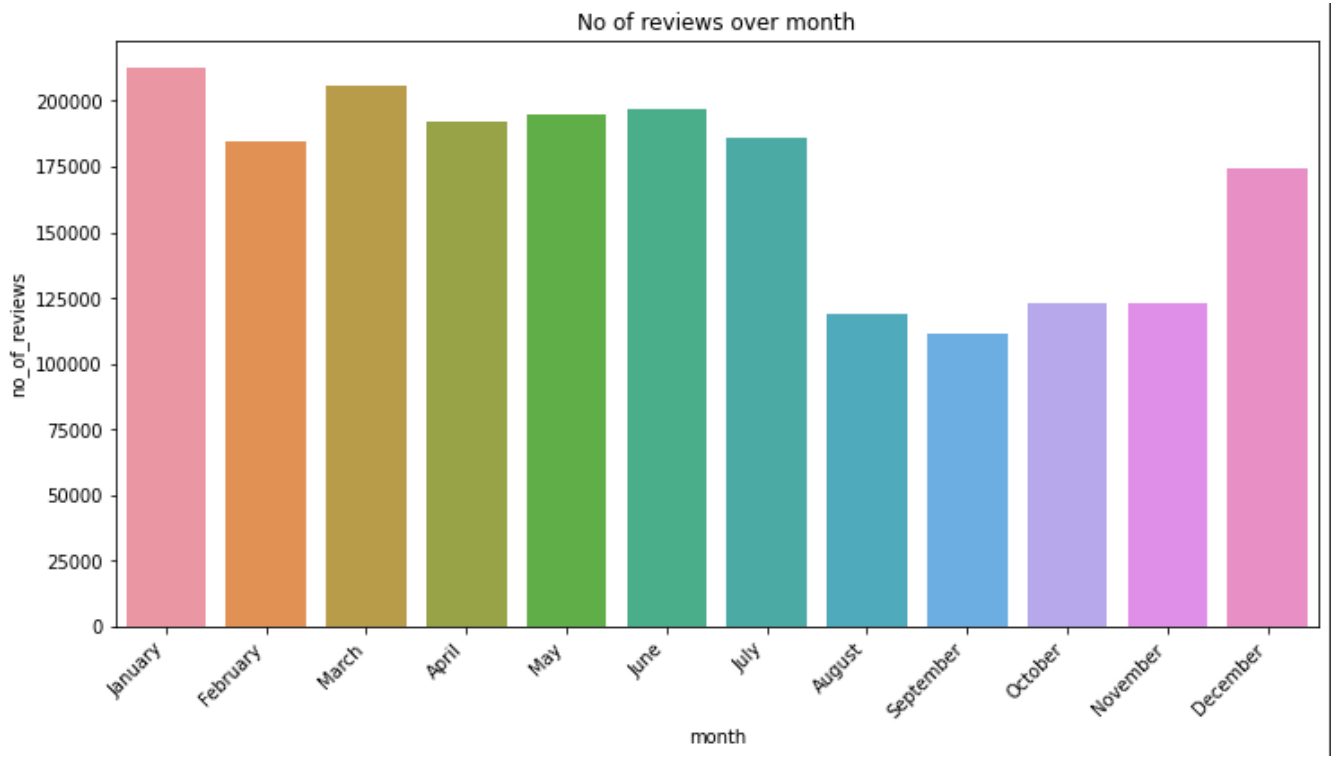
Rating of Products



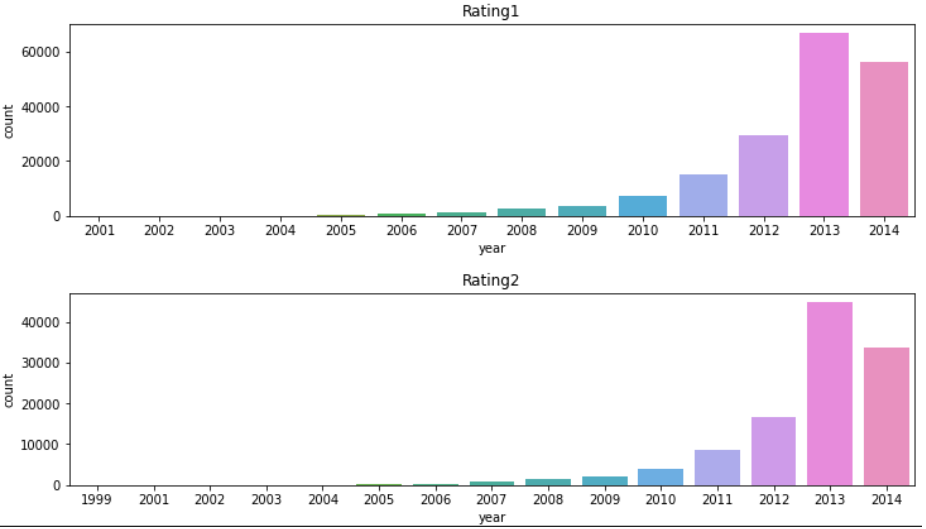
Review Over Year

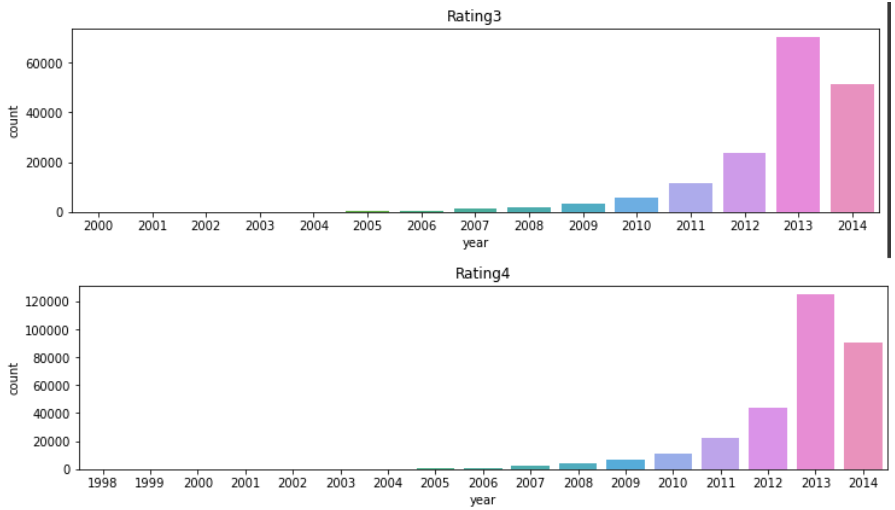


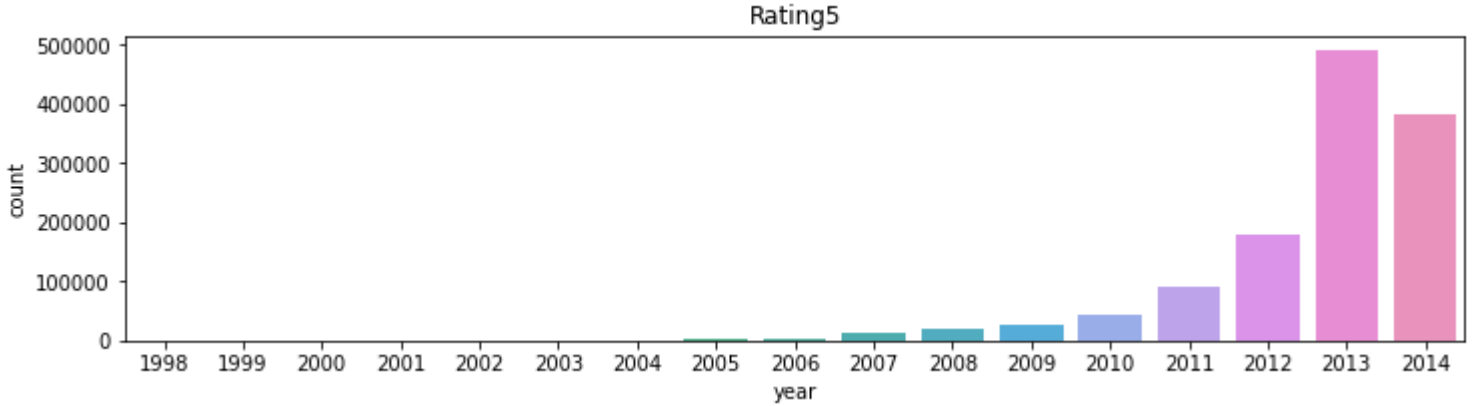
Review over Month



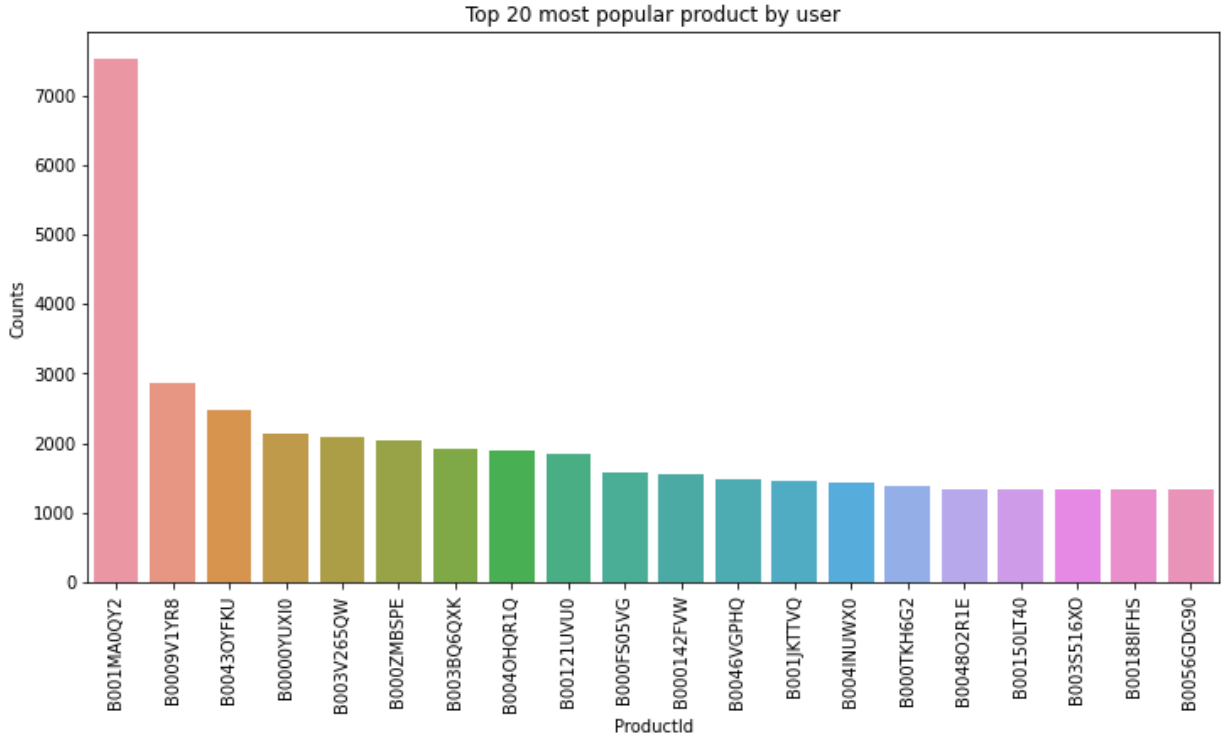
Ratings over Years



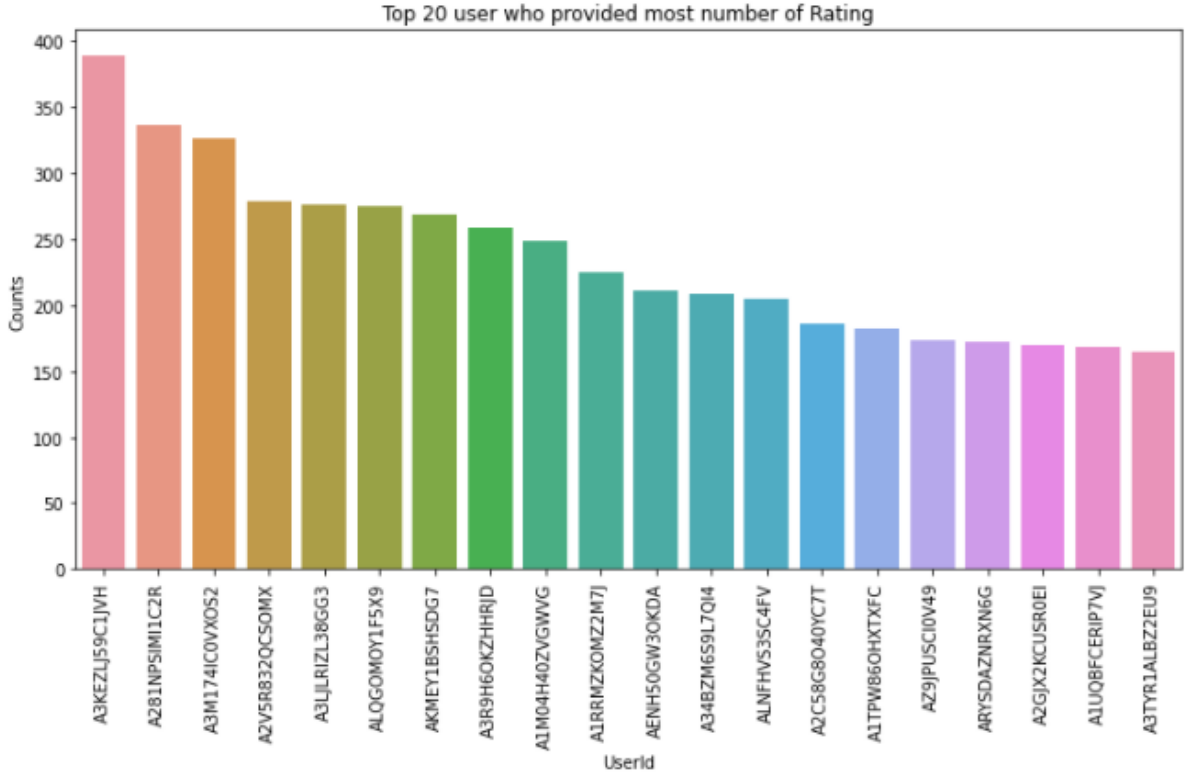




Popular Product By User



Top Customers With Most Number of Rating



Popularity Recommended Model

	UserId	ProductId	true_ratings	predicted_ratings
0	AXRMB1697C1MY	B0078DXKLI	5.0	3.562500
1	A43SU2MFB7LX8	B0078DXKLI	4.0	3.562500
2	ABFUIZW6PAJNK	B002K8W1UC	5.0	4.113636
3	A357E2DE2FBLS9	B002K8W1UC	5.0	4.113636
4	A3MQEP2Z1VVQB9	B002K8W1UC	3.0	4.113636

- RMSE score for popularity Recommended Model is 1.2521

Collaborative Filtering Model

- Trained Two Models KnnwithMeans and SVD

Collaborative Filtering Model

KnnwithMeans

- RMSE score for KnnwithMeans is 1.1466

SVD

- RMSE Score for SVD is 1.1032
- Find the best parameters through GridsearchCV
- After Hyperparameter tuning RMSE score is 0.9615
- Choosen this model as the Best model, Using this model Products are Recommended to the users.

Recommendation using Collaborative Filtering Model

```
ADMPGWBF0BC9W ['B004TSF8R4', 'B000NIY7QM', 'B005OZFV50', 'B002B4GGUG', 'B005OZDYCW']
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A5O7POXXUSO2G ['B0036B8S1I', 'B005CRJUEI']
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A1BCBWJBXK6QN9 ['B004TXY0TG', 'B003ZWEW1S', 'B007MFMHSE', 'B005DVDNLE', 'B002F5DTQA']
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Q&A

Thank You