Hotel Reviews

Done by:

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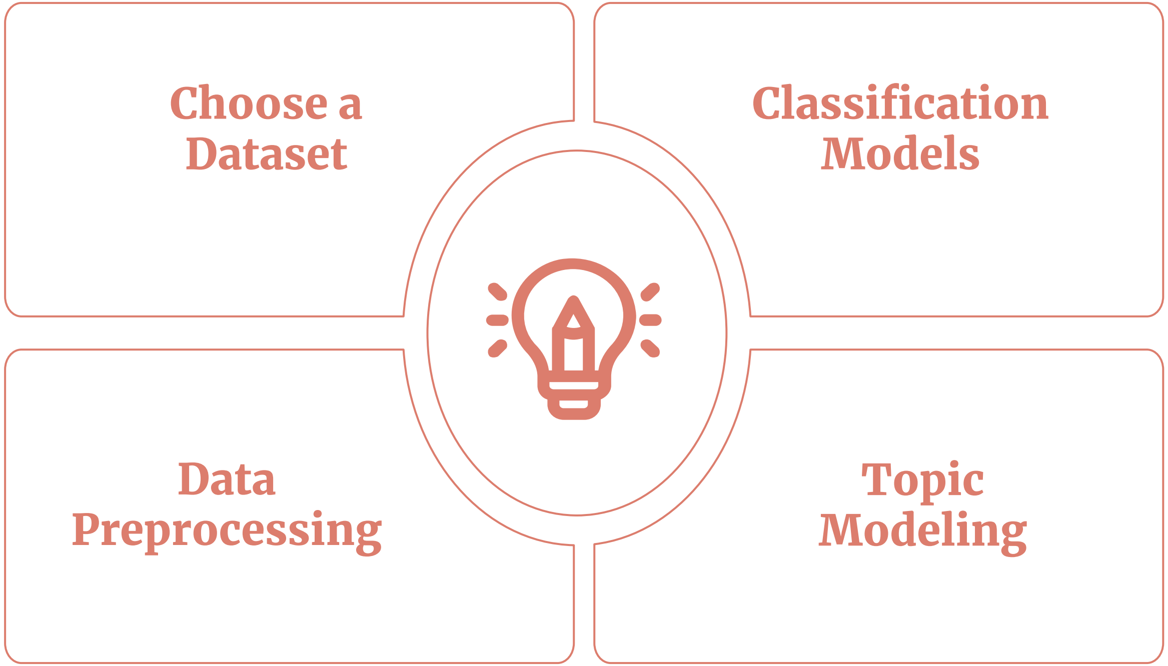
Overview

In this project, we are working on a dataset that consists of text about the hotel reviews. Our observation is a customer’s review.

Goal

Building NLP model which is unsupervised learning that focuses on finding meaningful topics on Hotel reviews.

Methodology

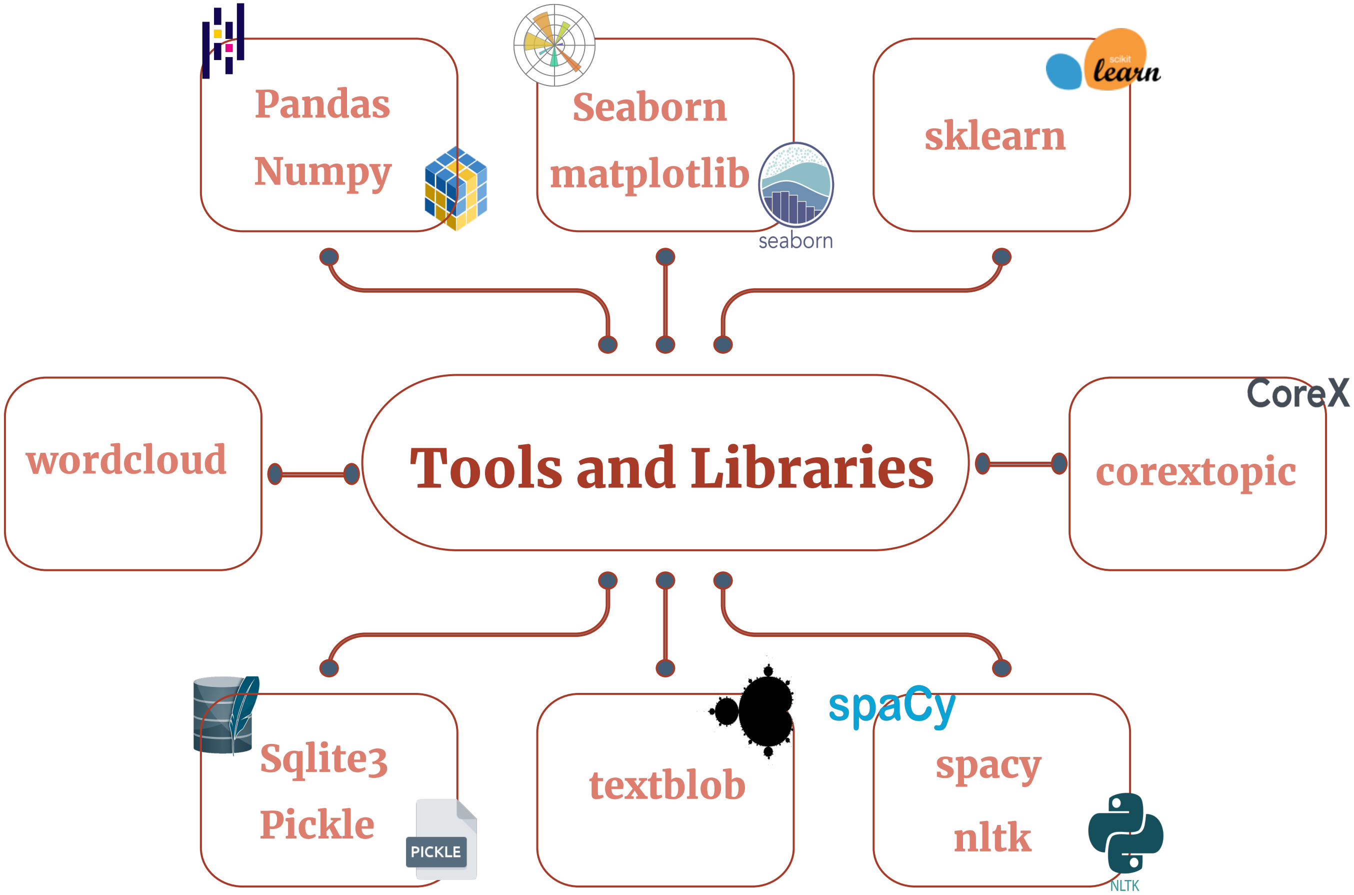


Choose a Dataset

Classification Models

Data Preprocessing

Topic Modeling



Tools and Libraries

- Pandas
- Numpy
- Seaborn
- matplotlib
- sklearn
- wordcloud
- corextopic
- Sqlite3
- Pickle
- textblob
- spacy
- nltk

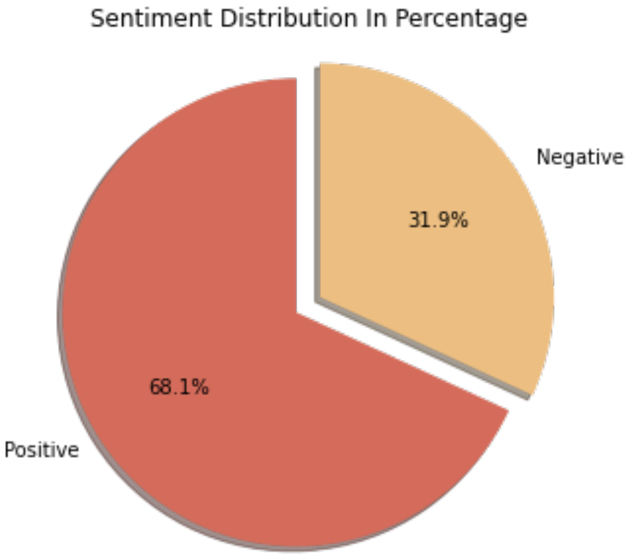
Dataset

38,932 documents

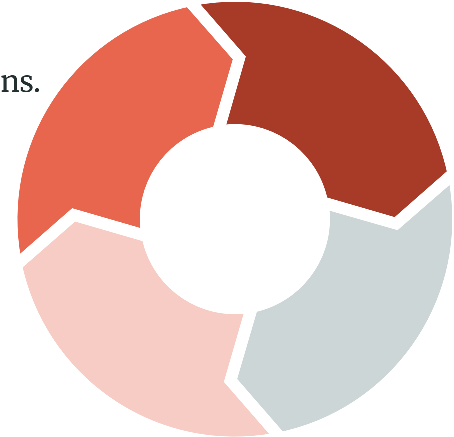
5 terms

User_ID	Description	Browser_Used	Device_Used	Is_Response

Exploratory Data Analysis (EDA)



Data Preprocessing



Data Cleaning

- Remove Chinese letters.
- Remove spaces and punctuations.
- Remove repeated letters.
- Remove numbers.
- Remove empty tokens.
- Remove stop words.

Delete Meaningless Words

- Remove the meaningless words

Spelling Correction

- correcting the words in reviews.

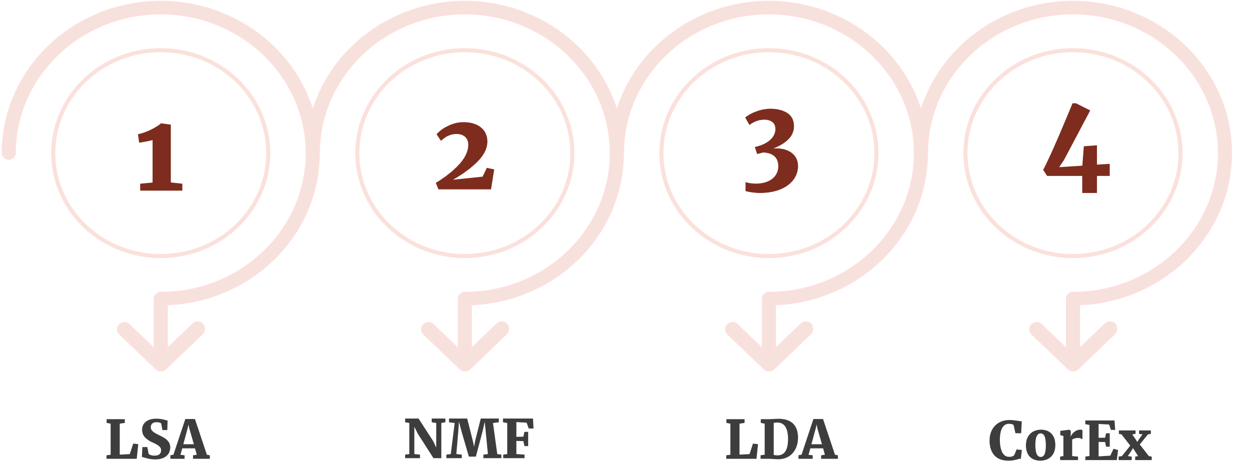
Stemming & Lemmatization

- Stemming and lemmatization the review words.

Vectorization

- Count Vectorizer.
- TF-IDF Vectorizer.

Topic Modeling Algorithms



1

LSA

2

NMF

3

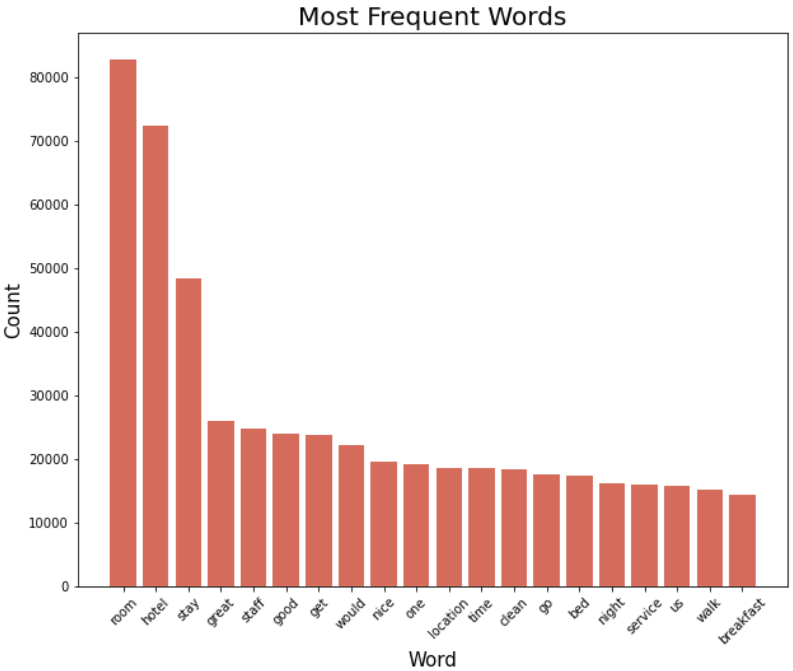
LDA

4

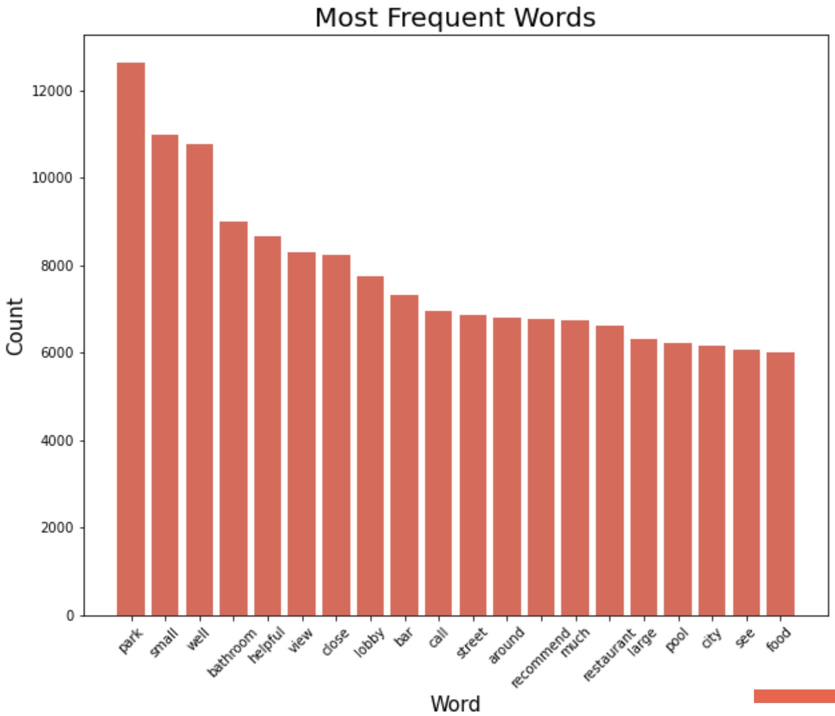
CorEx

Delete Meaningless Words

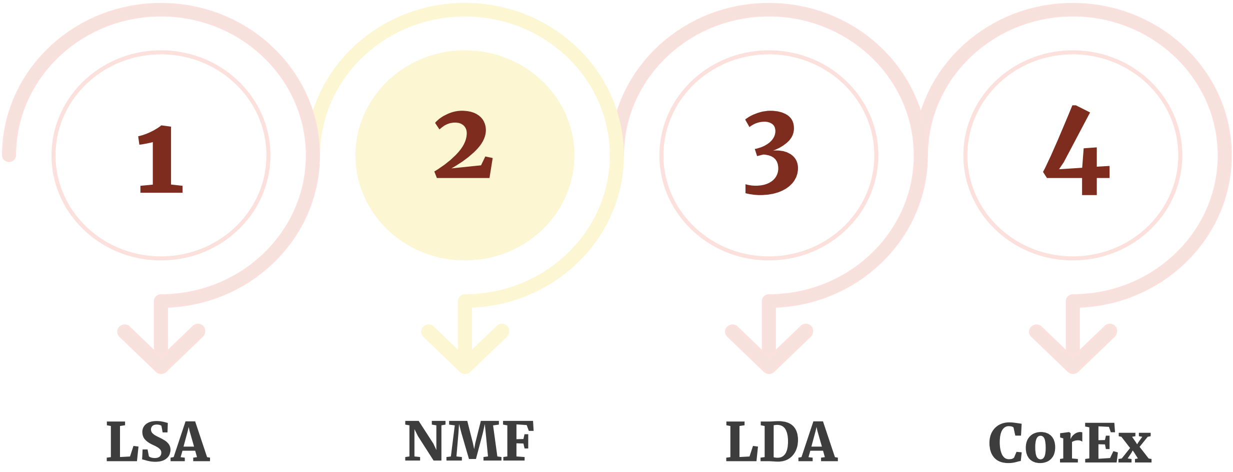
First iteration



Fifth iteration



Topic Modeling Algorithms



1 LSA

2 NMF

3 LDA

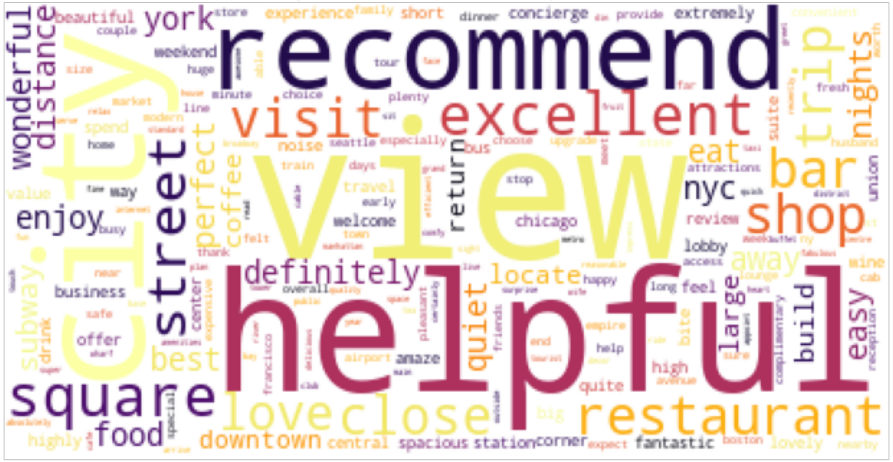
4 CorEx

The Best Algorithm is NMF with 5 topics

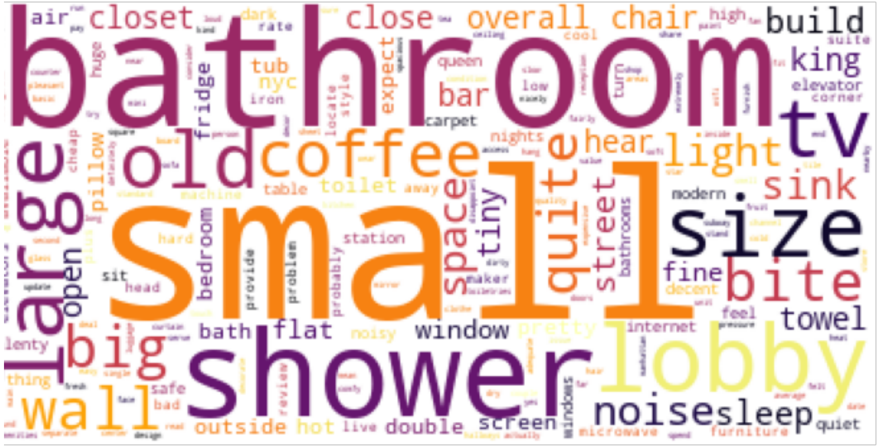
Procedures, Parking, General Atmosphere, Room Facilities, Resort Hotel.

WordCloud

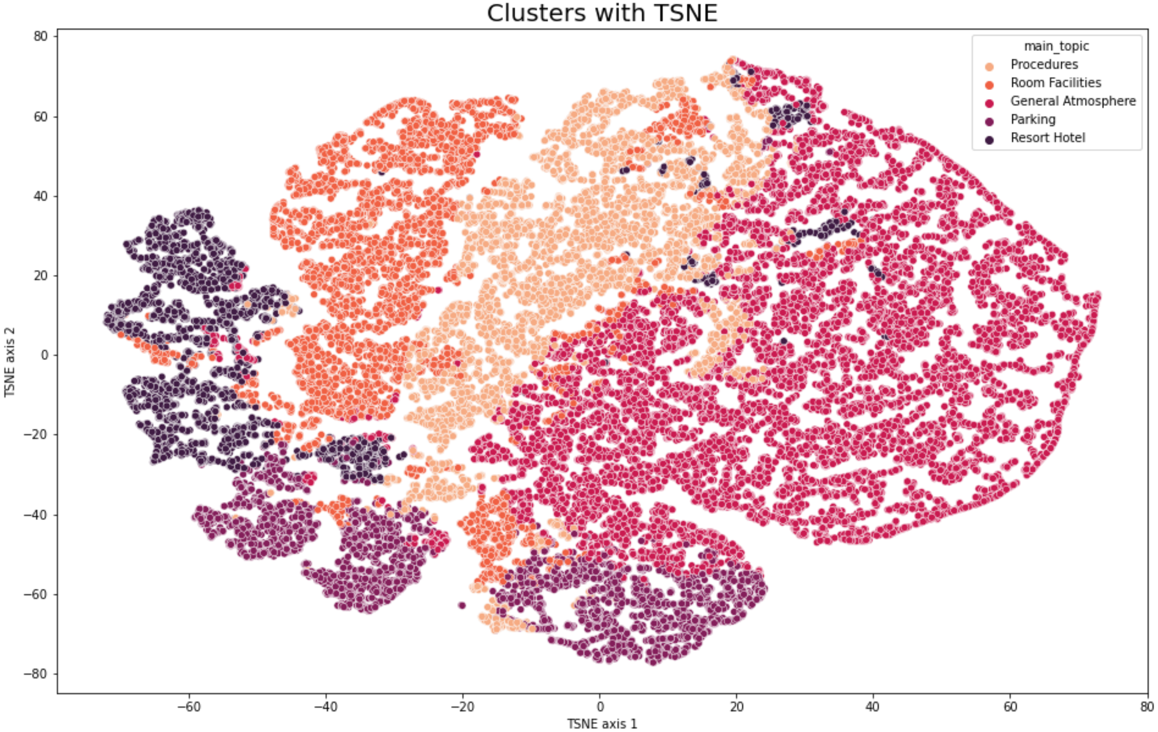
Topic: General Atmosphere



Topic: Room Facilities

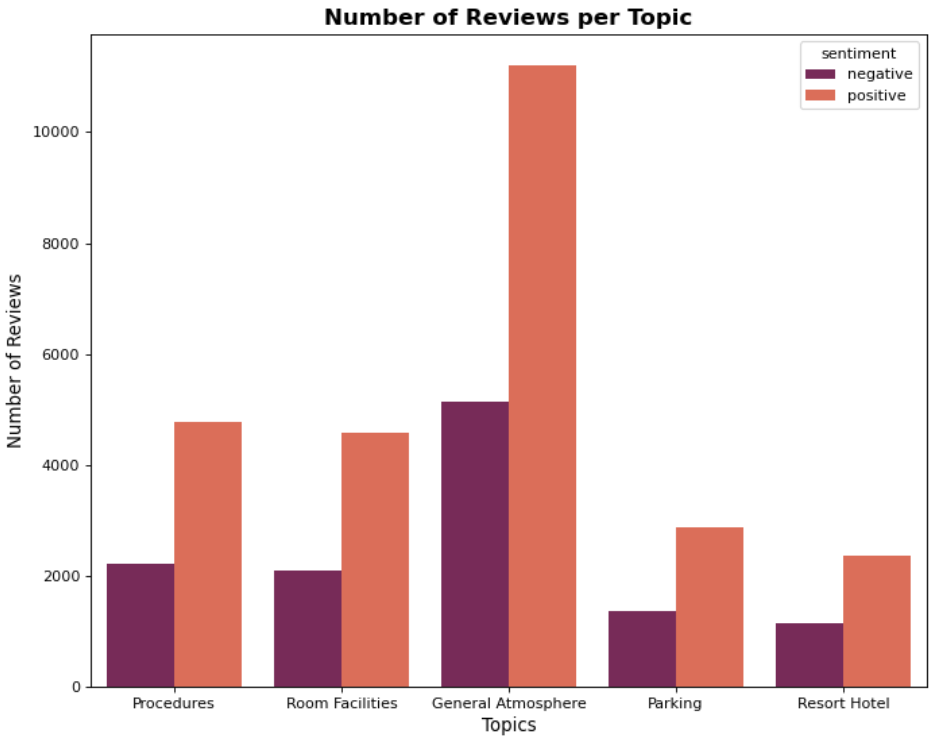


TSNE


Clusters with TSNE
main_topic
● Procedures
● Room Facilities
● General Atmosphere
● Parking
● Resort Hotel
TSNE axis 2
80
60
40
20
0
−20
−40
−60
−80
TSNE axis 1
−60
−40
−20
0
20
40
60
80

Scatter Text

Sentiment Reviews per Topic



Classification Models

	Training	Validation
Logistic Regression	0.9685	0.9668
Random Forest Classifier	1.000	0.9820
Bernoulli NB	0.4843	0.4973
Multinomial NB	0.4313	0.4409
Gaussian NB	0.7999	0.8057

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Random Forest Classifier is **Best Model**

Selected Models

	Training	Testing
Random Forest Classifier	1.000	0.9842

THANK YOU!