


A black and white photograph of the New York Stock Exchange building facade, featuring large classical columns and the inscription 'NEW YORK STOCK EXCHANGE' at the top. The image is dark, with the text overlaid in white.

Business Review NLP

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The data we have contains user reviews on certain businesses like (restaurants, Airports and parks..) and these reviews determine the effectiveness and quality of the place, and these reviews are useful for conveying users' experiences and helping other users to make better choices



INTRODUCTION



PROBLEM STATEMENT

- Is it possible to recommend every business user that may receive a like?

OBJECTIVE

- Classify the **business** review based on their review
- Apply topic modeling on the review of each business to differentiate between them based on stars

DATA SET

Data Source:



data.world

Before Cleaning



229907 and 32 columns

After Cleaning



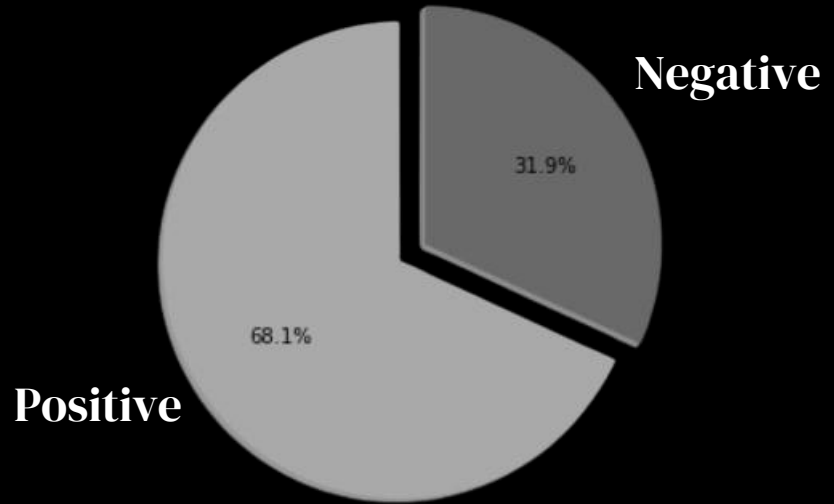
182972 and 5 columns

Tools



Exploratory Data Analysis (EDA)

Sentiment Distribution In Percentage



DATA PRE-PROCESSING



Data Cleaning

- Drop Unnecessary Columns
- Drop Duplicate and Null value
- remove numbers, capital letters and punctuation
- Remove stop words



Lemmatization

Lemmatization the review words.



Vectorization

- Count Vectorizer
- TF-IDF Vectorizer

Recommender System

Each user recommends the business that may like



Topic Modeling Algorithms

Latent Semantic Analysis (LSA)

Topic 0:

Good, place, food, like, great, time, really, service, little, got, nice,
love, restaurant, menu, order, chicken, try, people, best

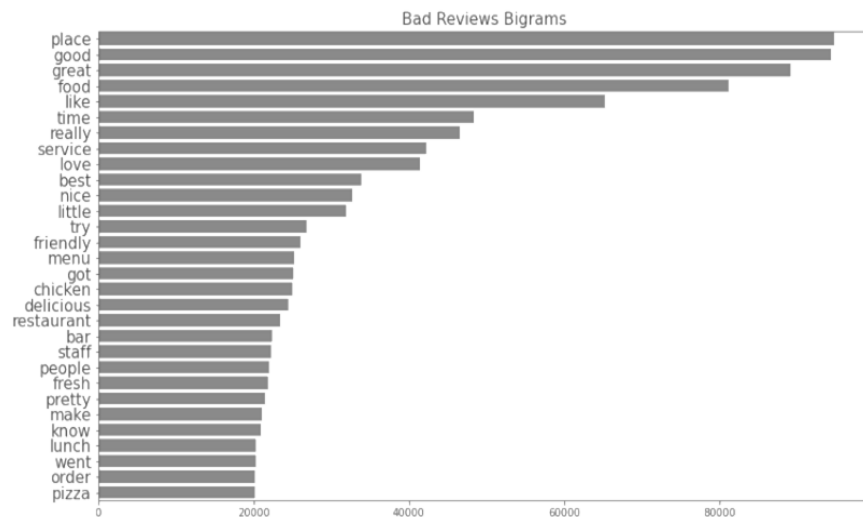
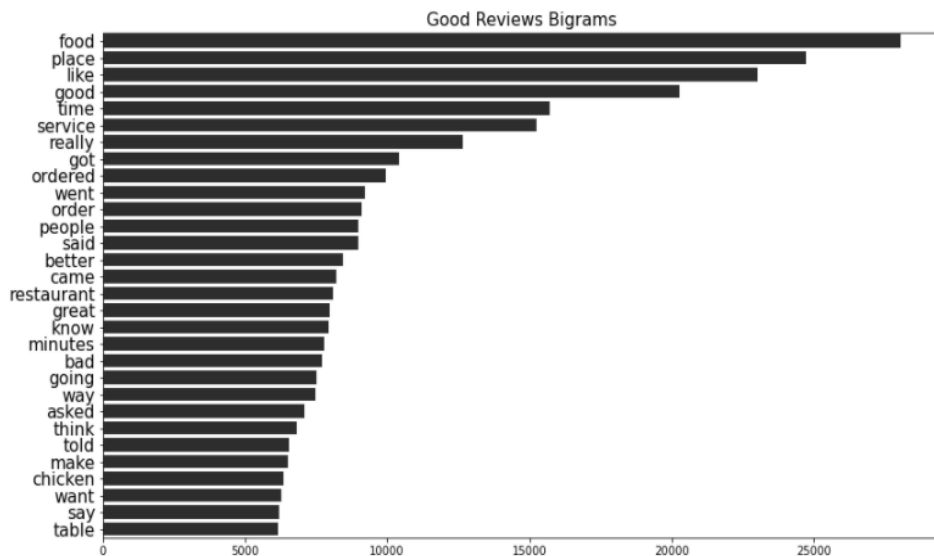
Topic 1:

food, good, chicken, restaurant, service, ordered, sauce,
menu, rice, mexican, salad, meal, thai, delicious, fried, lunch,
dish, beef, spicy, fresh

Topic 2:

Like, good, time, ordered, got, said, came, order, really, asked
minutes, sauce, chicken, know, cheese, told, went, table, salad, way

MOST COMMON WORDS



Recommender System

Number of ratings: 215877

Number of unique business id's: 11535

Number of unique users: 43873

Average ratings per user: 4.92

Average ratings per business: 18.71

The business ID is : 9yKzy9PApeiPPOUJEtnvkg

The business he chose is: **Morning Glory Cafe**

The **recommended** business is:

Business **name** is: Fry's Marketplace,

Business **name** is: Salad Creations,

Business **name** is: Donut Central,

Business **name** is: Lucy's Cafe & Grill,

Business **name** is: Tcf Bank,

Business **name** is: Target Stores,

Business **name** is: Latitude 30,

Business **name** is: Ruby Tuesday,

Business **name** is: CVS/pharmacy,

Business **name** is: Grand Avenue Tavern,

And his **classification** is: Grocery

And his **classification** is: Restaurants

And his **classification** is: Donuts

And his **classification** is: Restaurants

And his **classification** is: Financial Services

And his **classification** is: Drugstores

And his **classification** is: Restaurants

And his **classification** is: Restaurants

And his **classification** is: Pharmacy

And his **classification** is: Nightlife

Classification Models


	Training	Validation
	Accuracy	Accuracy
Logistic Regression with Count Vectorizer	99%	92%
TF-IDF with Count Vectorizers	93%	91%
TF-IDF (unigram , binary gram)	90%	89%



Final Result

**Logistic Regression with Count
Vectorizer**

Testing: 93%

Two solid black squares of different sizes are positioned in the top-left corner of the slide.

After using the NLP method and the recommendation system, they were able to predict what business users might like

A low-angle, dark photograph of a skyscraper reaching towards a grey sky. The word 'CONCLUTION' is overlaid in white text.

CONCLUTION



Thank You!