

# ZOMATO REVIEW ANALYSIS

*Using Artificial Intelligence (Natural Language Processing)*

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## INTRODUCTION

Zomato is an online discovery guide for restaurants, bars, pubs and clubs and for dine-outs. The registered users are required to post reviews and rate (on a scale of 1 - 5 stars) the restaurants on the basis of their choice, visit and experience. The website helps in defining the restaurant/pub/club on the basis of presence or absence of air conditioning, smoking area, WiFi Internet, stag entry, live performances and outdoor seating or whether non-vegetarian food and alcohol are served or not. Zomato also provides information related to cuisines served, operation timings, approximate cost of a meal for two, credit cards accepted or not.

A. History of Brand Zomato

Zomato started as the website [Foodiebay.com](http://Foodiebay.com), by Deepinder Goyal, a post-graduate from IIT Delhi. Foodiebay officially started in July 2008 with a list of 1,200 restaurants in the Delhi NCR region. This database expanded to 2,000 restaurants by end 2008. Expanded its reach to Kolkata, Mumbai, Bangalore and Pune within the next six months. That is when Info Edge (India), the parent company of the [Naukri.com](http://Naukri.com) group, invested 4.7 crore (US\$1 million) in the business. In November 2010, [Foodiebay.com](http://Foodiebay.com) was renamed [Zomato.com](http://Zomato.com). The brand name was changed due to a possible move outside of the food vertical and also to avoid a possible conflict with eBay, because the earlier brand name Foodiebay contained 'ebay' in it.

B. Geographical Coverage

By 2011, Zomato's coverage reached Chennai and Hyderabad as well. In 2011, Zomato also launched applications for iOS, Android, Windows Phone and BlackBerry devices. In September 2012, Zomato expanded to its first overseas location by launching its services in Dubai, UAE. This was followed by quick expansion into Sri Lanka, Qatar, the United Kingdom, The Philippines, South Africa, New Zealand, and more recently to Brazil, Turkey and Indonesia.

# 1.1 OVERVIEW

In today's digitized modern world, popularity of food apps is increasing due to its functionality to view, book and order for food by a few clicks on the phone for their favorite restaurant or cafes, by surveying the user ratings and reviews of the previously visited customers. Food app like Zomato provides a secular part where user can rate their experience of the visited restaurant or café. Zomato also provides columns for writing classified user reviews. Such sort of substance provided by web is named as client produced content. Client created content contains a great deal of significant and essential data about the food items and restaurant administrations. Since there is no control on the nature of this substance on the web and thus, these elevate fraudsters to compose counterfeit surveys to defame the restaurant administrations, to provide misleading reviews, to generate irrelevant content regardless of the product or service, to advertise unrelated content, etc. These phony surveys anticipate clients and associations achieving genuine decisions about the product, services, and amenities of the restaurants or cafes. In this case, Review Analysis has become vital to generate authenticated and unbiased reviews which help in avoiding fraudulent activities used to promote business by publishing fake reviews. Hereby in this paper we focus on mining customer reviews, authenticate them, classify them into positive and negative reviews, and find worthiness of the product.

# 1.2 PURPOSE

Sentiment analysis using Natural Language Processing (NLP) techniques that consists in extracting emotions related to some raw texts. This is usually used on social media posts and customer reviews in order to automatically understand if some users are positive or negative and why. The goal of this study is to show how sentiment analysis can be performed using python. Here are some of the main libraries we will use:

NLTK: the most famous python module for NLP techniquesWe will use here some zomato reviews data. Each observation consists in one customer review for one zomato bengaluru restaurant. Each customer review is composed of a textual feedback of the customer's experience at the hotel and an overall ratingFor each textual review, we want to predict if it corresponds to a good review (the customer is happy) or to a bad one (the customer is not satisfied)

## 2.LITERATURE SURVEY

[1] Mitali Gupta stated that Online ordering took a storm from the food business. Innovation has buried the business sector, technology has changed the whole restaurant industry system, and it will continue to do a great job. A technologically built digital food ordering system has radically changed the culture of the restaurant and is bringing people around the globe a new amazing comfort zone. The key goal. In India, there are a couple of food delivery applications that can be downloaded from advanced cells to arrange food in a hurry and from home comfort. The typical Indian's changing urban lifestyle is emotional enough to be ideal to evolve at higher rates for the food-on - the-go and fast home delivery models.

[2] Author says that data and method are the most important factors in order to make precise predictions and provide expert recommendations. We came across the fact that Facebook and Yelp are most successfully used datasets by thoroughly analyzing the literature. We also present a survey of various techniques and advantages that have been used.

The recommendation system for restaurants can provide users with accurate and effective information about restaurants based on user profile information and preferences. This paper analyse existing techniques ' different approaches and challenges of existing techniques.

### 2.1 Existing Problem

- 1.Zomato uses a 5-point classroom-style grading model,where the distribution of scores in every city is normalized ,resulting in ratings in each city being distributed over a normal curve.
- 2.Zomato's problem of fake restaurants shows negative impact on the site&will indirectly shows in the form of reviews.
- 3.Of the 1.8 million verified reviews 75% were good reviews.
- 4.There are also some unverified reviews which are showing negative impact to the reviews and the reviews and the it creates ambiguous nature about quality of food.

## 2.2 Proposed Solution

- 1.NLP refers to AI method of communicating with an intelligent systems using a natural language such as English
- 2.Processing of Natural language is required when you want an intelligent system like robot to perform as per your instructions.when you want to hear decision from a dialogue form a dialogue based clinical expert system.
- 3.The lead of NLP involves making computers to perform useful tasks with the natural language humans use.
- 4.Three input & output of an NLP system can be: 1.Speech  
2.Written Text
- 5.We will be using the Natural Language Processing to analyse the statement (positive or a negative)of the given review.
- 6.A sample web application is integrated dynamically.

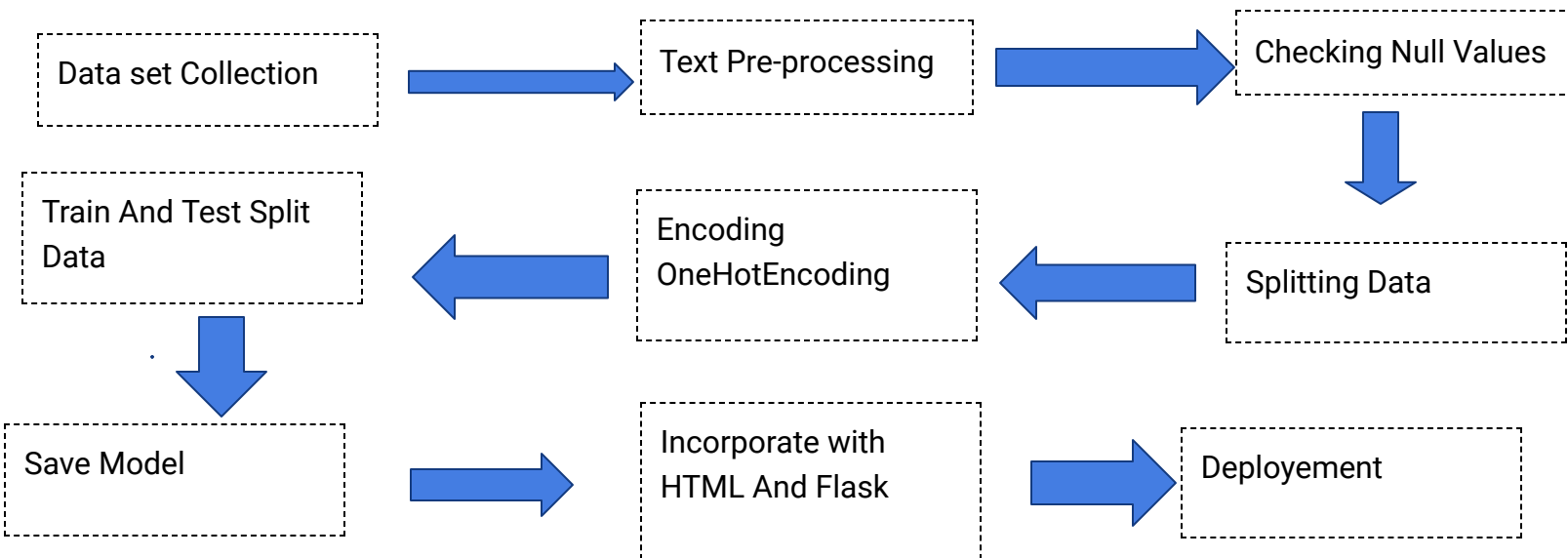
## 3.THEORETICAL ANALYSIS

While selecting the algorithm that gives an accuracy prediction we gone through lot of algorithms which give the results high accurate and from them we selected only one algorithm for prediction problem that is Natural Language Processing algorithm it assumes that the presence of a particular feature in a review is unrelated to the presence of any other feature.

The peculiarity of this problem is collecting the customers review details real time and working with the prediction at the same time,so we can know the customers you will be remain and will exit.Accuracy is defined as the defined as the ratio of samples correctly classified by the classifier to the total number of samples for given test data set.The formula is as follows

$$\text{Accuracy} = \frac{TP+TN}{TN+FT+FN}$$
 At first we got like lot of worst accuracies because we tried lot of algorithms for the best accurate algorithm,finally after all of that we tried the best suitable algorithm which gives the prediction accurately is Natural Language Processing Algorithm.And developed prediction problem for the zomato

### 3.1 Block Diagram



## 3.2 Software Designing

- Jupyter Notebook Environment
- Spyder Ide
- NLP Algorithms
- Python (pandas, numpy)
- HTML
- Flask

We developed this zomato review analysis by using the Python language which is a interpreted and high level programming language and using the Natural Language Processing algorithms. for coding we used the Jupyter Notebook environment of the Anaconda distributions and the Spyder, it is an integrated scientific programming in the python language. For creating an user interface for the prediction we used the Flask. It is a micro web framework written in Python. It is classified as a microframework because it does not require particular tools or libraries. It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions, and a scripting language to create a webpage is HTML by creating the templates to use in th functions of the Flask and HTML.

# 4.EXPERIMENTAL INVESTIGATION

1.In this paper, the dataset we used is derived from

<https://www.kaggle.com/himanshupoddar/zomato-bangalore-restaurants>

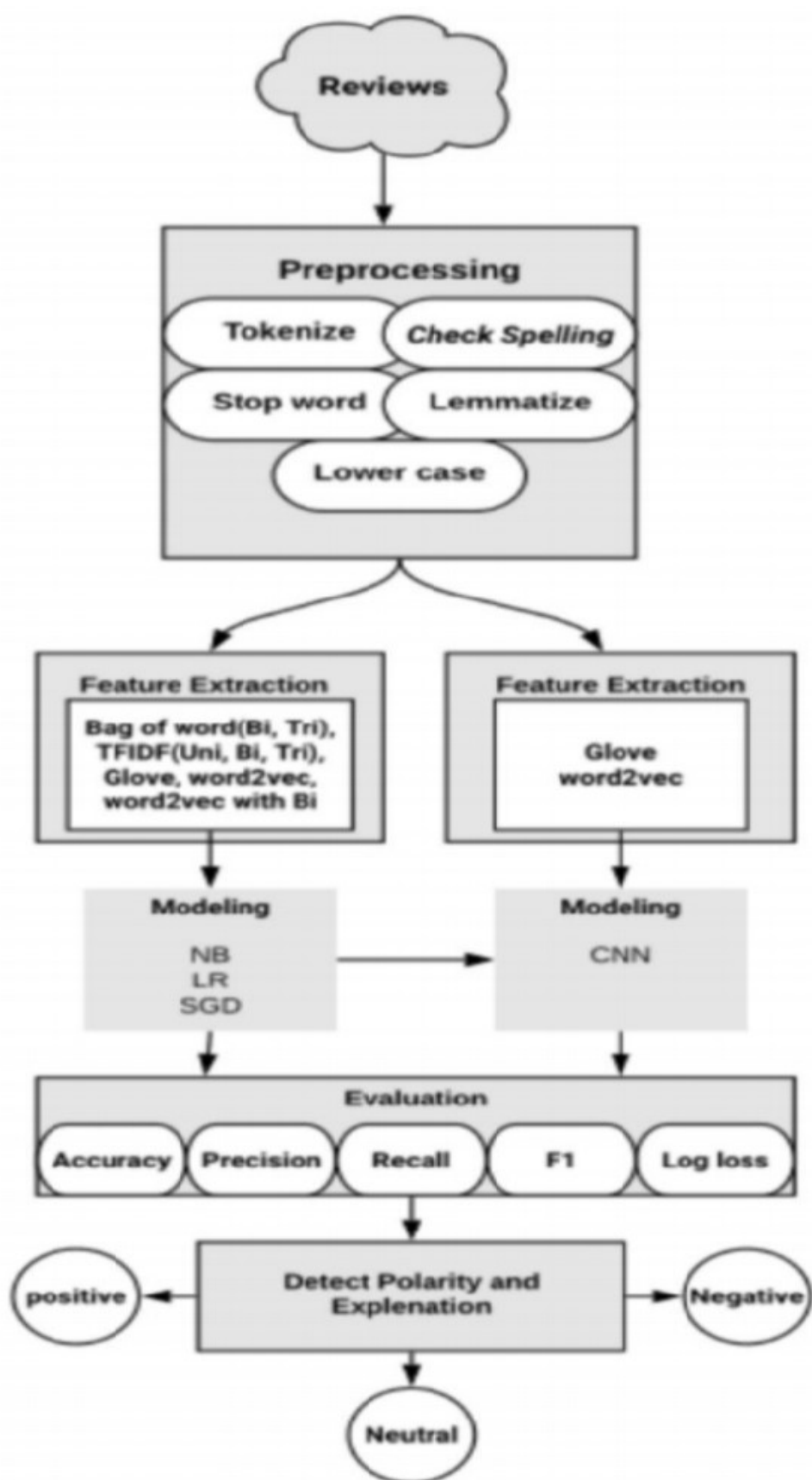
2.It contains more than 1000 original zomato data with a lot of reviews.

3.After that, the missing values are filled in by means of mode interpolation, and the duplicate or meaningless attributes are deleted, finally we have retained to 1 attribute.And we have taken additionally one as Label with (positive negative,neutral)

3.Those attributes were shown below in the screenshot of the data set we used.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	
1	url	address	name	online_orcbook_tabl	rate	votes	phone	location	rest_type	dish_liked	cuisines		approx_ccreviews_li:menu_ite	n	listed_in(ty	listed_in(city)							
2	https://ww	942, 21st N Jalsa	Yes	Yes	4.1/5	775	080	Banashank	Casual Din	Pasta, Lun	North Indi		800	["Rated 4. []		Buffet	Banashankari						
3	https://ww	2nd Floor, Spice Elep	Yes	No	4.1/5	787	080 41714	Banashank	Casual Din	Momos, Li	Chinese, N		800	["Rated 4. []		Buffet	Banashankari						
4	https://ww	1112, Next San Churrc	Yes	No	3.8/5	918	+91 96634	Banashank	Cafe, Casu	Churros, C	Cafe, Mexi		800	["Rated 3. []		Buffet	Banashankari						
5	https://ww	1st Floor, / Addhuri U	No	No	3.7/5	88	+91 96200	Banashank	Quick Bite:	Masala Do	South Indi		300	["Rated 4. []		Buffet	Banashankari						
6	https://ww	10, 3rd Flo Grand Ville	No	No	3.8/5	166	+91	Basavanag	Casual Din	Panipuri, G	North Indi		600	["Rated 4. []		Buffet	Banashankari						
7	https://ww	37, 5-1, 4tl Timepass	Yes	No	3.8/5	286	+91	Basavanag	Casual Din	Onion Ring	North Indi		600	["Rated 3. []		Buffet	Banashankari						
8	https://ww	19/1, New Rosewood	No	No	3.6/5	8	+91	Mysore Rc	Casual Dining		North Indi		800	["Rated 5. []		Buffet	Banashankari						
9	https://ww	2469, 3rd f Onesta	Yes	Yes	4.6/5	2556	080	Banashank	Casual Din	Farmhous	Pizza, Cafe		600	["Rated 5. []		Cafes	Banashankari						
10	https://ww	1, 30th Ma Penthouse	Yes	No	4.0/5	324	+91	Banashank	Cafe	Pizza, Moc	Cafe, Italia		700	["Rated 3.0", "RATED\n	I had been to this place with one of my friends, it's a very small place but dece								
11	e are a bit	things ten	service w	["Rated 4.1	"RATED\n	nTop floo	no outdoo	though th	a nice plai	["Rated 1.1	"RATED\n	we had ne	it turned c	["Rated 3.1	"RATED\n	parking fa	it was littl	["	Cafes	Banashankari			
12	https://ww	2470, 21 N Smaczneg	Yes	No	4.2/5	504	+91	Banashank	Cafe	Waffles, P	Cafe, Mex		550	["Rated 4. []		Cafes	Banashankari						
13	https://ww	12,29 Nea Caf	Yes	No	4.1/5	402	080	Banashank	Cafe	Waffles, P	Cafe		500	["Rated 4. []		Cafes	Banashankari						
14	https://ww	941, 3rd Fl Cafe Shuff	Yes	Yes	4.2/5	150	+91 97421	Banashank	Cafe	Mocktails, Cafe,	Italia		600	["Rated 1. []		Cafes	Banashankari						
15	https://ww	6th Block, The Coffee	Yes	Yes	4.2/5	164	+91 97316	Banashank	Cafe	Coffee, Sp	Cafe, Chin		500	["Rated 4. []		Cafes	Banashankari						
16	https://ww	111, Sapph Caf-Elever	No	No	4.0/5	424	080 49577	Banashank	Cafe	Sandwich, Cafe,	Cont		450	["Rated 2. []		Cafes	Banashankari						
17	https://ww	1112, Next San Churrc	Yes	No	3.8/5	918	+91 96634	Banashank	Cafe, Casu	Churros, C	Cafe, Mexi		800	["Rated 3. []		Cafes	Banashankari						
18	https://ww	2303, 21st Cafe Vivac	Yes	No	3.8/5	90	080	Banashank	Cafe	Garlic Bre	Cafe		650	["Rated 2. []		Cafes	Banashankari						
19	https://ww	241, 4th Fl Catch-up-i	Yes	No	3.9/5	133	+91	Banashank	Cafe	Momos, M	Cafe, Fast		800	["Rated 1. []		Cafes	Banashankari						
20	https://ww	405, 24th (Kirthi's Bin	Yes	No	3.8/5	144	080	Banashank	Cafe	Pasta, Geli	Chinese, C		700	["Rated 3. []		Cafes	Banashankari						
21	https://ww	504, Cj Ve	T3H Cafe	No	No	3.9/5	93	+91 88847	Banashank	Cafe	Cheese Mi	Cafe, Italia		300	["Rated 4. []		Cafes	Banashankari					
22	https://ww	47, 48 &49 360 Atoms	Yes	No	3.1/5	13	+91 98805	Banashank	Cafe		Cafe, Chin		400	["Rated 5. []		Cafes	Banashankari						
23	https://ww	146, 50 ft I The Vintag	Yes	No	3.0/5	62	+91	Banashank	Cafe	Burgers, Ci	Cafe, Fren		400	["Rated 2. []		Cafes	Banashankari						
24	https://ww	3353, 2nd Woodde	P Yes	No	3.7/5	180	+91 74068	Banashank	Cafe	Pizza, Garli	Cafe, Pizza		500	["Rated 3. []		Cafes	Banashankari						
25	https://ww	SRF Compl Cafe Coffe	No	No	3.6/5	28	080 32486	Banashank	Cafe		Cafe, Fast		900	["Rated 4. []		Cafes	Banashankari						
26	https://ww	224/Y, 4th My Tea Hc	Yes	No	3.6/5	62	080	Banashank	Quick Bite:	Pasta, Icec	Italian, Fas		600	["Rated 4. []		Cafes	Banashankari						
27	https://ww	775/1, Opj Hide Out C	No	No	3.7/5	31	+91 99014	Banashank	Cafe		Cafe		300	["Rated 4. []		Cafes	Banashankari						
28	https://ww	101, Wate CAFE NOV	No	No	3.2/5	11	+91 89710	Banashank	Cafe		Cafe, Bake		600	["Rated 1. []		Cafes	Banashankari						
29	https://ww	27th Cross Coffee Tin	Yes	No	3.8/5	75	+91 99457	Banashank	Cafe, Quick	Bites	Cafe, Sout		200	["Rated 5. []		Cafes	Banashankari						
30	https://ww	1036, Srin Sea Green	No	No	3.3/5	4	+91 90086	Banashank	Cafe		Cafe, Fast		500	["Rated 5. []		Cafes	Banashankari						
31	https://ww	940, Shant Cuppa	No	No	3.3/5	23	+91 95911	Banashank	Cafe		Cafe, Fast		550	["Rated 1. []		Cafes	Banashankari						
32	https://ww	112, Bull T Srinathji's	No	No	3.8/5	148	080	Basavanag	Casual Din	Paratha, Si	North Indi		550	["Rated 5. []		Cafes	Banashankari						
33	https://ww	30, Survey Redberrys	Yes	No	4.0/5	219	+91 91484	Basavanag	Cafe	Pizza, Fries	Cafe, Italia		600	["Rated 4. []		Cafes	Banashankari						
34	https://ww	2/1, 7th M Foodiction	Yes	No	2.8/5	506	+91 99161	Banashank	Quick Bite:	Burgers, Li	North Indi		500	["Rated 1.0", "RATED\n	Worst restaurant ever , Veg Manchurian worth ?130 doesn't even fill a tiny cup								
35	ay for me	["Rated 2.1	"RATED\n	["Rated 2.1	"RATED\n	["Rated 1.1	"RATED\n	["Rated 1.1	"RATED\n	["Rated 4.1	"RATED\n	["Rated 3.1	"RATED\n	["Rated 1.1	"RATED\n	don't exp	["Rated 1.1	"RATED\n	["Rated 1.1	"RATED\n	["Rated 4.1	"RATED\n	["R
36	https://ww	101 Groun Sweet Trul	Yes	No	3.9/5	35	+91 77100	Banashank	Delivery		Bakery, De		500	["Rated 4. []	Chocolat Delivery	Banashankari							

# 5.FLOW CHART



## 6.RESULT

- 1.The development of Zomato reviews explains us alot of benefits.
- 2.It helps the user to estimate the quality of the food.
- 3.It estimates that it is liable according to the customer.
- 4.Through this food,we can assure that reviews play a key role in estimating the product.

## 7.ADVANTAGES AND DISADVANTAGES

### *Advantages:*

- 1.Makes managing orders simpler
- 2.Manage entire business at one platform
- 3.Improves productivity
- 4.Keep track of the orders and deliveries
- 5.Complete analysis of your business

### *Disadvantages:*

- 1.Data security
- 2.Risk of losing customer's data
- 3.Chance of a technical problem in the system
- 4.Mismatch data of orders,customers and drivers.
- 5.Difficulty in choosing the right developer to develop a customized system.

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## 8.APPLICATIONS

- 1.Zomato app searches nearby menus,restauranrts.
- 2.It takes the user reviews for its feed back.
- 3.It is very use friendly app that makes the sort of restaurants related to cost,hygiene.
- 4.It takes the location of the user so that the customer would get the relevant restaurant of their wish.



## 9.CONCLUSION

- 1.Zomato's item review platform shows that most of the reviewers have given 4-star and 3-star ratings to various dishes,items,sweets etc....
- 2.average length of the reviews comes close to 230 characters. We also uncovered that lengthier reviews tend to be more helpful and there is a positive correlation between price & rating.
- 3.Sentiment analysis shows that positive sentiment is prevalent among the reviews and in terms of emotionss, 'trust', 'anticipation' and 'joy' have highest scores.It'd be interesting to perform further analysis based on the platform(example:Swiggy etc.).
- 4.We can also look at building a model to predict the helpfulness of the review and the rating based on the review text.
- 5.Corporus-based and knowledge-based methods can be used to determine the semantic similarity of Review text. There are many more insights to be unveiled from the Zomato review

## 10.FUTURE SCOPE

- 1.In this NLP is used further to understand the reviews in a simple language.
- 2.It is used to analyse the reviews in a realistic way.
- 3.In future ,reviews are made identical to the product.
- 4.In future reviews are made such that it is made according to beneficiary of a customer .& any such fake reviews will be eliminated or discarded.
- 5.A software is used to understand & demolish the fake reviews.

## 11.BIBILIIOGRAPHY

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- 3."[Zomato Claims To Be Profitable, Introduces Zero Commission For Partner Restaurants](#)". *Inc42.com*. 18 September 2017. Retrieved 21 September 2017.
- 4."[Zomato Launches Printed Food Guide; Monetization, International Expansion, WP7 App](#)". *Medianama.com*. 6 April 2012. Retrieved 15 November 2016.

# APPENDIX

## HTML:

### *home.html:*

```
<!DOCTYPE html>
<html>
<head>
  <title>Zomato</title>
  <link rel="stylesheet" type="text/css" >
</head>
<body style ="background-image:
url('https://i2.wp.com/inc42.com/wp-content/uploads/2019/11/Untitled-design-2019-1
1-13T081444.265.jpg?fit=1360%2C1020&ssl=1'); background-size: 100%
100%;background-repeat: no-repeat;background-size: cover;">
  <div class="container">
    <h1><center> Review Analysis</center> </h1>
  <div class="con2">
    <form action="{{ url_for('predict')}}" method="POST" align='center'>
    <h5>Enter Your Review Here</h5>
    <!-- <input type="text" name="comment"/> -->
    <textarea name="message" rows="6" cols="50"></textarea>
    <br/>
    <input type="submit" class="btn-info" value="Analyze">
  </form>
</div>
</div>
</body>
</html>
```

### **Result.html:**

```
<!DOCTYPE html>
<html>
<head>
  <title>Result-Zomato</title>
  <link rel="stylesheet" type="text/css" href="{{ url_for('static', filename='css/styles.css')
}}">
</head>
<body style="background: lightpink ; font-size: 20px; text-align: center;" >
  <header>
    <div class="container">
      <div id="brandname">
        Review Analyzer
      </div>
      <h2>Analyzer for your zomato reviews</h2>
    </div>
  </header>
  <p style="color:blue;font-size:20;text-align: center;"><b>Your Analysis is
here.</b></p>
  <div class="results">
    {% if prediction == 0%}
    <h2 style="color:red;">Negative</h2>
    {% elif prediction == 1%}
    <h2 style="color:blue;">Positive</h2>
    {% elif prediction == 2%}
    <h2 style="color:blue;">Neutral</h2>
    {% endif %}
  </div>
</body>
</html>
```

### ***App.py***

```
from flask import Flask,render_template,url_for,request
import pandas as pd
import pickle
from sklearn.feature_extraction.text import CountVectorizer
from sklearn.naive_bayes import MultinomialNB
from sklearn.externals import joblib
import pickle
from keras.preprocessing.text import Tokenizer
from keras.preprocessing.sequence import pad_sequences
tk = Tokenizer()
from keras.preprocessing import sequence
from keras.models import load_model
import tensorflow as tf
global graph
graph=tf.get_default_graph()
filename = r"E:\vyshu\Flaskapp\New folder\zomatoNLP.h5"
clf = load_model(filename)
cv=pickle.load(open(r'E:\vyshu\Flaskapp\New folder\1.13.1_cv_tranform.pkl','rb'))
app = Flask(__name__)
@app.route('/')
def home():
    return render_template('home.html')
@app.route('/predict',methods=['POST'])
@app.route('/predict',methods=['POST'])
def predict():
    if request.method == 'POST':
        message = request.form['message']
        data = [message]
        vect = cv.transform(data).toarray()
        vect = sequence.pad_sequences(vect, maxlen=1500)
        with graph.as_default():
            my_prediction = clf.predict_classes(vect)

    return render_template('result.html',prediction = my_prediction)
```

```
if __name__ == '__main__':  
    app.run(debug=True)
```