

# SENTIMENT ANALYSIS OF CUSTOMER REVIEWS

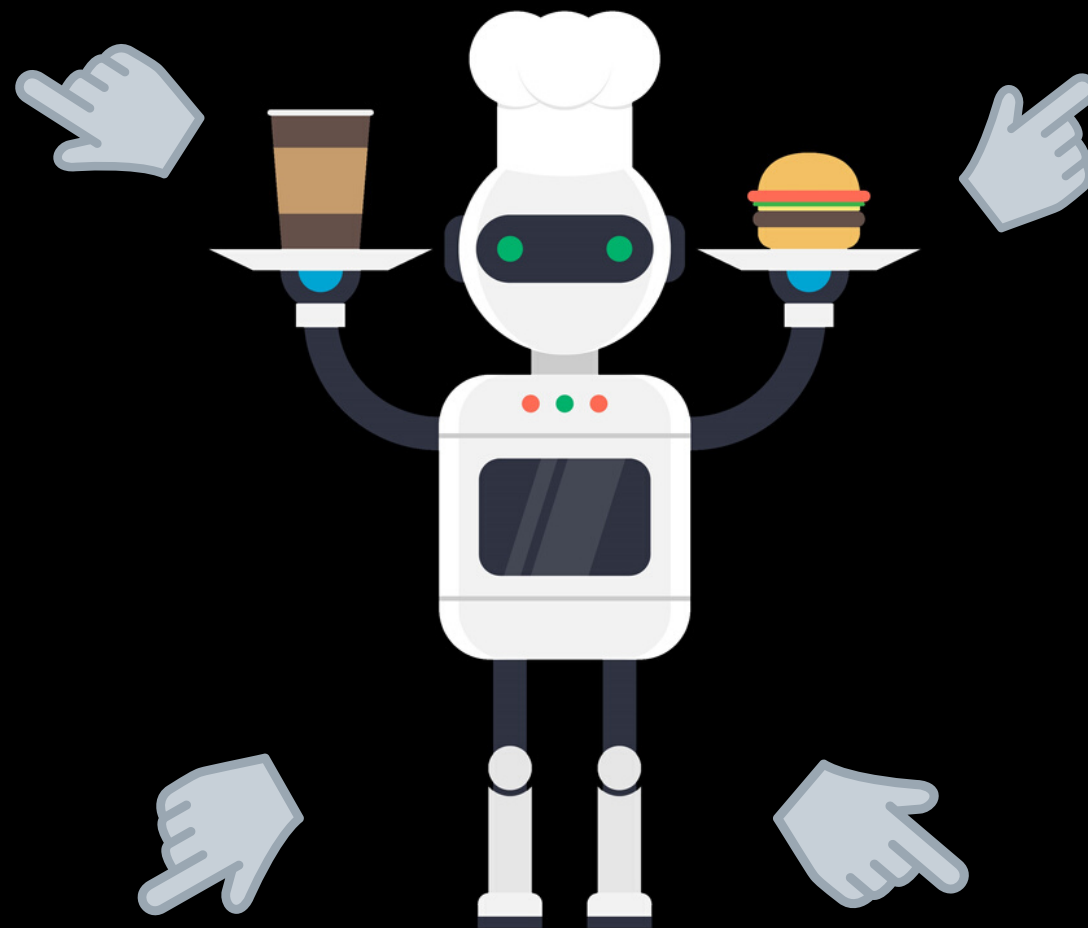
SUMMARIZING THE CUSTOMER REVIEWS TO HELP CUSTOMERS CHOOSE A  
CASUAL DINING RESTAURANT

Akshay Bansod(A19008)	Pratik Chakravorty(A19023)	Sreetama Das(A19037)
Hitesh Relwani(A19013)	Satendra Nath(A19027)	Vivek Kumar(A19041)

# WHY THIS ?

- Risk Reduction

- Search time reduction



- Buyer's remorse

- Group influence

# Project Background

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For Owners



## Taste Bots

You can explore Casual Dining Restaurant here and find out what people think about it!!!!



### Barbeque Nation

Indulge yourself in a sumptuous spread of buffet and take your taste buds on a culinary journey across lands with Barbeque Nation. A pioneer of the live-grill ...



### Absolute Babecues

Indulge yourself in a sumptuous spread of buffet and take your taste buds on a culinary journey across lands with Barbeque Nation. A pioneer of the live-grill ...



### Effingut

Have fun, taste the difference and discover craft beer along the way!



### Tales And Spirits

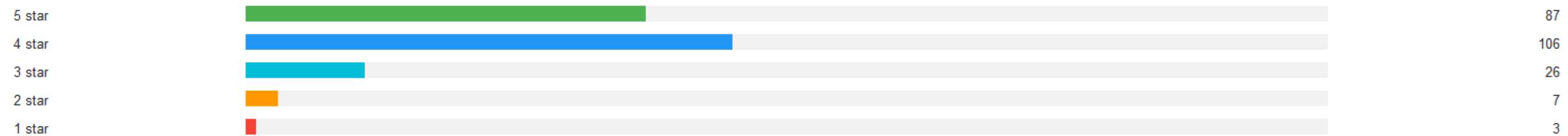
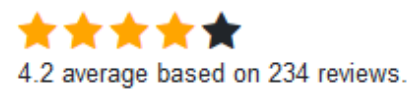
Tales and Spirits is a cocktail bar with restaurant serving exquisite drinks, amazing food, and bar bites in contemporary, unique, and vintage glassware.



# Continued



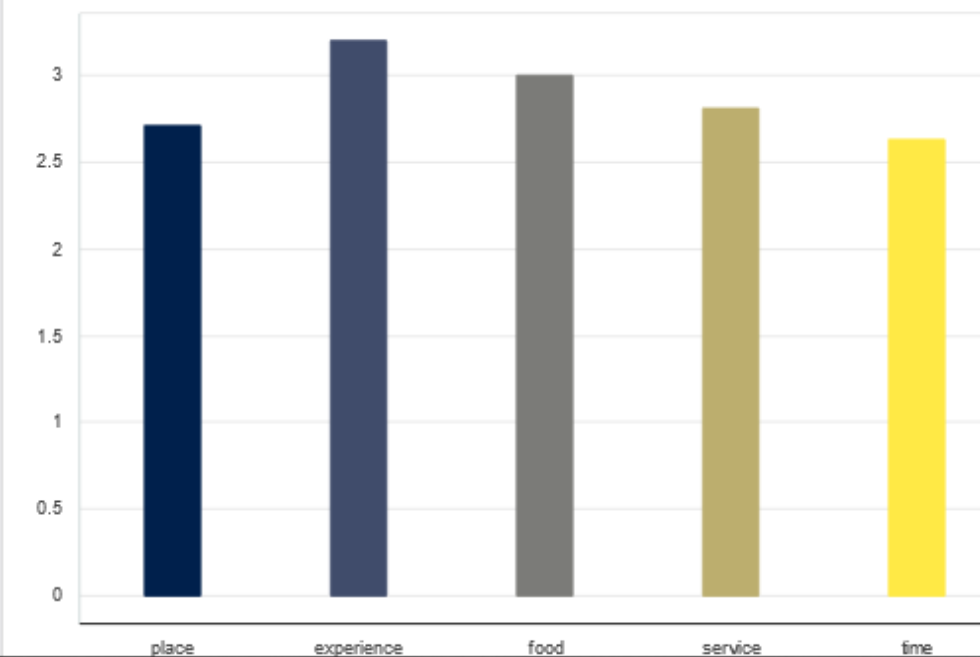
### User Rating



### Most Talked Words



### Feature Score



# Continued

## The Positives

food



buffet



experience



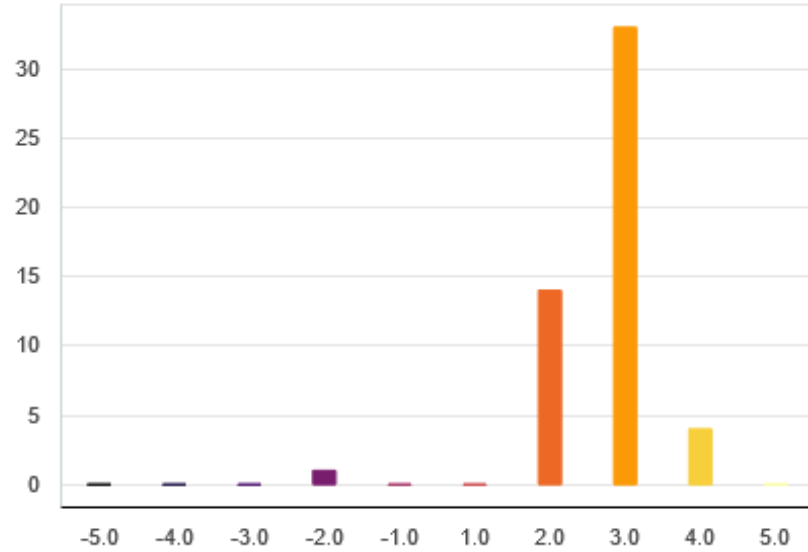
## The Negatives

# Continued

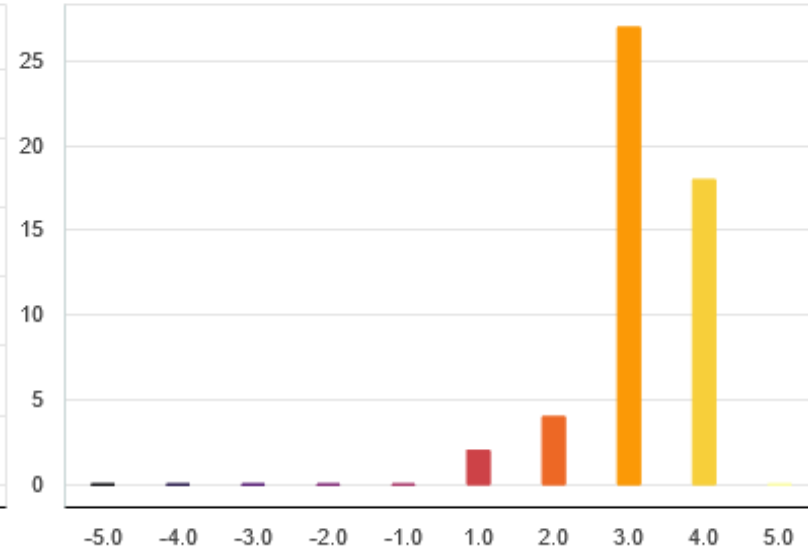
## Sentiment Distribution of Features



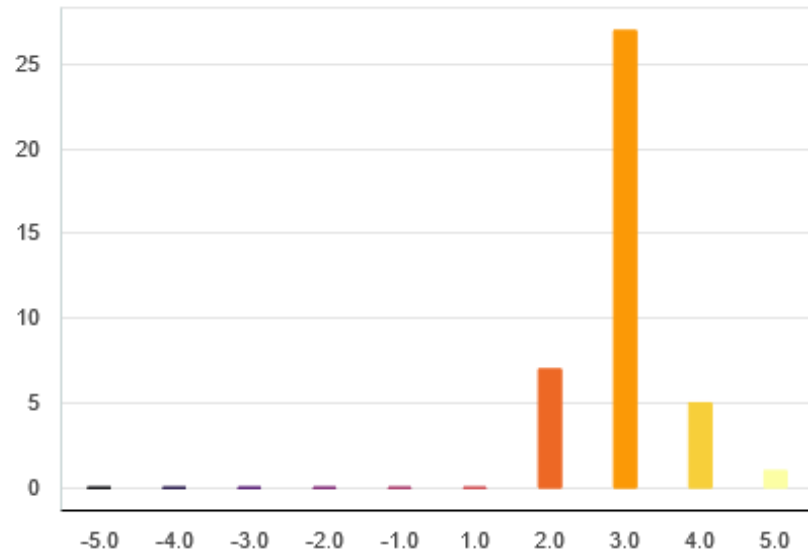
Score Distribution for place



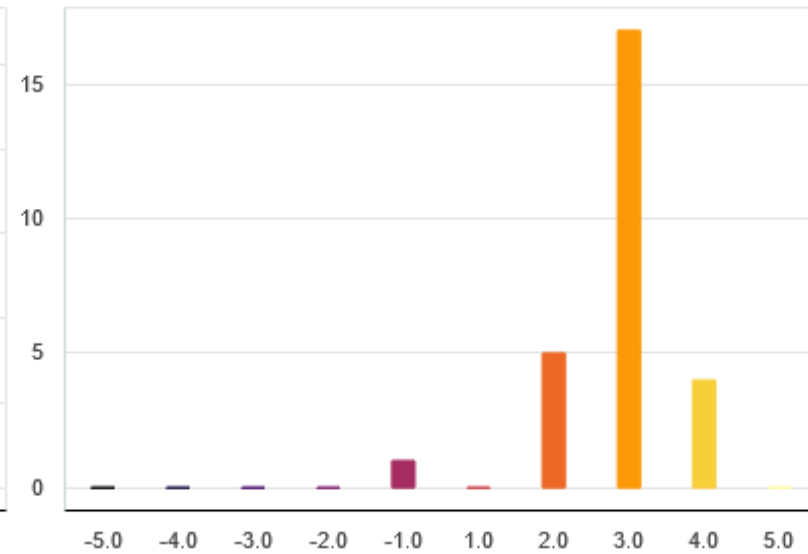
Score Distribution for experience



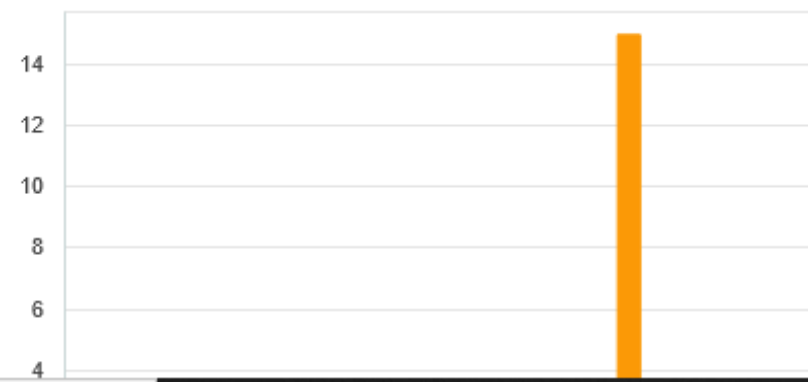
Score Distribution for food



Score Distribution for service



Score Distribution for time



## Positive Reviews

### Review 1

It is awesome place Staffs are so friendly Music is quite good I think No need to talk about food because the name itself saying that the barbeque in the town Water melon n pineapple barbeque z my favorite Complimentary birthday anniversary cake with music dance n lods of wishes U will love d place

### Review 2

One of the finest dinning erience in the city Has got a lot to eat Even if you're done their menu is still never ending Including starters main course snacks drinks The best part is the live barbeque Good for couples family friends gathering etc Staffs are really very awesome Thanks Diganta for making our erience more memorable

### Review 3

Just haven for non vegetation We never had any veg Unlimited barbeque and kebabs And all others main course also good but again desert is oho What a variety Overall a good erience Must recommend

## Negative Reviews

### Review 1

Visited today not taking bookings for 2 paaiting is also so long staff is also not cooperative Not all recommended they are just seeking for only families and more number of people only for them they provide table immidete basis

### Review 2

They made us wait for one hour and then said the buffet is over The worst service EVER They kept saying we need ten minutes and made us wait for 1 hour

### Review 3

This particular outlet is surely a place preferable to not visit while I was there the serving staff don't really bother to get my starters when requested the place was not being cleaned and the buffet area was left with foot imprints all overall With regards to the food none of the

# Continued

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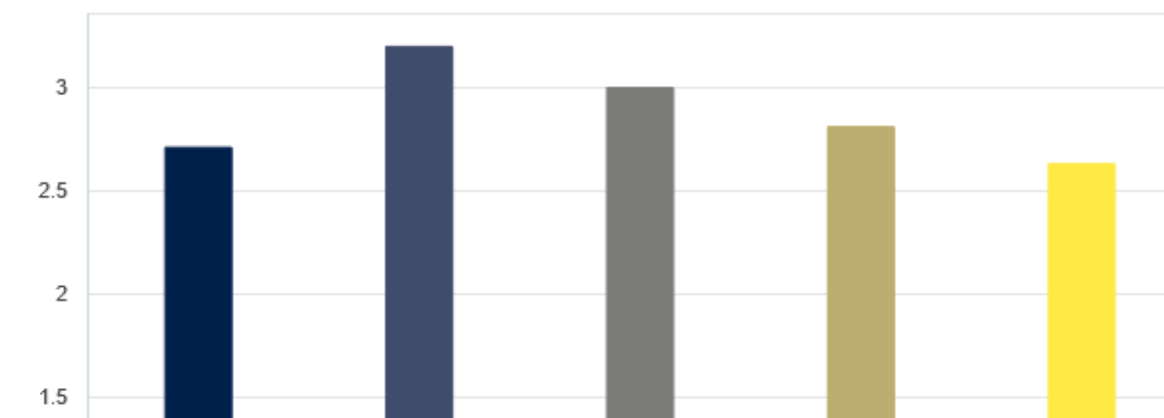
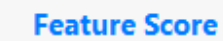
### Similar Restaurants

Known For Biryani

### Known For Ambience

### Known For Service

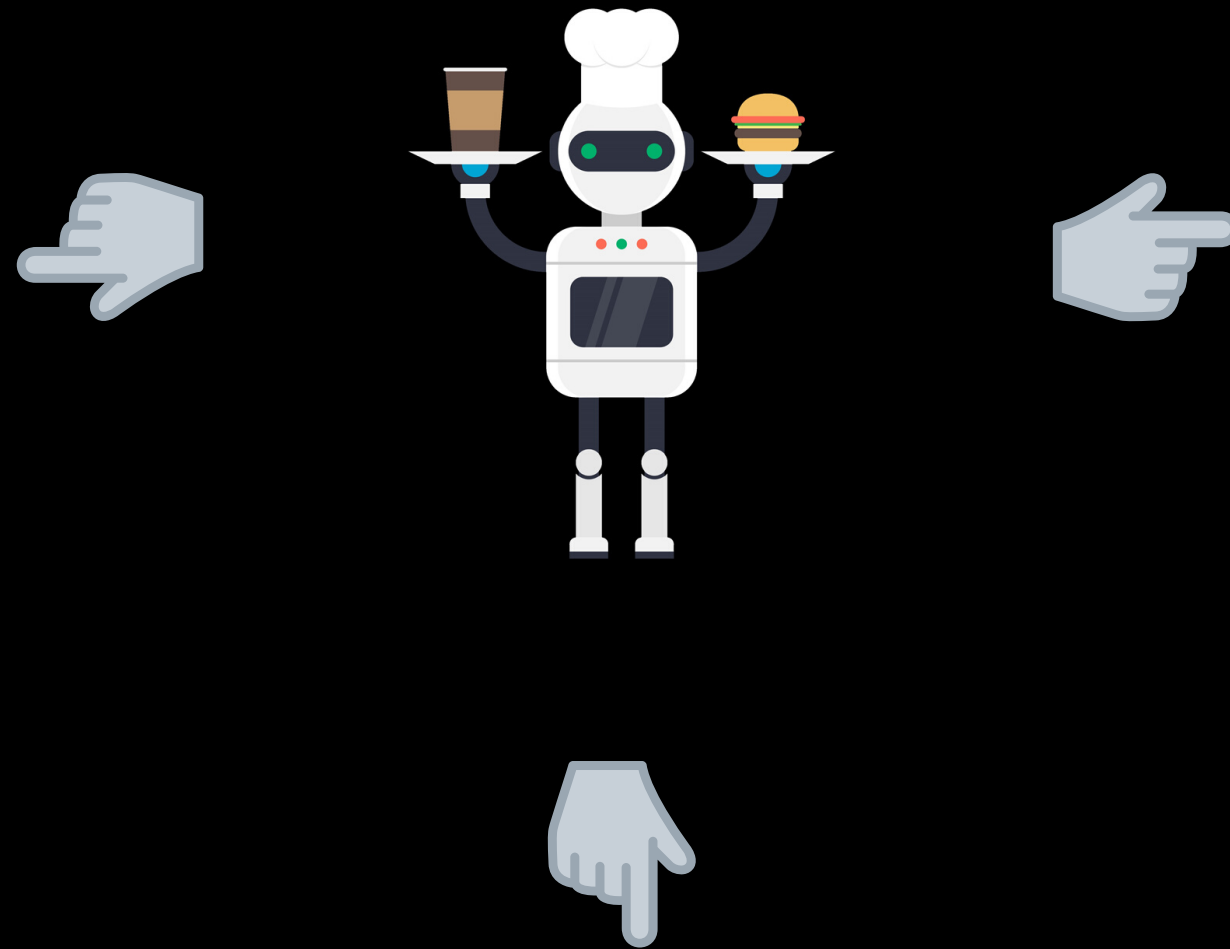
Search..





# Data Collection

- The dataset used is "Zomato Bangalore Restaurants"



- Columns used were Restaurant Names, rating and the reviews

- The casual dining segment has around 40K rows satisfying our requirements



# Process

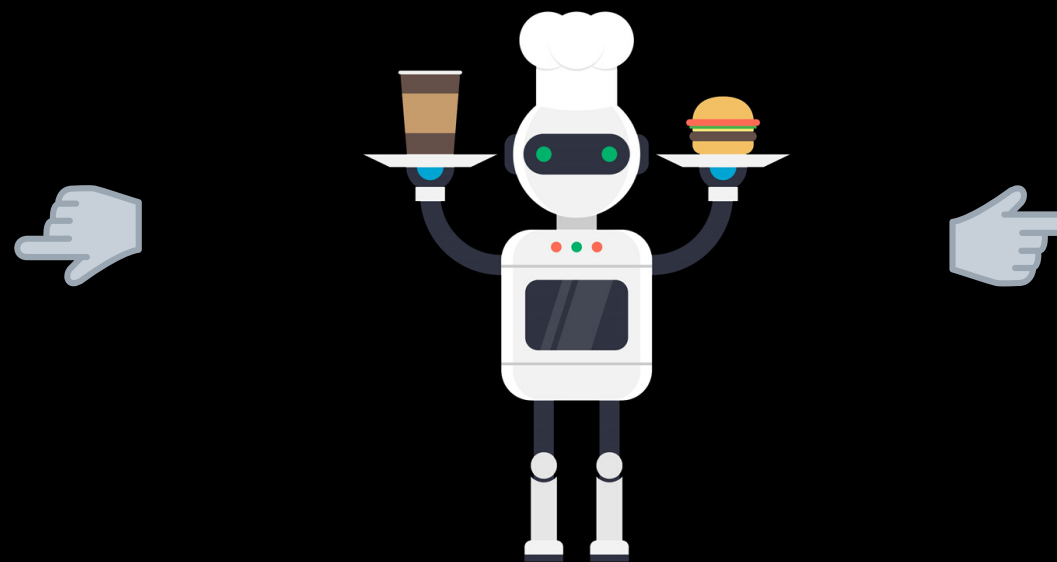
Symspell ➡ Lemmatization ➡ Deep Segment ➡ Feature Extraction  
➡ Dependency Parsing ➡ Sentiment Score



Topic Modelling

# Symspell

- Compound splitting and decompounding



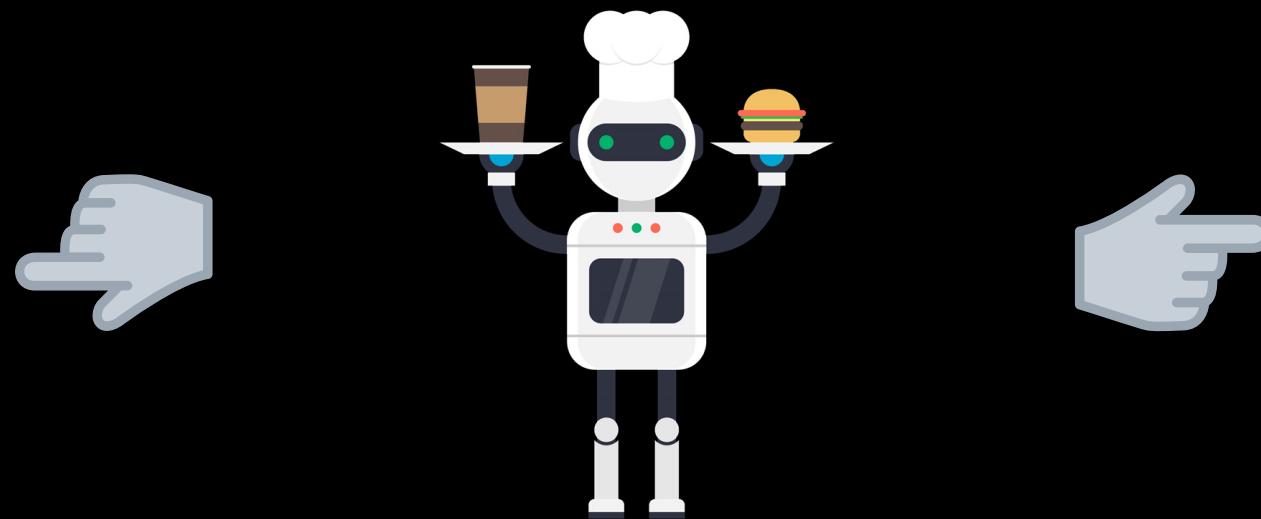
- Automatic spelling correction

```
review = 'The food was gr8 but specially the biryni was amazing , the staff was courtious and ambience was wonderful'  
slang_corr = slang_trans(review)  
corr_string = spell_checker_eng_word(slang_corr)  
print("Incorrect English:",review)  
print("Corrected English:",corr_string)
```

Incorrect English: The food was gr8 but specially the biryni was amazing , the staff was courtious and ambience was wonderful  
Corrected English: the food was great but specially the biryani was amazing , the staff was courteous and ambience was wonderfu  
1

# Lemmatization

- It involves resolving words to their dictionary form

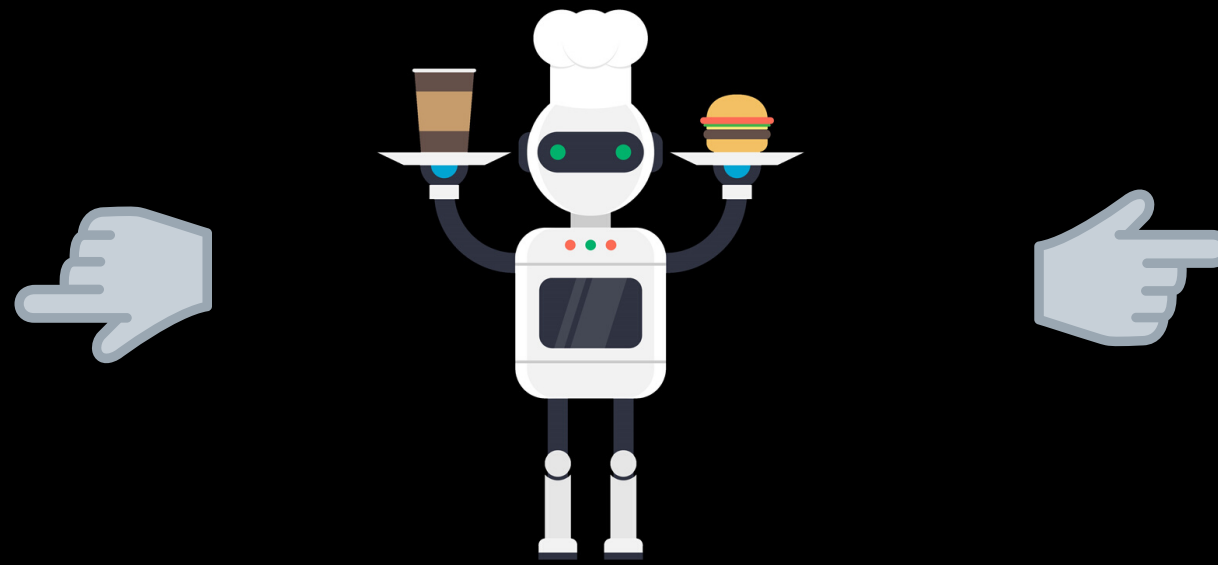


- To get the best results, we have to feed the part of speech tags to the lemmatizer

```
lemmatize_sentence(sentence):  
    nltk_tagged = nltk.pos_tag(nltk.word_tokenize(sentence))  
    wn_tagged = map(lambda x: (x[0], nltk2wn_tag(x[1])), nltk_tagged)  
    res_words = []  
    for word, tag in wn_tagged:  
        if tag is None:  
            res_words.append(word)  
        else:  
            res_words.append(lemmatizer.lemmatize(word, tag))  
    return " ".join(res_words)
```

# Deep Segment

- Performs sentence segmentation on the unpunctuated text



- Uses seq2seq for punctuation correction at a sentence level

```
Input : a very nice and good place with best buffet in town The staff be very humble and polite  
Output: ['a very nice and good place with best buffet in town', 'The staff be very humble and polite']
```



# Feature Extraction

- Feature Extraction i.e Chunking computes the root of the phrase

Input : the food is good and the biryani is awesome

Noun Chunks : [the food, the biryani]

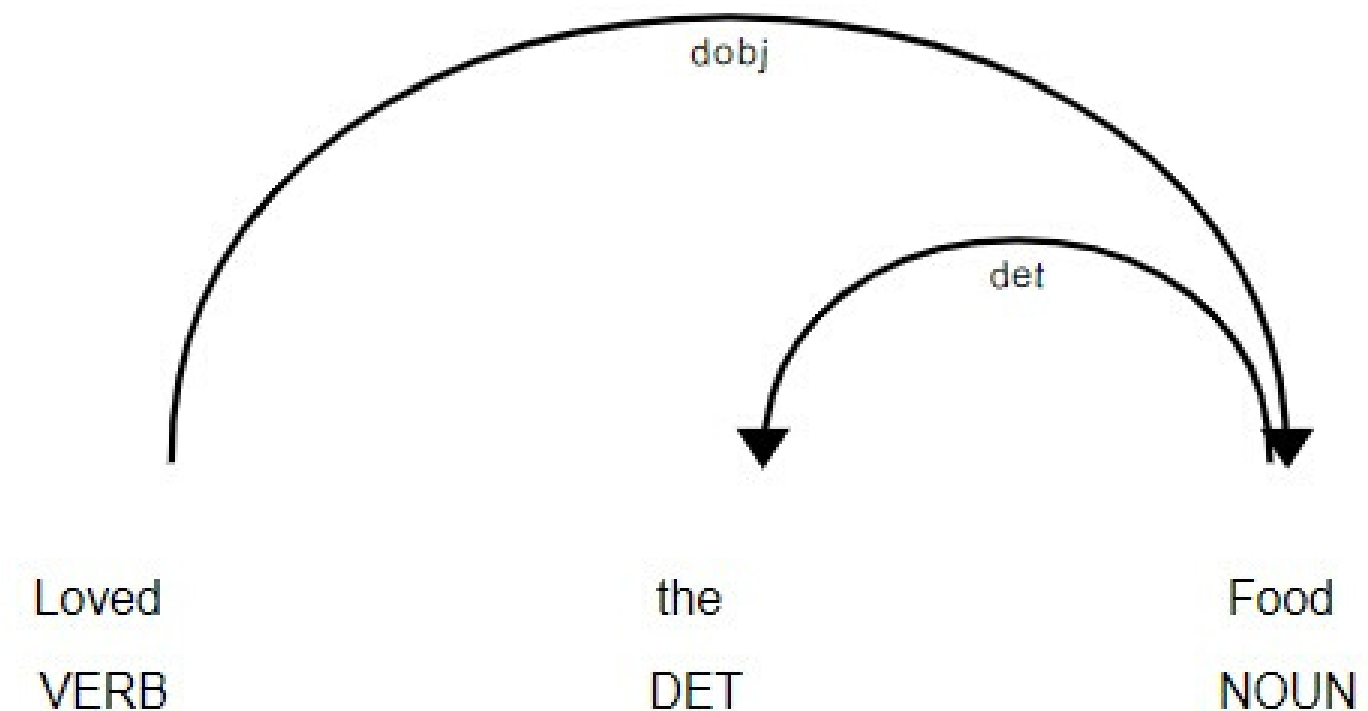
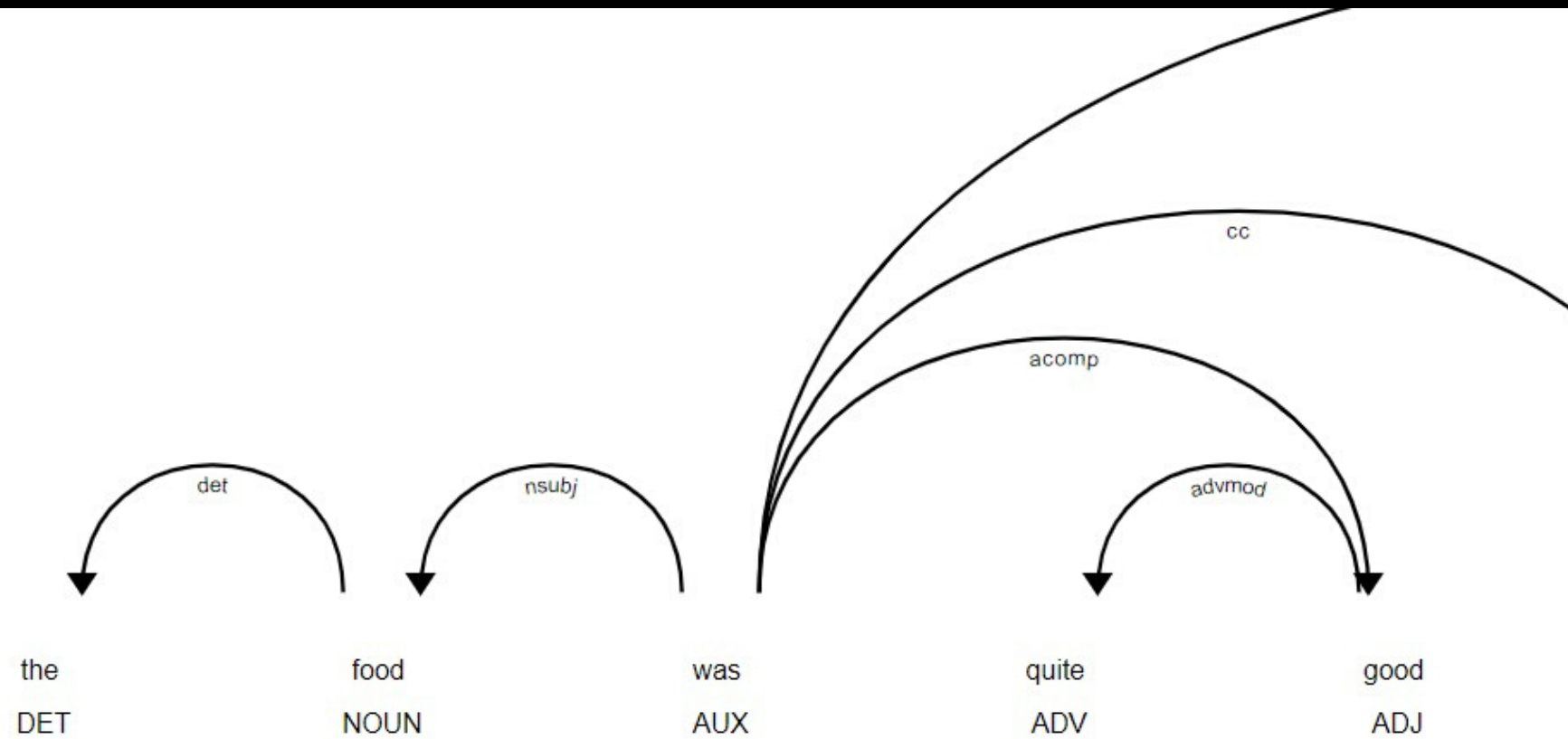
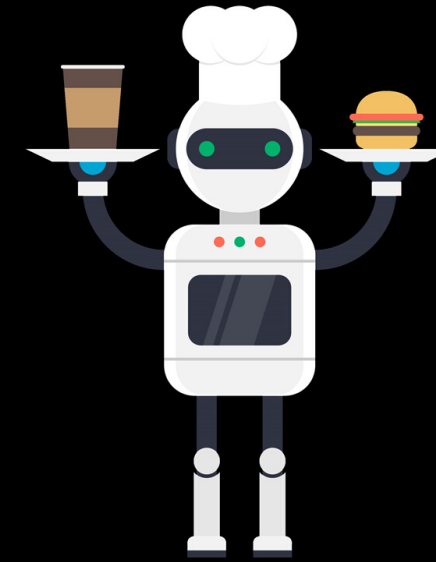
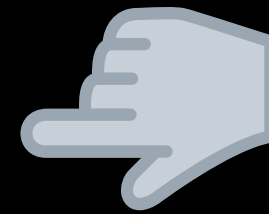
Cleaned Chunks : ['food', 'biryani']

- Extraction of top noun chunks and their associated frequencies

```
[('main course', 6),  
 ('starters', 5),  
 ('options', 4),  
 ('staff', 4),  
 ('desserts', 4),  
 ('food', 4),  
 ('quality', 3),
```

# Dependency Parsing

- To get proper association of the noun/noun phrases with the adverbs and/or adjectives(whether it be positive or negative)/ or verb

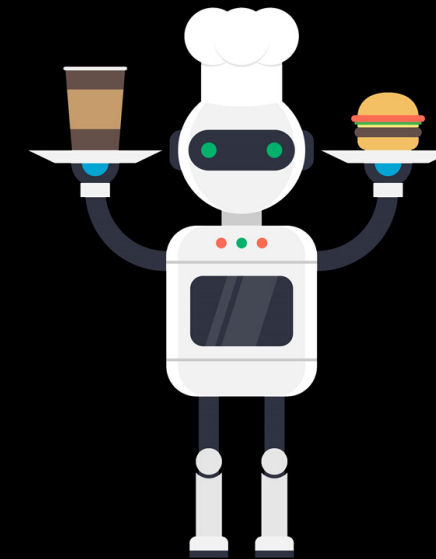


The dictionary which has its key as the features and values as the terms describing the features.

```
{ 'staff': [' courteous', ' extremely polite', ' very polite', 'friendly'],  
  'main course': ['avoided',  
                  'not acceptable',  
                  ' disappointing',  
                  'not that good'],  
  'options': ['courteous', 'consider', 'nice', 'many'],  
  'service': ['courteous',  
              ' very courteous',  
              'Absolutely loved',  
              ' upto',  
              ' disappointing'],
```

# Sentiment Score

- The AFINN lexicon has been used for sentiment analysis

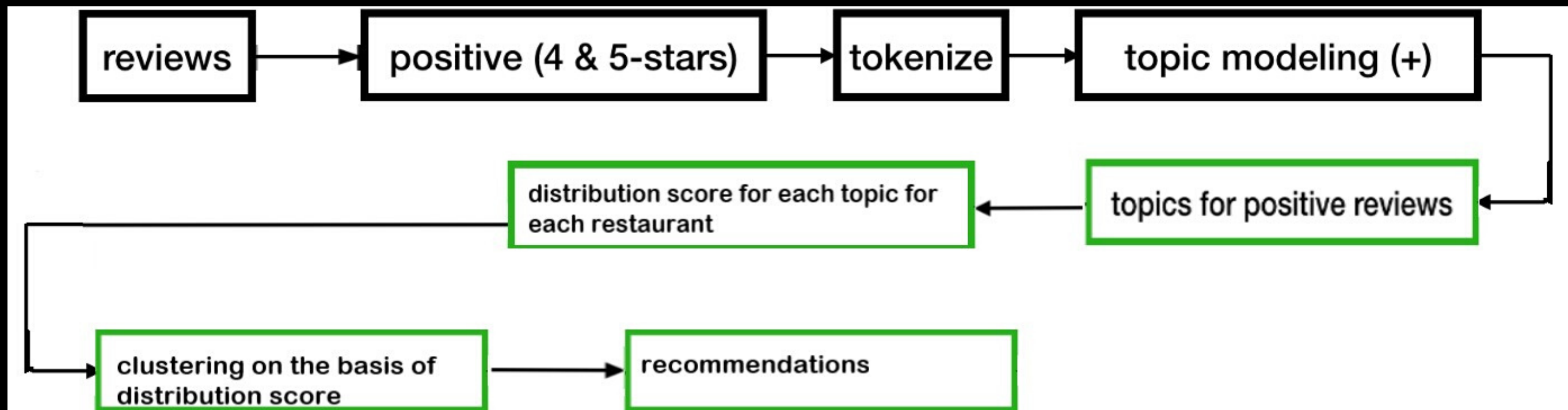
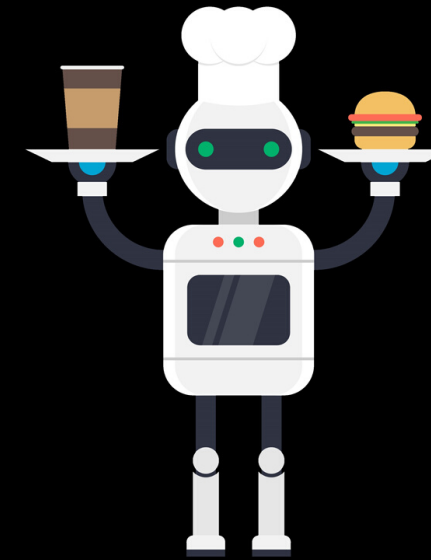


Restaurant	Word	Mean	Freq	-5.0	-4.0	-3.0	-2.0	-1.0	1.0	2.0	3.0	4.0	5.0
Barbeque Nation	place	2.75	80	0	0	1	0	1	2	13	56	7	0
Barbeque Nation	taste	1.22	18	0	0	1	5	0	0	3	7	2	0
Barbeque Nation	order	2	3	0	0	0	0	0	1	1	1	0	0
Barbeque Nation	main course	0.6	5	0	0	0	2	0	1	0	2	0	0
Barbeque Nation	service	1.09	47	0	0	7	9	0	0	3	28	0	0
Barbeque Nation	ambiance	2.5	16	0	0	0	0	0	1	6	9	0	0
Barbeque Nation	restaurant	2.15	13	0	0	1	0	0	0	5	7	0	0



# Topic Modelling

- It is the process of identifying topics in a set of documents

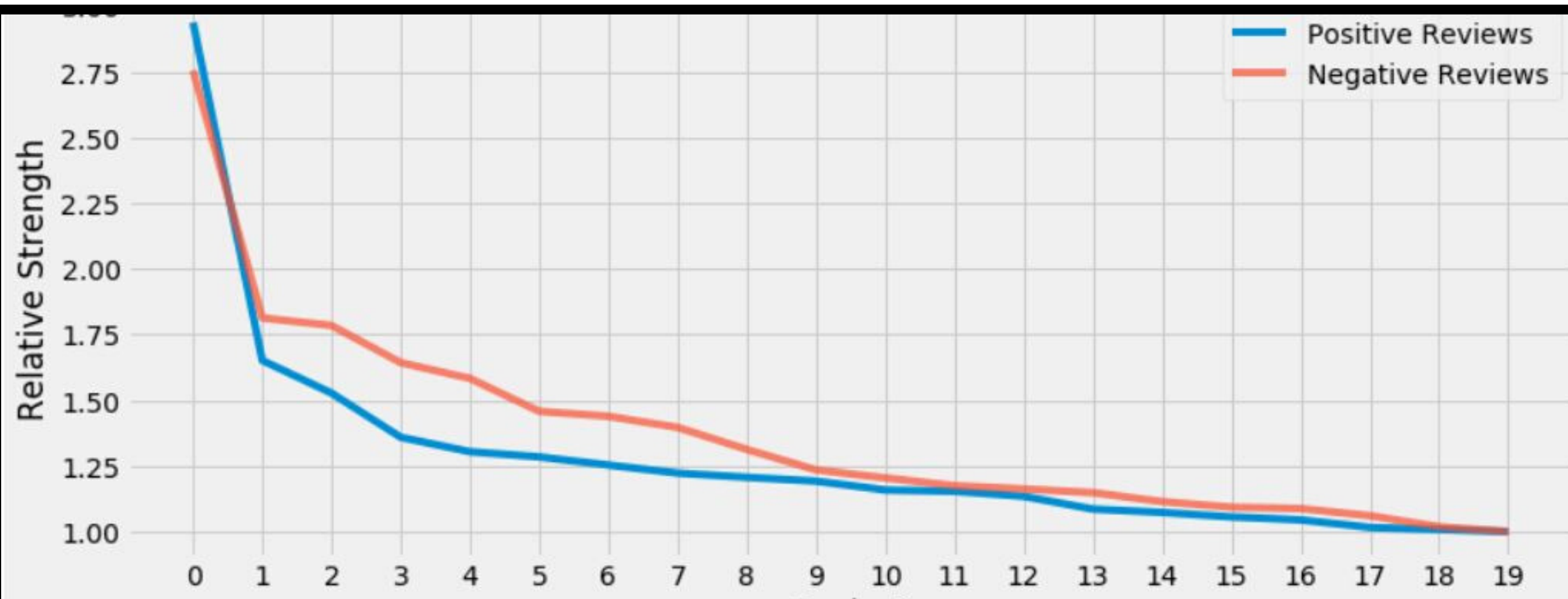


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Topics for POSITIVE reviews

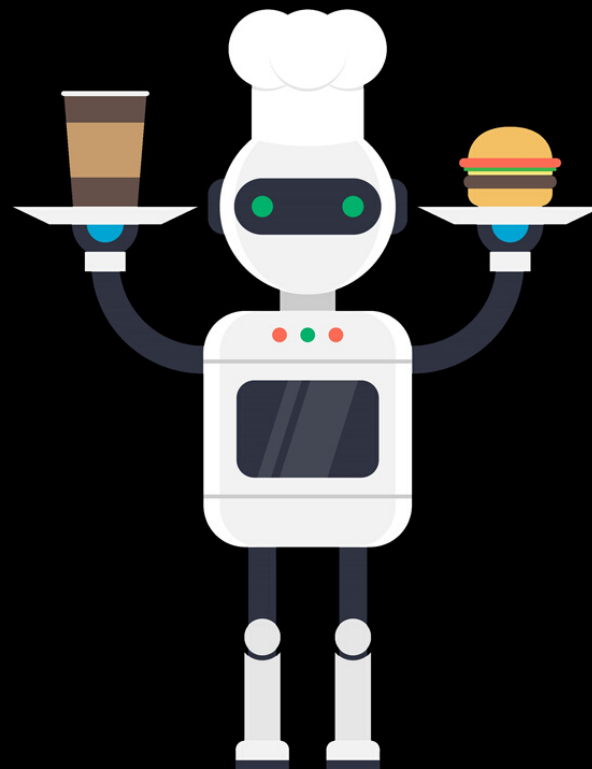
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Topic 0: 3.467\*chicken, 1.218\*biriyani, 1.136\*order, 0.871\*rice, 0.720\*tasty  
Topic 1: 3.364\*biryani, 0.393\*mutton, 0.317\*chicken, 0.275\*best, 0.264\*dum  
Topic 2: 3.883\*nice, 0.155\*ambience, 0.143\*tasty, 0.114\*friends, 0.107\*staff  
Topic 3: 1.842\*service, 1.540\*great, 1.281\*ambience, 0.932\*staff, 0.884\*visit  
Topic 4: 2.723\*taste, 1.912\*awesome, 0.737\*quality, 0.668\*quantity, 0.521\*delivery  
Topic 5: 2.275\*veg, 1.258\*non, 0.534\*starters, 0.365\*buffet, 0.324\*main



# Conclusions

- We have proposed a technique to analyze the customer reviews of casual dining restaurants



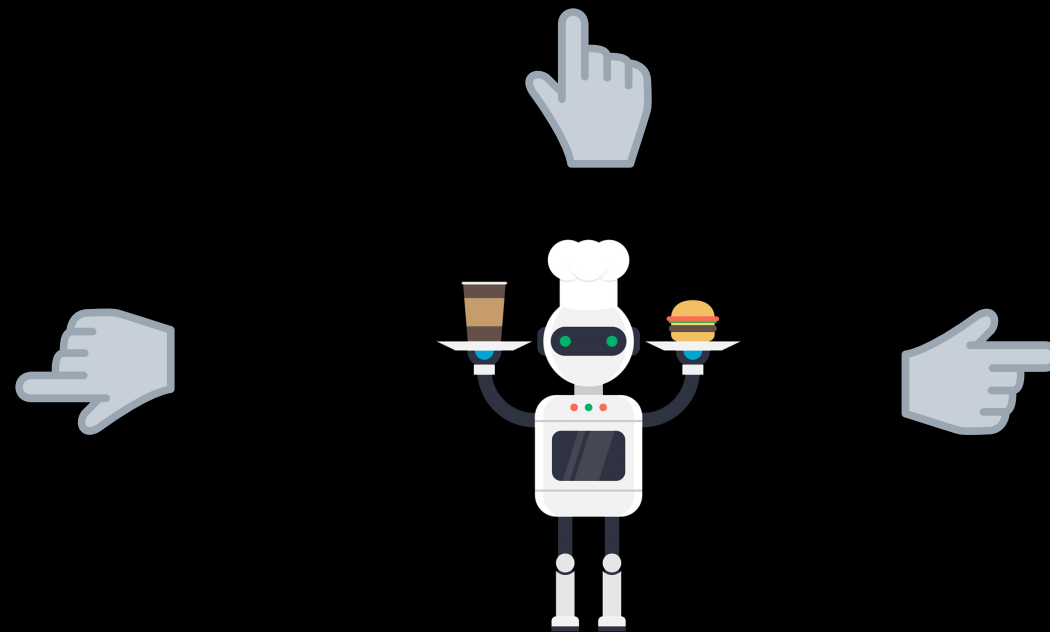
- The UI would enable customers to search similar restaurants based on different attributes such as Similar Restaurants, Ambience and Service

# Future Scope

- Zomato dataset → Local systems storage → Preprocessing →

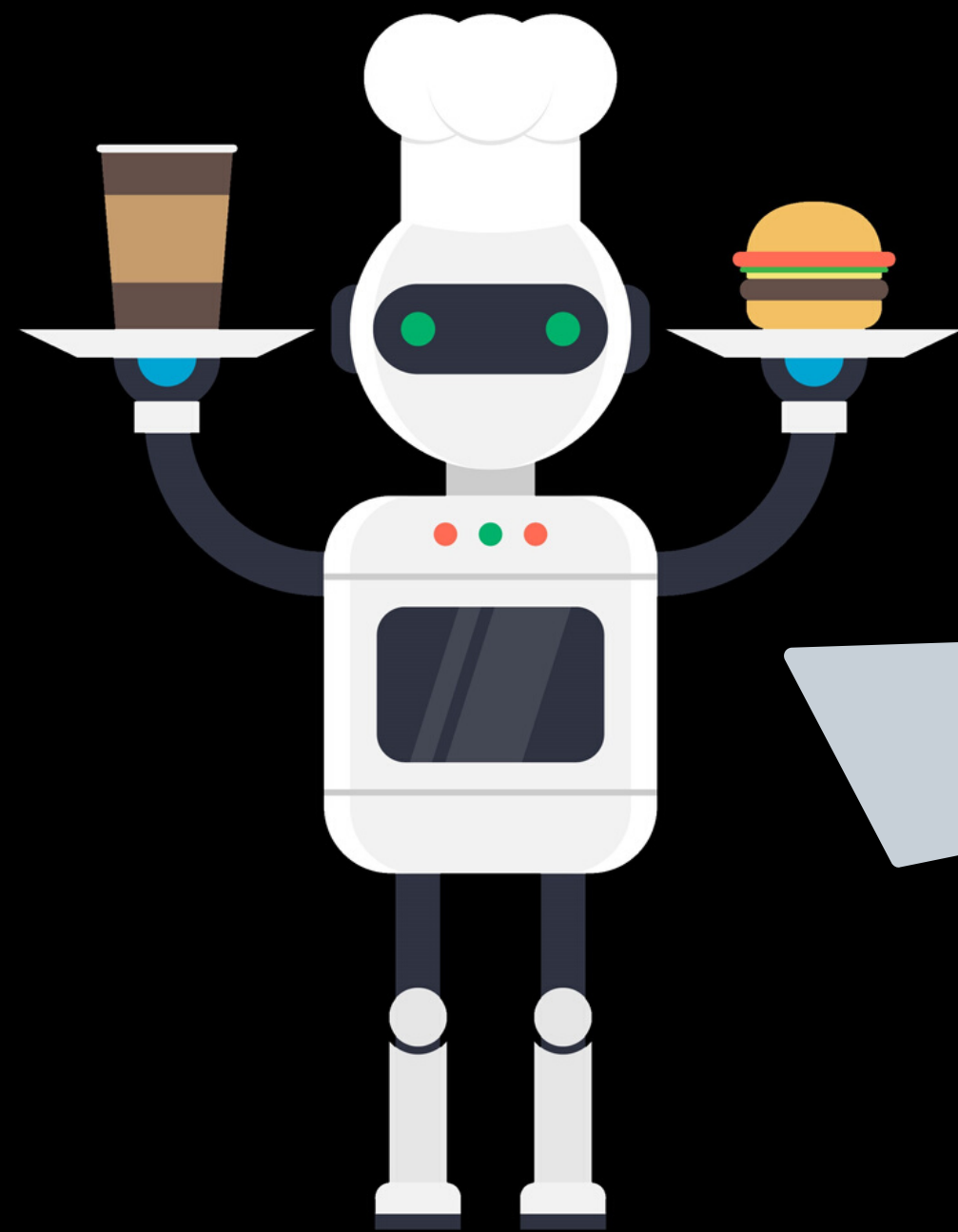
Analysis == Make the above process dynamic

- Customize the product to be business/owner specific



- Increase the search criteria beyond what we have





*Thank You*

# References

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