

Project Development Phase

Model Performance Test

Date	24 November 2023
Team ID	Team ID: 591739
Project Name	Restaurant Recommended System
Maximum Marks	10 Marks

Model Performance Testing:

In our Unsupervised Machine Learning-based restaurant recommendation project, we implemented two distinct recommendation systems:

1. A Content-Based Recommendation System, leveraging cosine similarity to analyze and recommend restaurants based on features such as location, rating, reviews, and restaurant type.
2. A Popularity-Based Recommendation System, which recommends restaurants based on their overall popularity.

```
from sklearn.metrics.pairwise import cosine_similarity
```

```
similarity = cosine_similarity(vector)
```

```
similarity
```

```
array([[1.          , 0.71409206, 0.67992868, ..., 0.60620507, 0.55054907,
        0.5665704 ],
       [0.71409206, 1.          , 0.7662401 , ..., 0.39199556, 0.66116738,
        0.34694076],
       [0.67992868, 0.7662401 , 1.          , ..., 0.45516046, 0.55698884,
        0.42009166],
       ...,
       [0.60620507, 0.39199556, 0.45516046, ..., 1.          , 0.36602726,
        0.80926083],
       [0.55054907, 0.66116738, 0.55698884, ..., 0.36602726, 1.          ,
        0.26500327],
       [0.5665704 , 0.34694076, 0.42009166, ..., 0.80926083, 0.26500327,
        1.          ]])
```

Popularity Based Model:

```
popularity_output=filtered_res[['name','location','Rating','Mean Rating','Cost','rest_type','book_table','online_order','phone','address']]

#location
popularity = popularity_output[popularity_output['Rating'] > 4].sort_values(by='Mean Rating', ascending=False).reset_index(drop=True)
# popularity.drop('Mean',axis=1,inplace=True)
```

This model takes the user input's

1. Recommendation based on only Restaurant Name.
2. Recommendation based on only Location.
3. Recommendation based on only Restaurant Name and Location
4. Recommendation based on only Restaurant Type and Location.

Model Output:

```
recommend_main('the hidden home', 'all', 'all')
```

1 thehiddenhome restaurants is available in different location
thehiddenhome at Sarjapur Road

	name	location	rating	cost	rest_type	book_table	online_order	phone	address
0	the hidden home	Sarjapur Road	4.3	1300	Casual Dining	Yes	Yes	080 49653432	82/4B, Next To Wipro Corporate Office, Sarjapu...
1	vapour brewpub and diner	Sarjapur Road	4.6	1400	Microbrewery, Pub	Yes	No	080 49653047	7th Floor, Bren Mercury, Kaikondrahalli Juncti...
2	1131 bar + kitchen	Indiranagar	4.6	1500	Bar, Casual Dining	Yes	No	080 49652166	100 Feet Road, HAL 2nd Stage, Indiranagar, Ban...
3	hammered	Cunningham Road	4.7	1300	Pub, Cafe	Yes	Yes	+91 8041217527\r\n+91 7618729481	18, All Askar Road, Cunningham Road, Bangalore
4	nouvelle garden	JP Nagar	3.7	900	Casual Dining	No	No	+91 9900022134\r\n+91 9900022136	The Ambient Turret, 35/A, 1st Main Road, 3rd P...
5	shift	HSR	4.2	1500	Lounge, Casual Dining	Yes	Yes	080 49653439	1085, 14th Main, 18th Cross, Sector 3, HSR, Ba...

```
recommend_main('jalsa', 'all', 'all')
```

2 jalsa restaurants is available in different location
jalsa at Banashankari

jalsa at Marathahalli

	name	location	rating	cost	rest_type	book_table	online_order	phone	address
0	jalsa	Banashankari	4.1	800	Casual Dining	Yes	Yes	080 42297555\r\n+91 9743772233	942, 21st Main Road, 2nd Stage, Banashankari, ...
1	jalsa gold	Marathahalli	4.5	1300	Casual Dining	Yes	No	+91 9066887021\r\n+91 7022455300	20/5, Panathur Junction, Outer Ring Road, Kadu...
2	the hidden home	Sarjapur Road	4.3	1300	Casual Dining	Yes	Yes	080 49653432	82/4B, Next To Wipro Corporate Office, Sarjapu...
3	sidewalk - the garden bar	Marathahalli	4.5	1300	Bar, Casual Dining	Yes	Yes	+91 9591325180\r\n+91 9999266306	Ground Floor, Soul Space Paradigm, Next to Inn...
4	foxtrot	Marathahalli	4.4	1200	Pub, Casual Dining	Yes	Yes	+91 9108136001\r\n+91 9108136003	89/1, Monnekollal Village, Varthur Hobli, Oute...
5	hangover	HSR	4.3	1500	Bar, Casual Dining	Yes	Yes	080 49652578	2324, 17th Cross, 27th Main, Opposite Studio P...
6	jalsa	Marathahalli	4.2	1500	Casual Dining	Yes	Yes	+91 7406617555\r\n+91 7406627555	25/7, Doddannakundi, Outer Ring Road, Mahadeva...
7	jalsa gold	Marathahalli	4.5	1300	Casual Dining	Yes	No	+91 9066887021\r\n+91 7022455300	20/5, Panathur Junction, Outer Ring Road, Kadu...
8	the hidden home	Sarjapur Road	4.3	1300	Casual Dining	Yes	Yes	080 49653432	82/4B, Next To Wipro Corporate Office, Sarjapu...
9	hangover	HSR	4.3	1500	Bar, Casual Dining	Yes	Yes	080 49652578	2324, 17th Cross, 27th Main, Opposite Studio P...
10	bombay brasserie	Bellandur	4.3	1800	Casual Dining	No	Yes	+91 9513347399\r\n+91 8046834444	International Bay, Campus 8/A, RMZ Ecoworld, B...
11	hammered	Cunningham Road	4.7	1300	Pub, Cafe	Yes	Yes	+91 8041217527\r\n+91 7618729481	18, All Askar Road, Cunningham Road, Bangalore

```
recommend_main('jalsa', 'Marathahalli', 'all')
```

	name	location	rating	cost	rest_type	book_table	online_order	phone	address
0	jalsa	Marathahalli	4.2	1500	Casual Dining	Yes	Yes	+91 7406617555\r\n+91 7406627555	25/7, Doddannakundi, Outer Ring Road, Mahadeva...
1	jalsa gold	Marathahalli	4.5	1300	Casual Dining	Yes	No	+91 9066887021\r\n+91 7022455300	20/5, Panathur Junction, Outer Ring Road, Kadu...
2	the hidden home	Sarjapur Road	4.3	1300	Casual Dining	Yes	Yes	080 49653432	82/4B, Next To Wipro Corporate Office, Sarjapu...
3	hangover	HSR	4.3	1500	Bar, Casual Dining	Yes	Yes	080 49652578	2324, 17th Cross, 27th Main, Opposite Studio P...
4	bombay brasserie	Bellandur	4.3	1800	Casual Dining	No	Yes	+91 9513347399\r\n+91 8046834444	International Bay, Campus 8/A, RMZ Ecoworld, B...
5	hammered	Cunningham Road	4.7	1300	Pub, Cafe	Yes	Yes	+91 8041217527\r\n+91 7618729481	18, All Askar Road, Cunningham Road, Bangalore

```
recommend_main('all', 'HSR', 'Bar')
```

	name	location	rating	cost	rest_type	book_table	online_order	phone	address
0	house of commons	HSR	4.7	1000	Bar	Yes	No	080 45128819	1085, 14th Main, 18th Cross, Sector 3, HSR, Ba...