



HOTEL RECOMMENDATION SYSTEM

INTRODUCTION

Mission



The proliferation of online travel platforms has led to an overwhelming number of hotel options. This project aims to develop a hotel recommendation system that leverages customer feedback to provide personalized and accurate recommendations.

By analyzing customer reviews and preferences, the system will assist travelers in selecting hotels that align with their specific needs and tastes, enhancing overall travel experiences.

PROBLEM STATEMENT

Overwhelming number of hotel options on online platforms.

Inefficient use of customer feedback for improving recommendations.

Existing recommendation systems often provide generic suggestions.

Difficulty in finding hotels that match individual preferences.

Lack of personalized recommendations based on user history and behavior.



PROPOSED SOLUTION

The proposed solution uses Filtering and Sorting systems. Comprehensive Data collection is done on hotels, including amenities, pricing, location, and customer reviews to extract meaningful insights and provide tailored recommendations.

Libraries used : Numpy, Pandas, Pickle

FILTERING

Filtering is done based on:

- Tag-based filtering from descriptive query
- Country-based
- Star rating based (3 star, 4 star, etc.)

SORTING

Sorting is based on :

- Hotel Rating based
- Customer Review
- Price Based Sorting



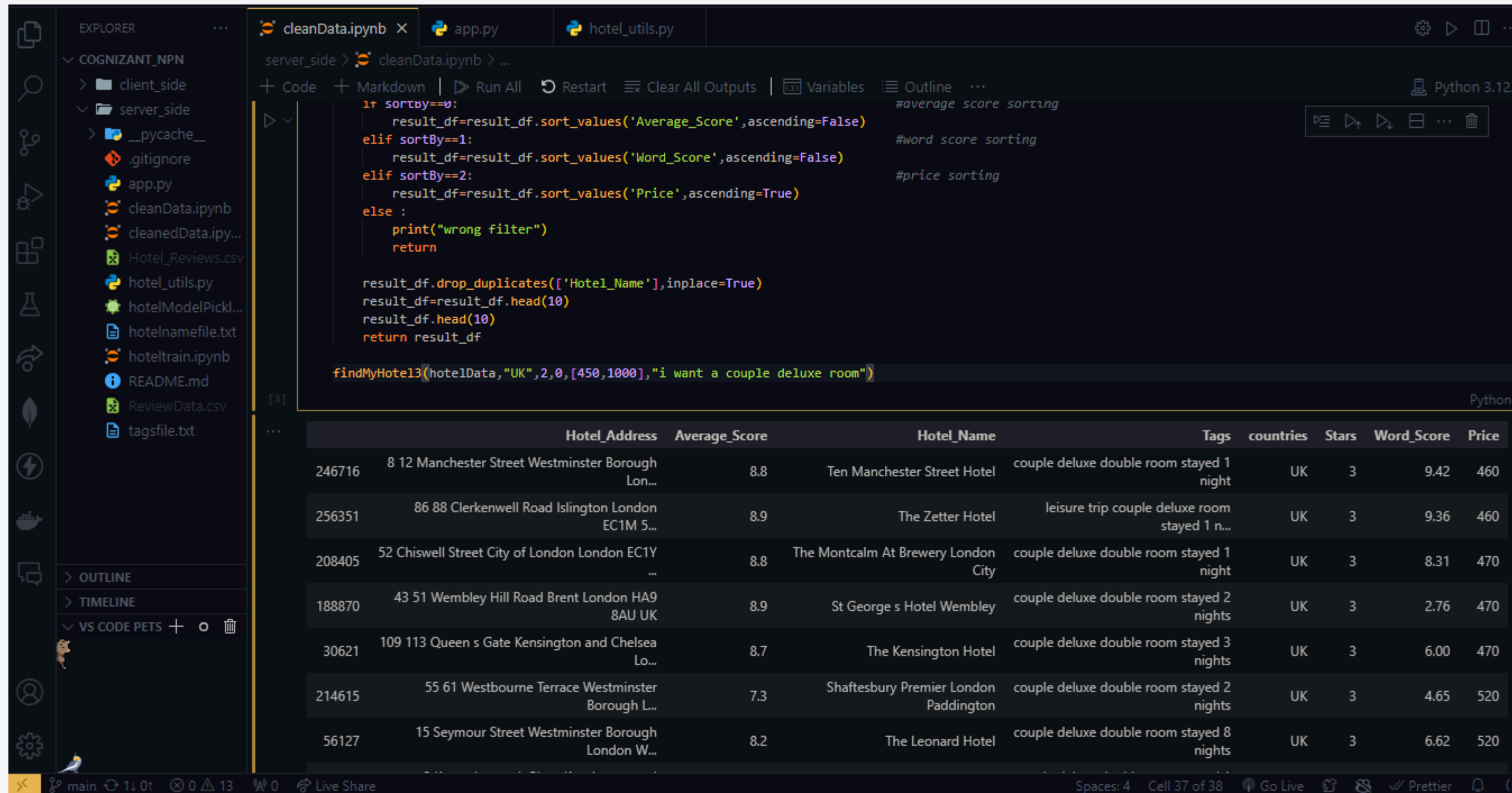
ALGORITHMS USED

In the hotel recommendation system, the filtering function accepts the dataframe, country, description, price and other parameters in order to filter out the suitable hotels that best fit the criteria required by the user.

Some Libraries that have been used are:

- Pandas
 - Tf-IdfVectorizer and cosine from scikit learn
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Code Snippets



The screenshot shows a VS Code editor with a Jupyter Notebook open. The code in the notebook is as follows:

```
server_side > cleanData.ipynb > ...
+ Code + Markdown | ▶ Run All ⏮ Restart ⏭ Clear All Outputs | [V] Variables [≡] Outline ... Python 3.12.3
1# sortBy==0: #average score sorting
   result_df=result_df.sort_values('Average_Score',ascending=False)
2elif sortBy==1: #word score sorting
   result_df=result_df.sort_values('Word_Score',ascending=False)
3elif sortBy==2: #price sorting
   result_df=result_df.sort_values('Price',ascending=True)
4else :
   print("wrong filter")
   return

result_df.drop_duplicates(['Hotel_Name'],inplace=True)
result_df=result_df.head(10)
result_df.head(10)
return result_df

findMyHotel3(hotelData,"UK",2,0,[450,1000],"i want a couple deluxe room")
```

The output of the code is a table with 10 rows of hotel data:

	Hotel_Address	Average_Score	Hotel_Name	Tags	countries	Stars	Word_Score	Price
246716	8 12 Manchester Street Westminster Borough Lon...	8.8	Ten Manchester Street Hotel	couple deluxe double room stayed 1 night	UK	3	9.42	460
256351	86 88 Clerkenwell Road Islington London EC1M 5...	8.9	The Zetter Hotel	leisure trip couple deluxe room stayed 1 n...	UK	3	9.36	460
208405	52 Chiswell Street City of London London EC1Y ...	8.8	The Montcalm At Brewery London City	couple deluxe double room stayed 1 night	UK	3	8.31	470
188870	43 51 Wembley Hill Road Brent London HA9 8AU UK	8.9	St George s Hotel Wembley	couple deluxe double room stayed 2 nights	UK	3	2.76	470
30621	109 113 Queen s Gate Kensington and Chelsea Lo...	8.7	The Kensington Hotel	couple deluxe double room stayed 3 nights	UK	3	6.00	470
214615	55 61 Westbourne Terrace Westminster Borough L...	7.3	Shaftesbury Premier London Paddington	couple deluxe double room stayed 2 nights	UK	3	4.65	520
56127	15 Seymour Street Westminster Borough London W...	8.2	The Leonard Hotel	couple deluxe double room stayed 8 nights	UK	3	6.62	520

Sample output of the searching function

Code Snippets

The screenshot displays the Visual Studio Code interface with a REST client extension. The Explorer sidebar on the left shows a project structure for 'COGNIZANT_NPN' with folders 'client_side' and 'server_side'. The 'server_side' folder contains files like 'app.py', 'cleanData.ipynb', 'cleanedData.ipynb', 'Hotel_Reviews.csv', 'hotel_utils.py', 'hotelModelPickl...', 'hotelnamefile.txt', 'hoteltrain.ipynb', 'README.md', 'ReviewData.csv', and 'tagsfile.txt'.

The REST client is configured for a POST request to '127.0.0.1:5000/findHotel3'. The request body is in JSON format:

```
{
  "country": "UK",
  "sortBy": 1,
  "stars": 0,
  "range": [450, 1000],
  "description": "i want a deluxe room for a couple"
}
```

The response status is 200 OK, with a size of 2.97 KB and a time of 3.94 s. The response body is a JSON array of hotel data:

```
[
  {
    "Average_Score": 8.8,
    "Hotel_Address": "8 12 Manchester Street Westminster Borough London W1U 4DG UK",
    "Hotel_Name": "Ten Manchester Street Hotel",
    "Price": 460,
    "Stars": 3,
    "Tags": "couple deluxe double room stayed 1 night ",
    "Word_Score": 9.42,
    "countries": "UK"
  },
  {
    "Average_Score": 9.2,

```

The bottom panel shows the 'TERMINAL' tab with a table of hotel data:

	Hotel_Name	Tags	Average_Score	Word_Score	Stars	Price
246716	Ten Manchester Street Hotel	couple deluxe double room stayed 1 night	8.8	9.42	3	460
83673	The Hoxton Holborn	leisure trip couple deluxe room stayed 1 n...	9.2	9.39	4	620
14766	Haymarket Hotel	leisure trip couple deluxe room stayed 1 n...	9.6	9.38	4	830
256351	The Zetter Hotel	leisure trip couple deluxe room stayed 1 n...	8.9	9.36	3	460
216212	Dorsett Shepherds Bush	couple deluxe double room stayed 2 nights	8.6	9.23	4	820
290091	Crowne Plaza London Battersea	couple deluxe double room stayed 1 night	8.8	8.99	4	790
196167	The Premier Notting Hill	couple deluxe double room stayed 1 night	7.3	8.95	5	1000
244303	Shaftesbury Metropolis London Hyde Park	couple deluxe double room stayed 1 night	7.7	8.41	4	630
208405	The Montcalm At Brewery London City	couple deluxe double room stayed 1 night	8.8	8.31	3	470
72201	Park Avenue Baker Street	couple deluxe double room stayed 1 night	7.7	7.83	4	650

The terminal also shows the command: '127.0.0.1 - - [21/Aug/2024 01:12:32] "POST /findHotel3 HTTP/1.1" 200 -'

Request and Response from the back-end server