Shoe recommendation using recommender system

The aims of this shoe recommender system revolve around facilitating users in finding the most suitable pair of shoes tailored to their preferences and needs.

What project does

The main goal of this project is to finalise the top 10 shoes based on the 3 criterias performed, which are Rating and Votecount, Content-based recommender and User characteristics .The shoes are ranked using prioritisation based on overlapping of 3 shoe IDs > overlapping of 2 shoe IDs > Content-based recommender > User characteristics > Rating and Votecount.

Algorithm used

There are 4 types of algorithms used in this project, including **Weighted Rating**, **FuzzyWuzzy**, **tfidf_vectorizer** and **Cosine_similarity**.

Limitations and Future Enhancements

Limitations:

1. Small dataset: Limited diversity and robustness in recommendations due to small sample size of shoes and users.
2. Restrictive user queries: Difficulty in interpreting complex or natural language queries, hindering user experience.
3. Reliance on text-based descriptions: Text descriptions may not capture all aspects of shoes, limiting recommendation accuracy.
4. Lack of social and contextual data: Missing factors like social networks and situational relevance in recommendations.

Future Enhancement:

1. Dataset expansion: Collect more comprehensive data on shoes and users for diverse and accurate recommendations.
2. Improved query interpretation: Implement natural language processing (NLP) for better understanding of user input.
3. Multimedia integration: Include images and user-generated content for visually appealing and comprehensive recommendations.
4. Social and contextual integration: Incorporate social and contextual data like social networks and trends for more relevant recommendations.

Running the project

Steps:

1. Download Anaconda.https://docs.jupyter.org/en/latest/install/notebook-classic.html We recommend downloading Anaconda's latest Python 3 version (currently Python 3.9).
2. Install the version of Anaconda which you downloaded, following the instructions on the download page.
3. Congratulations, you have installed the Jupyter Notebook. To run the notebook:

   `jupyter notebook`

4. Download the provided *users.csv*, *shoes.csv* and *ShoesRecommenderSystem* jupyter source files
5. Before executing the code in *ShoesRecommenderSystem* jupyter source files. Run:

   `pip install fuzzywuzzy`

   `pip install python-Levenshtein`

Demonstration & Example Output

Actions:			
	User's Input		System's Response
1.	Execute the code	2.	Display top 5 highest rating shoes (Figure 1)
3.	Input the related keywords,eg:sneaker (Figure 2)	4.	Display top 5 recommended shoes based on looking (Figure 3)
5.	Select own characteristic (Figure 4)	6.	- Display all average similarity score (Figure 5) - Display top 5 recommended shoes with past buyers's information (Figure 6) - Display final 10 shoes recommendation (Figure 7)
Alternative action:			
A1.Step 5:	Select new own characteristic,the system will display new step6's output based on new characteristic input		

```
==================================================
||          The Top 5 Highest Rating Shoes        ||
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	Shoe ID	Name	Brand	Weighted Rating
0	18	Formal Dress Shoes	Allen Edmonds	4.896208
1	8	Trail Running Shoes	Salomon	4.866909
2	13	Basketball Shoes	Jordan	4.798360
3	2	Running Shoes	Nike	4.783500
4	17	Waterproof Boots	Timberland	4.698586

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The top 5 highest rating shoes are : [18, 8, 13, 2, 17]

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Figure 1:Table of Top 5 Highest Rating Shoes

Enter what kind of shoes you are looking for : sneaker

Figure 2:Input key words

```
Enter what kind of shoes you are looking for : sneaker

================================================================
||       Top 5 Recommended Shoes Based on your looking          ||
================================================================
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	Shoe ID	Name	Brand	Description
0	1	Classic Sneakers	Adidas	Classic sneakers with a timeless design, perfe...
1	7	Canvas Sneakers	Converse	Classic canvas sneakers with a retro vibe, ava...
2	9	Slip-On Sneakers	Vans	Iconic slip-on sneakers with a low-profile sil...
3	25	Fashion Sneakers	Steve Madden	Trendy fashion sneakers with chunky soles and ...
4	22	Athletic Sneakers	Under Armour	Performance-driven athletic sneakers with brea...

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Top 5 Shoe IDs: 1, 7, 9, 25, 22

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Figure 3:Table of Top 5 Recommended Shoes based on Looking

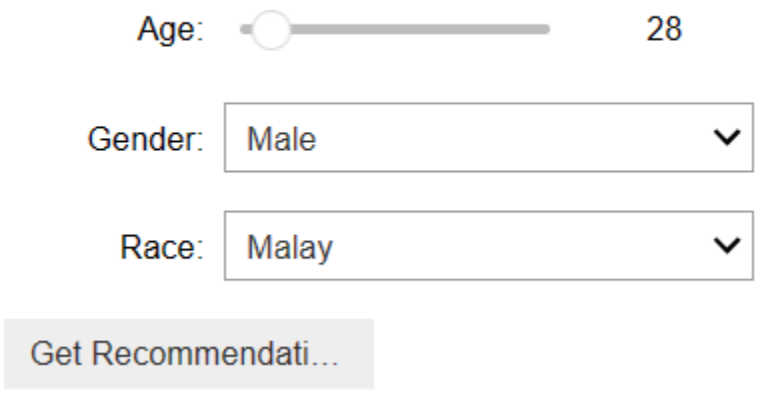

Figure 4:Select user's characteristic

Similarity Scores Table:

	Shoe ID	Average Similarity Score
0	3	0.999716
1	4	0.999483
2	1	0.999448
3	2	0.999353
4	5	0.999203
5	25	0.998847
6	24	0.998419
7	23	0.998385
8	20	0.997327
9	13	0.997321
10	18	0.997316
11	15	0.997292
12	12	0.997285
13	14	0.997186
14	10	0.996826

Figure 5:Table of Average Similarity Score

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================================================================
||       Recommended Shoes with Past Buyers's Information       ||
================================================================
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	Shoe ID	User ID	Gender	Age	Race
0	3	[6]	[Male]	[40]	[Malay]
1	4	[10]	[Male]	[47]	[Malay]
2	1	[2, 11, 21, 26]	[Male, Female, Female, Male]	[45, 29, 24, 44]	[Malay, Malay, Malay, Malay]
3	2	[3, 13, 27]	[Female, Female, Female]	[27, 25, 28]	[Malay, Malay, Malay]
4	5	[9, 19, 25]	[Female, Female, Female]	[22, 31, 21]	[Malay, Malay, Malay]

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Top 5 recommended shoe IDs based on your characteristics: [3, 4, 1, 2, 5]

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Figure 6:Table of Top 5 Recommended Shoes with Past Buyers's Information

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=================================================================
||              Final 10 Shoes Recommendations                 ||
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	Shoe ID	Name	Brand	Description
0	2	Running Shoes	Nike	High-performance running shoes featuring light...
1	1	Classic Sneakers	Adidas	Classic sneakers with a timeless design, perfe...
2	7	Canvas Sneakers	Converse	Classic canvas sneakers with a retro vibe, ava...
3	9	Slip-On Sneakers	Vans	Iconic slip-on sneakers with a low-profile sil...
4	25	Fashion Sneakers	Steve Madden	Trendy fashion sneakers with chunky soles and ...
5	22	Athletic Sneakers	Under Armour	Performance-driven athletic sneakers with brea...
6	3	Casual Loafers	Sperry	Comfortable slip-on loafers crafted from premi...
7	4	Hiking Boots	Merrell	Durable hiking boots designed for rugged terra...
8	5	Formal Oxfords	Johnston & Murphy	Elegant leather oxfords suitable for formal oc...
9	18	Formal Dress Shoes	Allen Edmonds	Handcrafted dress shoes made from premium leat...

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Figure 7:Table of Final 10 Shoes Recommendation

Project's team

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