

SAR Version 1

1. First, we extract the ratings for each workspace location by generating 100 random rows of data with a uniform distribution between 1 and 5 (inclusive). We assign each of these rows to a new user identifier, 'User_1' through "User_100."
2. Next, we group the data by the category of each workspace location and calculate the average rating for each category across all users. We round these values to one decimal place for readability.
3. We drop the Workspace_Id row from the category averages dataframe.
4. We create a dataframe with indices and columns equal to the Workspace_Id values and populate it with the average ratings between each pair of workspace locations. This is done by looping through each pair of workspaces and calculating their average rating.
5. We calculate the recommendation scores for each workspace location by multiplying the workspace-to-workspace affinity matrix by the User_1 affinity vector. This produces a recommendation score for each workspace location.
6. We create a dataframe with the recommendation scores for each workspace location and sort it in descending order to get the top recommended workspaces for User_1.
7. We print the details for the top 5 recommended workspaces for User_1, including the name, address, category, price range and overall rating.
8. Finally, we print the details for the top 5 recommended workspaces for User_1, using a for loop. For each of the top 5 recommended workspaces, we increment a 'top' variable to keep track of the ranking, print the top choice number using an f-string, and call the 'print_workspace()' function to print the details of the recommended workspace. This function extracts relevant information from the 'clean_df' dataframe and formats it for display.

In summary, the SAR model for the workspace recommendation engine generates a workspace-to-workspace affinity matrix based on the average ratings for each category of workspace location, and then uses this matrix to calculate recommendation scores for each workspace location based on a user's affinity vector. The top recommended workspaces for the user are then determined by sorting the recommendation scores and selecting the highest scoring workspaces. The details for the top recommended are printed to the console for the user to see.