A Pirate's Favorite Letter Write-up

Introduction

In response to Expedia offering recommended or featured hotels, we have created an algorithm to recommend destinations to customers as well. This is a way for Expedia to advertise specific locations to customers that have traveled to similar locations in the past. This allows for Expedia to sell more tickets and for customers to find new places that they would enjoy.

OVERVIEW OF EXPEDIA RECOMMENDATION ALGORITHM

Our rationale is that customers who traveled to a destination where certain traits were voted favorably, would be most likely to purchase services through locations which are similar. Conversely, customers who visited destinations with low reviews for a particular activity, such as golf, skiing, or art sports venues, would be less likely to travel to locations with similar scores.

Taken from the data dictionary, the customer review variables are:

> "Popularity scores of travel related facets of destinations. The interpretation of the popularity score is log10 of the probability that customer would endorse a destination for specific facet. These data are from the reviews that Expedia customers wrote for hotels in each destination."

Our algorithm is as follows.

- Define a destination vector as the vector whose elements are the components of the popularity scores for each destination.
- Create a customer profile by summing the destination vectors for each booking, for that particular customer.
- Use Cosine Similarity to compare each customer's preference vector with each destination vector.
- Find the destinations closest to the customer's preferences by finding the cosines closest to 1.

Results

The Algorithm seems to perform well upon manual inspection. Look at a customer who had been to: Dubai Emirate, United Arab Emirates; Sharm el Sheikh, Egypt; Cairo, Egypt; Riyadh, Saudi Arabia; Aqaba, Jordan; Dusseldorf, Germany; Chennai, India; and Riyadh, Saudi Arabia. Our algorithm recommended: Doha, Qatar; Amman, Jordan; Bismarck, North Dakota; Cali, Colombia; and Beirut, Lebanon. We can see that the customer had been to many areas in the Middle East and our recommendation algorithm's top 5 suggestions had 3 cities in the Middle East. Keep in mind that our algorithm does not take into account location data, only popular_* data.