Customizing Travel Based on User Ratings

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Domain

These data come from the travel and tourism domain. This project will explore users' interests and group users based on TripAdvisor ratings to form customized travel itineraries and potential travel social groups.

Annotated References:

DataFlair. (2021). Clustering in Tableau – Learn the steps to perform it easily. Retrieved from https://data-flair.training/blogs/clustering-in-tableau/

This tutorial provides detailed steps for performing clustering analysis in Tableau.

Dietz, L.W., Sen, A., Roy, R. et al. Mining trips from location-based social networks for clustering travelers and destinations. Inf Technol Tourism 22, 131–166 (2020). https://doi.org/10.1007/s40558-020-00170-6

This study uses social data to understand how tourists travel and uses clustering to group users together based on what locations they've checked into.

Finch, S. (2021). 7 tourism marketing challenges and how to overcome them. Hearst Bay Area. Retrieved from https://marketing.sfgate.com/blog/tourism-marketing-challenges

This blog lays out challenges in tourism marketing today and advice on how to overcome them.

Goyal, A. (2021, April 25). Introduction to K-means Clustering. MarkTechPost. Retrieved from https://www.marktechpost.com/2021/04/25/introduction-to-k-means-clustering/

This post is an introduction to k-means clustering with examples.

Koksal, I. (2020, April 4). How travel apps are using AI to personalize the experience. Forbes. Retrieved from https://www.forbes.com/sites/ilkerkoksal/2020/04/04/how-travel-apps-are-using-ai-to-personalize-the-experience/?sh=5258aa07f216

Koksal describes the current AI trends in the travel industry for personalizing travel planning and gives examples such as Airbnb and TripAdvisor.

Logesh, R., Subramaniyaswamy, V., Vijayakumar, V., & Li, X. (2019). Efficient user profiling based intelligent travel recommender system for individual and group of users. Mobile Networks & Applications, 24(3), 1018–1033. https://doi-org.ezproxy.bellevue.edu/10.1007/s11036-018-1059-2

Authors describe a Travel Recommender System (TRS) using Yelp and TripAdvisor data that gives users a list of destinations and points of interest based on their preferences.

Renjith, S., Sreekumar, A., & Jathavedan, M. (2018). Evaluation of partitioning clustering algorithms for processing social media data in tourism domain. 2018 IEEE Recent Advances in Intelligent Computational Systems (RAICS), 127-131, doi: 10.1109/RAICS.2018.8635080.

Authors use social media data, including the Travel Reviews dataset, to feed clustering algorithms, and they compare this approach to traditional collaboration filtering techniques commonly used in tourism recommendation systems.

Schroer, A. (2020, April 6). Personalized hotel booking and money for delayed flights: 9 reasons why AI is a traveler's best friend. Retrieved from https://builtin.com/artificial-intelligence/ai-travel-tech

This article gives an overview on different companies using AI to personalize travel and help travelers have a smooth and worry-free experience.

Shukla, Y., & Jyoti, J. (2017). State of Art Survey of Travel based Recommendation System. International Journal of Advanced Research in Computer Science, 8(3).

This journal article describes approaches for travel recommendation systems using customers' social network data and geo-spatial data.

Tsaih, R. & Hsu, C. (2018). Artificial Intelligence in smart tourism: A conceptual framework. International Conference on Electronic Business. Retrieved from https://pdfs.semanticscholar.org/24e9/507f17e1866bb38abaa57f7e3cde1f64be58.pdf

Tsaih and Hsu discuss how AI is involved in creating smart tourism, which involves technology in personalization, context-awareness, and real-time monitoring for predictions and recommendations.

Uçar, T. (2021). Benchmarking data mining approaches for traveler segmentation. International Journal of Electrical & Computer Engineering (2088-8708), 11(1), 409–415.

This study examines travel agency data of flight and hotel bookings with the purpose of planning user-oriented trips and travel campaigns. It delves into machine learning algorithms for clustering user data and performing prediction tasks.

Data Source

Travel Reviews Data Set
https://archive.ics.uci.edu/ml/datasets/Travel+Reviews#

This dataset from the UCI Machine Learning Repository contains one csv file with data from TripAdvisor.com reviews on destinations within East Asia. There are 980 observations, and each user has average ratings in 10 categories including art galleries, dance clubs, juice bars, restaurants, museums, resorts, parks, beaches, theaters, and religious institutions. Ratings are on a scale of Excellent (4), Very Good (3), Average (2), Poor (1), and Terrible (0).

Research Questions and Benefits

Which users enjoy similar attractions?

Which users dislike similar attractions?

Which users could have similar travel itineraries?

Which categories are most popular to include on all itineraries?

Which categories, if any, should not be included on itineraries?

Analyzing these data could help in decision making when creating travel itineraries and potential travel social groups. A travel agency could adjust daily agendas based on who is traveling and what the most popular attractions are. Ratings can also help in planning future trips in other areas of the world based on similar activities available.

Method

In this project, I'll be using Python in Jupyter Notebook to clean and process the data, and also generate exploratory visualizations. I'll use R for machine learning to apply clustering algorithms to find similar groups of users based on ratings per category. Then I'll use Tableau to create final visualizations.

Potential Issues

Some challenges I foresee with this project include limited details within the data, my own familiarity with clustering algorithms, and clustering visualizations in Tableau. The data are from East Asia, but I don't have information on what the specific attractions are within each category, which would be ideal to have. On the topic of clustering, I need to continue building my knowledge and skills when it comes to k-means clustering. I will also need to experiment in Tableau with the guides I've found so far to get the final visualizations right.

Concluding Remarks

With recommendation systems popping up everywhere in our daily lives, the expectation for customized experiences is growing and all industries need to keep up. Travel is no exception. People crave personalization and respond well to research results that are organized with their interests taken into account. Travelers are more likely to return to a service if they had a good experience, which makes the personalization factor competitive and critical in keeping up with other companies and apps. One of the major challenges in the travel and tourism industry is the fact that there are too many choices for travelers to make. In that way, simplifying travel decisions for customers using personalization is the best way to meet current demands.