

A recurrent neural network travel route recommendation system based on geotagged photos

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ABSTRACT

Traveling is an important component of every human life. The tourism industry has experienced a steady growth over the years. Personalization has been found to be one of the key factors of growth in the recent years. However, the large volume of information available has hindered travelers' ability to make travel plans in a fast and easy fashion. In order to address this problem a travel route recommendation system is proposed. This recommender was developed by inferring trip information obtained from metadata of photos posted by travelers on FLICKR. Locations visited were extracted by means of geospatial clustering. The types of travelers were inferred by executing topic modelling and clustering the resulting vectors. Total trip duration was calculated as the sum of the time spent at each location plus the travel time between locations. The recommender itself is built on a recurrent neural network. Based on the sequences learned and the particular user class to which the sequences belong to, the recommender predicts the next most likely location to be visited, while the trip duration acts as a constraint on the length of the trip. The experiments showed that user classes have a high degree of influence in the final result of the recommendation. Also, constraining the recommendation by using the trip duration showed to be an effective way of providing recommendations bounded in the user's context of time available. The recommender not only does not repeat locations, but also provides logical trips that are shorter in terms of kilometers in comparison to a Markov Model recommendation system.