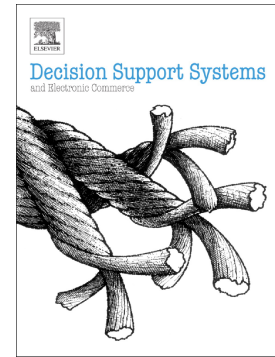


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# Tour Recommendations by Mining Photo Sharing Social Media

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## Abstract

With the increasing popularity of photo and video sharing social networks, more and more people have shared their photos or videos with their family members and friends. Therefore, in this paper, we propose a framework for recommending top- $k$  tours to meet user's interest and time frame by using user-generated contents in a photo sharing social network. The proposed framework contains four phases. First, we cluster geotagged locations into landmarks, and further cluster these landmarks into areas by the mean-shift clustering method. Second, we employ the Latent Dirichlet Allocation model to categorize the hashtags posted by users into landmark topics, and then use these topics to characterize landmarks and users. Third, to recommend tours for a user, we compute the tendency (or score) of the user visiting each landmark by the landmark popularity, the attraction of landmark to the user, and how many users similar to the user visit the landmark. Finally, based on the scores computed, we develop a method to recommend top- $k$  tours with highest scores for the user. Unlike most previous methods recommending tours landmark by landmark, our framework recommends tours area by area so that users can avoid going back and forth from one area to another and save plenty of time on transportation, which in turn can visit more landmarks. The experiment results show that our proposed method outperforms the Markov-Topic method in terms of average score and precision. Our proposed framework may help users plan their trips and customize a trip for each user.

**Keywords:** tour recommendation, photo sharing social network, mean-shift clustering method, Latent Dirichlet Allocation model, data mining.

## 1. Introduction

With the increasing popularity of photo and video sharing social networks, more and more people have shared their photos or videos with their family members and friends. A recent Harvard

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