

OrientSTS: Spatio-Temporal Sequence Searching in Flickr

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1. EXTENDED ABSTRACT

Nowadays, due to the increasing user requirements of efficient and personalized services, a perfect travel plan is urgently needed. However, at present it is hard for people to make a personalized traveling plan. Most of them follow other people's general travel trajectory. So only after finishing their travel, do they know which scene is their favorite, which is not, and what is the perfect order of visits.

In this research we propose a novel spatio-temporal sequence (STS) searching, which mainly includes two steps. Firstly, we propose a novel method to detect tourist features of every scene, and its difference in different seasons. Secondly, combined with personal profile and scene features, a set of interesting scenes will be chosen and each scene has a specific weight for each user. The goal of our research is to provide the traveler with the STS, which passes through as many chosen scenes as possible with the maximum weight and the minimum distance within his travel time.

However, the STS searching has not been addressed before. Zheng et al. [1] recorded GPS tracks of 107 users to determine the interestingness of tourist scenes. The authors of [2] also focused on mining similar traveling sequences from multiple users' GPS logs. None of these approaches considers scene features, user's profile and temporal information.

We propose a method based on topic model to detect scene features, and provide two approximate algorithms to mine STS: a local optimization algorithm and a global optimization algorithm. System evaluations have been conducted and the performance results show the efficiency.

Categories and Subject Descriptors

H.4 [Information Systems Applications]: prototyping

General Terms

Design

Keywords

spatio-temporal sequence, topic model, approximate

2. SYSTEM OVERVIEW

Figure 1 shows the interface of our prototype STS. It has five major components: profile-based scene choice, context-based algorithm choice, STS searching, parameter set, and



Figure 1: the Interface of STS

photo gallery. *Profile-based scene choice* includes the choice of cities and scene categories based on user's profile. *Context-based algorithm choice* includes three different algorithms which are fit for different situations separately. If the user is more concern about the distance, the algorithm dLOA will be chosen; if he care more about the weight, the algorithm wLOA will be chosen; else, the algorithm GOA can be used, which considers both the distance and the weight of the sequence. After specifying a start point and an end point, clicking the button of *STS searching*, we will get a spatio-temporal sequence. *parameter set* includes the settings of map mode, the season, the profile, the balance factor and the total time. *photo gallery* shows the representative photos in the sequence.

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4. REFERENCES

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