

Point-of-interest Recommendation for Location Promotion in Location-based Social Networks

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Abstract:

With the wide application of location-based social networks (LBSNs), point-of-interest (POI) recommendation has become one of the major services in LBSNs. The behaviors of users in LBSNs are mainly checking in POIs, and these checkingin behaviors are influenced by user's behavior habits and his/her friends. In social networks, social influence is often used to help businesses to attract more users. Each target user has a different influence on different POI in social networks. This paper selects the list of POIs with the greatest influence for recommending users. Our goals are to satisfy the target user's service need, and simultaneously to promote businesses' locations (POIs). This paper defines a POI recommendation problem for location promotion. Additionally, we use submodular properties to solve the optimization problem. At last, this paper conducted a comprehensive performance evaluation for our method using two real LBSN datasets. Experimental results show that our proposed method achieves significantly superior POI recommendations comparing with other state-of-the-art recommendation approaches in terms of location promotion.

Introduction:

With the rapid development of the mobile internet, location based social networks (LBSNs) have become a new type of social network, for example, Foursquare, Gowalla, and Jiebang. Recently, many researchers have been engaged in location-aware services.

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In LBSNs, users can post comments on locations or activities, upload photos, and share check-in locations in which users are interested with friends. These locations are called points-of-interest (POIs). Currently, POI recommendation has become one of main location-aware services in LBSNs. POI recommendation approaches mostly involve recommending users with some locations in which users may be interested based on users' characters, preferences, and behavioral habits. In view of POIs, POIs (e.g. restaurants, hotel, markets) have to explore checking-in records to attract more users to visit; more users (e.g., friends of users that checked in these POIs) will be influenced to check in these locations. In this paper, we regard the influence on the business as a maximization location promotion problem. The essential goals of recommendation system are to satisfy users' service demands and merchants' advertising needs. We formulate the problem as a POI recommendation problem for location promotion, in which, given a target region and the POI set in this region, a constant K , the aim is to maximize the number of influenced users through recommending these recommended POIs to the target user, for which the number of recommended POIs is K . In the previous study the authors formulated a location-aware influence maximization problem to find a set of seed users in social network for maximizing influence spreads, and it does not apply to our POI recommendation problem. The output result of our problem is a set of POIs.

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