Managing and Sharing Experiences on the Social Web

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Abstract

Mobile phones have transformed the ways people interact. Last minute plans for physically getting together are made possible by the ability to call each other, check each others' whereabouts and decide to meet up. A recent generation of mobile applications is having similar effects on virtual social networks. Those applications combine a user's social network and location to encourage socializing, provide recommendations in a given geographic area, and engage users in online and offline activities. With that, instant, unplanned and useful socializing has become possible. The social breadcrumbs gathered in that process can be used to build a rich repository of geo-tagged information and personal preferences and leveraged to offer new online experiences that go beyond *atomic content consumption.* In this position paper, we discuss opportunities and challenges that arise when managing and sharing such experiences.

1 Introduction

Hundreds of location-based social networks, services and advertising applications are being proposed on mobile devices. Those applications exploit geographic co-location and social networks to encourage socializing and content consumption. Yet, content recommendation solutions tend to focus on suggesting one piece of content (e.g., news articles, photos, travel destinations, products) that is endorsed by a large-enough number of users. In a world of mobility and virtual social networking, new recommendation opportunities that go beyond mainstream solutions are appearing. In this position paper, we propose a paradigm shift for social search and recommendation that makes use of the millions of social breadcrumbs left online by users and their social network, to *recommend experiences* instead of individual content items.

The list of applications that leverage geo-location and social networking keeps growing. For example, *Aka-aki* shows common friends and interests on a mobile display and also from people in one's neighbourhood, city or region. *Ask Around* and *lockChalk* let a user view, join and share real-time conversations happening nearby. *liin* enables mobile and online location-aware content, community and commerce. *Poki* lets one find out where friends are and track them on Google Maps and Google Earth. *blumapia* is a boating mobile social network with geotagged content sharing including photos. *flaik* combines location-based services with social networking, to pinpoint the location of individual skiers, deliver daily run statistics, and enable skiers to share their day with friends and families. *Foodspotting* allows users to share recommendations by taking a picture of their food, saying what it was and where they found it. *Trapster* users share the location of police speed traps. It uses the phone's GPS and Internet to alert users as they approach reported traps.

Social breadcrumbs left by users' actions and events together form their experience. In a mobile environment, breadcrubms are geo-located and time-stamped and can thus be gathered, stored, queried and recommended with different semantics. Moreover, making those experiences readily available will enable sharing and discussing them with others thereby engaging users more socially and helping them refine their own experiences and extract values from others'.

2 Challenges

Shifting the focus from managing and recommending atomic content items to experiences raises a number of challenging questions. First, the notion of experience requires to *gather and connect the actions* undertaken by a large number of users during a time period. Second, the relevance of an experience to a user needs to account not

only for the user's current activities (e.g., recommending a swimming pool after a hairdresser's is pointless), the user's affinities with others (e.g., gathering shoestore recommendations from certain friends can be useless), but also the time of day, and the user's geographic radius. Finally, experiences could be queried and explored in different ways. We argue that ranked lists are not the best paradigm for exploring others' experiences and discuss alternative explorations.

2.1 Gathering Experiences

Gathering experiences requires to continuously aggregate the paths of a large number of users. The sheer volume of data generated by individual users raises new opportunities for indexing and compressing such data. User paths have two unique characteristics: location and time. Indexing partial paths by users in the same geographic area and for different time intervals will speed up retrieval. In [1], we explored multiple user clusterings based on overlap in actions and social networks (in that work, an action represented a user tagging a URL in Delicious). This clustering needs to be revisited to account for co-location.

2.2 Experience Relevance

Different experiences appeal to different users. Moreover, the relevance to an experience to a user depends on the place, time and affinities of a user with those who "own" that experience. An interesting experience may be one formed by a set of actions none of which a user experienced before or one that overlaps with previous experiences a user liked. Hence, ranking experiences requires to re-think relevance to incorporate these new dimensions.

2.3 Finding Experiences

Several querying models can be designed to inquire about existing experiences at different times and places. We discuss three different approaches that were developed in different contexts and identify the challenges behind adapting them to the problem of finding experiences.

In [2], we used a graph model to represent user itineraries in a city that were extracted from Flickr photos taken by them at different points of interest (POIs) in the city. User photo streams were aggregated into a POI graph that became readily available for querying. We proposed an adaptation of the Orienteering algorithm to construct itineraries given a start point, an end point and a time budget. This approach could be adapted to account for time of day and user affinities when determining the relevance of an experience to a user.

Experiences can also be queried on the fly while users are on the move. In [4] we formalized interactive itinerary planning as an iterative process where, at each step: (1) the user provides feedback on a proposed set of POIs and the the system further selects a new set of POIs, with optimal utility, to solicit feedback for, at the next steps. This iterative process stops when the user is satisfied with the recommended itinerary. We showed that the problems of POI selection and of itinerary computation are both NP-complete and develped heuristics for helping users to construct itineraries on the fly. An interesting challenge here is to incorporate the physical co-location of one's friends in determining the next set of POIs with an objective function that maximizes socializing. In other terms, the system should account for the proximity of members of a user's social network in selecting the set of places a user could go to next and showing who will be there. That way, the user can choose or not to meet co-located friends.

One factor that comes into play when visualizing a set of experiences is their similarity/diversity ratio, i.e., the user is likely to prefer exploring many experiences that are different enough to be interesting as a whole but overlap enough to constitute alternatives to the same choice. While in other contexts such as Web search and recommendations [3, 5], diversity aims to minimize overlap between query results, here, the challenge is to achieve a good balance between similarity and dissimilarity.

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