Investigating the Place Categories Where Location-Based Services Are Used

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ABSTRACT
Location-based services are being used in a wide variety of places. However, not all services are used in the same types of places with the same frequency. We are beginning to investigate the place categories where a variety of location-based services are currently used. This position paper will begin by analyzing the differences between Foursquare and our location-based video sharing platform StoryPlace.me, highlighting key differences in places of use that arise based on the focus and design of each service.

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Location-Based Services; Place; Urban Computing.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms
Human Factors; Design.

INTRODUCTION
Mobile location-based services are becoming increasingly popular. Services such as Foursquare have over 25 million users [1] and are being integrated into the places of daily life. These new services require specific user interactions to share location information and differ from earlier systems that continuously shared location in the background. A variety of these new services exist and each has its own community, interaction style, and supported uses. These factors can impact not only with whom a person decides to use a particular service, but also the types of places where the service is explicitly used. Some services might be used more in restaurants and bars as a way to invite others or share favorite spots, while others might be used in parks or zoos to share media of family experiences with relatives.

It is these differences in places of use that we are interested in and will begin to explore in this position paper. We will explore two quite different location-based services, Foursquare and StoryPlace.me, and investigate the differences between the place types where they are used. A

larger activity of investigating usage data from other location-based services is an ongoing activity that we hope to be able to report on at the workshop.

THE SERVICES
Many location-based services exist in public use. For this initial analysis, we will choose two that are quite different, but we are also interested in exploring differences between services that have similar use cases and interaction styles.

Foursquare
Foursquare is a location-sharing service that enables users to "check-in" to specific venues to share their location with friends, create a record of the places they visited, and to earn points and badges. The use of the service in daily life has been studied by Cramer et al [4] and Lindqvist et al [5]. As of late 2012, the service had over 25 million users and was supported on a variety of mobile operating systems including Android, iOS, Windows Phone, and Blackberry.

In this analysis, we will use a Foursquare data set from 2011 [6] that was released to the Wall Street Journal. This data set includes all checkins in New York City and San Francisco, two cities where the service is heavily used, in a one-week period.

StoryPlace.me
StoryPlace.me [3] is a location-based service that we originally designed to promote the sharing of family stories between generations. The system allows users to record videos and save them to real world locations for specifically-designated recipients. When a recipient walks near the location of a story, their phone vibrates and they can watch the video in the real-world location where it was saved. Currently, there are over 1,200 registered users.

There are two data sets from the StoryPlace.me system. The first comes from privately shared stories. While we do not have access to the content of the videos, we do have access to the metadata for the location of each story and the title. Based on this, we have manually classified 139 stories into the Foursquare location categories for comparison.

The current public-beta version of the system also supports professional content and several content owners, such as WTTW and WNET (public television stations in Chicago and NYC), the Chicago Office of Tourism and Culture and The Points of Light Foundation in Washington DC, have contributed location-based videos to the system for others to discover. This second StoryPlace.me dataset contains the
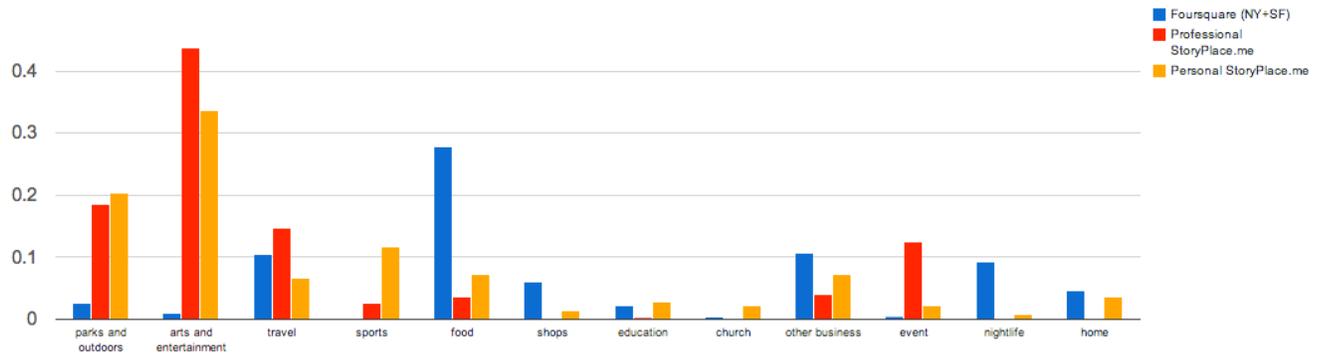
Figure 1: Place types where Foursquare and StoryPlace.me are used. Each bar represents the percent of use that occurred in a specific category for a particular service.

number of views on the 261 videos provided by these professional content sources.

INITIAL FINDINGS

The distribution of place types where each service was used can be seen in Figure 1. Several differences are immediately apparent. StoryPlace.me is used much more frequently in parks, outdoors, arts, and entertainment venues, while Foursquare is used much more frequently in food and nightlife related venues. Within the StoryPlace.me data sets, there is a higher representation of arts and event places in the professional content over the personal content.

There are many reasons that can lead to these differences. The focus of Foursquare is more about instantaneous sharing, which here is shown by its prevalence in food, nightlife, and travel categories. These are places where others are likely to meet up and sharing these locations can aid in coordination of later meet-ups. In contrast, StoryPlace.me is more focused on sharing important life events with others. These are more likely to be larger, more memorable events and, as we showed in [2], important places in the city tend to exist in these categories.

DISCUSSION

Various aspects of a service can impact the places where it is used. As HCI researchers, we should be studying not just the interactions on the screen, but also the interactions in the real world that the on-screen interactions afford. Various types of services will lead to heavy use in restaurants, bars, and other everyday locations while others may be more prominently used in places such as arts or parks.

When designing a service, understanding the types of places where it will be used can help to create a better interaction for the user. Understanding the types of people that users are likely to share with in different locations as well as the type of content that they would like to share there become important aspects of the design. In quieter environments of parks and outdoors, it is easier to capture audio or video, for example. Or in more social environments such as restaurants and bars, quick interactions become increasingly important so as not to distract from the other people that one is there with. In some places, awareness and real-time updates might be important to increase the chance of spontaneous meet-ups.

A deeper investigation into the place types where services are used as well as the features of each system is necessary to better understand the interaction between a service and the place categories where it is used, and this is ongoing work. By the time of the workshop, we expect to have data about other services as well as a comparison to other types of "important" places, such as those from the Milgram Map studies. Understanding where location-based services are used helps to move beyond the analysis of the on-screen interactions towards how these services integrate into the places of our everyday lives.

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