Travel Q: Questifying Micro Activities Using Travel Photos to Enhance Travel Experience

Yoojung Kim
User Experience Lab
Seoul National University
Seoul, South Korea
tendtoyj@snu.ac.kr

Changhoon Oh
Human Centered Computing Lab
Seoul National University
Seoul, South Korea
yurial@snu.ac.kr

Taeyoung Lee
Human Centered Computing Lab
Seoul National University
Seoul, South Korea
taeyoung.lee@snu.ac.kr

Donghun Lee
Human Centered Computing Lab
Seoul National University
Seoul, South Korea
donghun@snu.ac.kr

Joongseek Lee
User Experience Lab
Seoul National University
Seoul, South Korea
joonlee8@snu.ac.kr

Bongwon Suh
Human Centered Computing Lab
Seoul National University
Seoul, South Korea
bongwon@snu.ac.kr

Abstract

Travel is a series of micro activities. With the proliferation of digital cameras and smartphones, it is now common for travelers to record their micro activities in fine detail by taking photos without ever missing a moment. However, how to enhance the travel experience by utilizing such recorded micro activities has not been determined. Thus, we aim to 1) investigate how travelers record micro activities in photos through a user study and 2) design a system to enhance travel experiences utilizing travel photos. Based on the user study, we devise a "questification" strategy that motivates travelers to change their photos into quests. We implement a research prototype, Travel Q, a community platform that allows users to share their micro activities through photos. The results of a field study with the prototype suggest that questification is an applicable strategy for enhancing travel experiences.

Author Keywords

Travel experience; mobile application; micro activity; quest; photograph; gamification

ACM Classification Keywords

H.5.2. User Interfaces – User-centered design.

Introduction

The rapid spread of smartphones changed the way people take photos while traveling. It is now common for travelers to take hundreds of photos to capture every single moment of their trips. For instance, a person traveling in New York might try street food and take pictures of the food itself, the food truck, and the menu, capturing every detail. He might share one picture with the description, "Try crème brûlée, the bestselling food at The Cinnamon Snail Food Truck, if you are in Chelsea, New York." This shows how photos could reflect micro activities in a particular spot. In this paper, we characterize a micro activity as an activity performed by a specific individual in a specific place for a short period of time. Travel experience is usually consists of a series of such micro activities.

Understanding the relationship between travel photos and micro activities might be the key to enhancing travel experience. However, many studies have focused on recommending travel routes based on places of interest (POIs). Sightsmap is a recommendation system for tourist sites based on crowd-sourced geotagged photos [6]. The system allows users to find POIs through the heatmap along with popularity-sorted POI markers. Similarly, Kurashima et al. developed a travel route-recommendation system that links key landmarks based on the geotagged photos [4]. Those studies, however, tended to overlook the diversity of activities in travel spots by aggregating travel activities.

More recently, researchers have focused on the micro-level experiences related to a particular spot rather than just tourist site recommendations. CuratedCity [1] used the template "This is my favorite place for _____ in the neighborhood" for sharing micro-level

experiences. This study emphasized that micro-level recommendations can be useful for local people as well as travelers.

Meanwhile, "gamification," which is defined as the use of game design elements in non-game context [2], has gained significant attention from HCI communities. Gamification can enhance user experiences with affordances for gameful features to support overall value creation [3]. Especially in tourism context, gamification can encourage tourist engagement, enhance a tourist experience, improve tourist loyalty, and increase tourism brand awareness [7].

In this paper, we aim to enhance travel experience by utilizing photo collections representing micro activities and gamification strategy. To address the challenge, we conducted this research in two steps. First, we investigated travelers to identify how travel photos reflect micro activities. The results of in-depth interviews implied the ways in which travelers want to utilize their photos for their travel. There are three key findings: 1) Travelers want a "detailed guide," including micro activities related to a specific spot. 2) Travelers complete their to-do lists one by one and prove it by taking pictures. 3) Travelers describe their travel experiences as narratives.

Second, based on the findings, we designed a research prototype, Travel Q, to enhance travel experiences utilizing travel photos reflecting micro activities. The design strategy of Travel Q involves 1) "questifying" travel experience by completing micro activities identified in travel photo collections, 2) providing diverse quests for travelers through community sharing, and 3) facilitating storytelling by curating

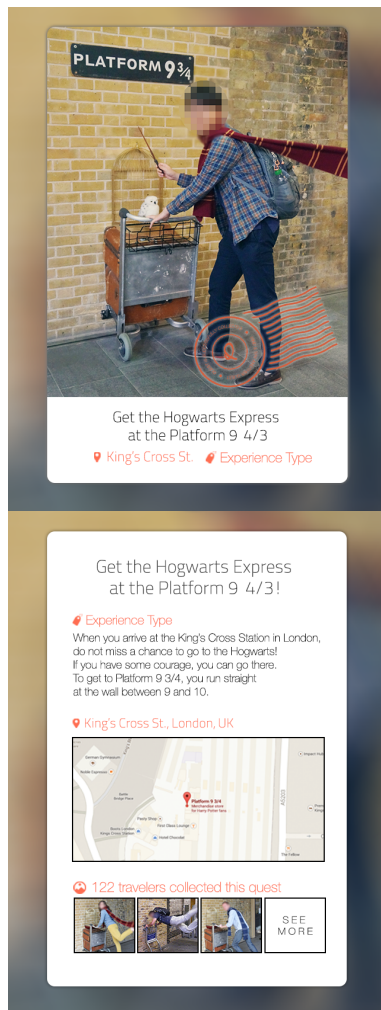**Figure 1.** Affinity Diagram for analysis of the user study data

Figure 2. Quest applying the card metaphor. To motivate users to collect the quests actively, we designed the quest employing a card metaphor.

micro activities represented by photo quests. With the research prototype, we performed a field study to investigate the feasibility of our design approach. The study result shows that our strategy has great potential to enhance travel experiences.

User Study & Design Strategy

In order to understand the photo practices of individuals during trips and micro activities, we conducted in-depth interviews with online travel community users. We recruited 28 users (male: 11 female: 17, age range: 22-33, median age: 25). The participants' jobs were diverse (e.g., undergraduate, graduate, teacher, writer, office worker, athlete, etc.).

The interview was semi-structured to identify how travelers record micro activities in their photos. Participants were asked to describe their most recent travels based on their travel photos and itineraries. They explained specific activities at tourist sites, as the travel photos and itineraries helped them to recall their travels. All interview data was recorded, transcribed, and analyzed through three ideation sessions. We then induced issue points and categorized them using an affinity diagram (Figure 1).

Travelers want a "detailed guide," including micro activities related to a specific spot.
Travelers need specific content and recommendations. They do not want basic information about POIs but micro-recommendations, such as a suggestion for an activity only possible in a certain spot. In particular, many travelers mentioned their desire to take pictures in certain spots that reflected the characteristics of the location. P02 said, "I have visited Jeong Dong Jin, famous place for its sunrise. I saw a tip on taking a

picture of 'eating the Sun' before the trip. I think it would be very nice if similar tips existed elsewhere." Travelers wanted to have more specific recommendations about the tourist sites.

Those results imply that travelers' photo could expand into detailed guides for other travelers. Travelers can explore available micro activities through other travelers' diverse photos. It would be needed to form a community platform to gather and share their photos. Thus, we aimed to develop a platform in which users could freely share their travel experiences in detail.

Travelers complete their to-do lists one by one and prove it by taking pictures.
When preparing for a trip, travelers refer a kind of to-do lists, and they complete each item on the list one by one on the real trip. 20 interviewees out of 28 said they referred to lists such as "10 Things to Do in San Francisco." In addition, 14 interviewees made their own lists. Some of them replaced the lists with photos. "Traveling is all about eating. I made a photo collection of food porn for this trip," (P13). They responded that they felt a sense of accomplishment as they clear their lists one by one. Especially travelers emphasized that clearing to-dos by taking photos reinforced a sense of fulfillment.

The results of interviews indicate that travelers usually manage their travel with to-do lists. We focused on that clearing to-dos by taking photos was preferred. It implies that to travel by completing to-do lists is similar to clearing quests in an adventure game. Borrowing the term of 'quest' would promote travelers to make and clear photo-based to-do lists.

User Roles

Quest creator: The role of a quest creator is changing travel photos into quests. He/she records the micro activities at a certain place by taking photos, and shares them by creating quests.

Quest collector: The role of a quest collector is responding to other travelers' quests. He/she seeks and completes the quests by taking a similar looking picture at the same place.

Quest validator: The role of a quest validator is to judge success or failure of other travelers' responses.

Quest curator: The role of a quest curator is weaving a number of individual quests into a quest-pack.

Table 1. Diverse User Roles

Travelers describe their travel experiences as narratives with photos.
In the interviews, participants described their trips by grouping their travel photos into stories. They arranged the photos in serial order and also classified them by subject. Five interviewees made multiple narratives with photos according to various themes (e.g., food, activities, sightseeing, etc.).

According to these results, travelers enjoy weaving travel stories by curating travel photos. It is needed to support linking individual travel photos freely, in which various elements are connected into a collection to yield a lager value than each combined [5].

Travel Q
Based on the design strategies, we developed Travel Q, to enhance travel experiences utilizing travel photos reflecting micro activities. The main idea of Travel Q is 1) 'quest-ification' of travel experience by completing micro activities identified in travel photo collection, 2) providing diverse quests for travelers through community sharing, and 3) facilitating storytelling by curating micro activities represented by photo quests. We developed Travel Q as an Android application.

Quest
A quest is a well-known feature of gamification. In this paper, a quest is defined as a unit of travel experience. A quest consists of a photo and its additional information (e.g., title, location, category, and direction). Users can create, collect, and validate the quests. While traveling, users take pictures of micro activities at the tourist site and upload them along with details. Then, other users collect the quest, by visiting the same site where the original quest photo was taken

and taking photos in the same pose or finding objects that are the same as those in the quest photo (Figure 2). The successful completion of the quest is judged by the votes of three other users.

To motivate users to collect the quests actively, we designed the quest employing a card metaphor. On the front of the card, basic information of a quest—photo, title, direction, location, and category—is presented. If the user collects the quest, a stamp appears automatically at the bottom of the card. By flipping the card over, users can check additional information, such as the user who first created the quest and quest answers that other users have tried.

Quest-pack
Users can curate a number of quests and make a new narrative out of them by combining different quests into a quest-pack. To generate a quest-pack, users must select a category, create a title, and provide a detailed explanation.

User Role & Scenario
We designed the system to provide users with various appropriate travel experiences by allowing them to perform four types of roles: quest creator, quest collector, quest curator and quest validator (Table 1). We present a scenario describing a traveler playing the multiple Travel Q roles.

James, a traveler, does not know what to do when visiting Seoul. He browses several quests and quest-packs about Seoul in Travel Q. He finds an interesting quest named "Gangnam Style Dance in Gangnam." In Gangnam, he takes a picture of himself dancing like Psy in the quest. He uploads the photo as an answer to the

No.	Sex	Age	Job
P01	F	34	School Personnel
P02	M	29	Office Worker
P03	M	24	Student
P04	F	22	Student
P05	F	23	Student
P06	M	29	Office Worker
P07	F	31	Teacher

Table 2. Demographic information of the participants

Figure 3. Facilitating social creativity. When P05 watched the quest "Eating an oval churro in a stall," she came up with an idea of making the AirBnB logo by crossing two oval shaped churros. She made a new quest "Find out AirBnB logo".

quest (quest collector). Walking down Gangnam Street, he comes across a building that looks like a beehive. He takes a photo of the building and creates a quest named "Find a Very Big Beehive in Gangnam" (quest creator). Before too long, another user of Travel Q answers James' quest. James examines the answer and smiles while confirming it (quest validator), since he thinks that he is not the only one who thinks that way. Browsing more quests about Seoul, he selects five quests and makes a quest-pack named "Five Must-See Places in Seoul" (quest curator).

Field Study
To assess the practical applicability of Travel Q, we conducted a field study with seven travelers (Table 2). The study was conducted in three popular tourist attractions in Seoul, Korea. We seeded 40 quests before the study and asked the participants to use all features of Travel Q. Each participant was asked to create, collect, and validate at least five quests and curate at least one quest-pack. Before the study, we briefly taught the participants how to use the Travel Q prototype. The study took 6 hours, including the post-hoc interview. Each participant was paid $50.

Creating Quests
A total of 96 quests were created. Considering that we asked the participants to create at least five quests, this result (13.71 quests per participant) suggests the following. First, the concept of questifying micro activities is easy to understand. The participants quickly learned how to create quests and made them without difficulty. Second, participants quickly identified questifiable micro activities. Many participants (P01, P03, P04, P06, and P07) reported that there were a number of micro activities worth questifying. We

investigated the content of the photos used for making quests. The investigation revealed that 83 photos actually contained micro activities associated with the location. These results strongly indicate that photos that represent related micro activities can be easily transformed into quests.

In addition, we found that the questification of photos could facilitate social creativity. Many participants mentioned that they were inspired to generate creative quests based on similar quests submitted by other users as shown in Figure 3. The example shows that the questification of travel photographs is a viable way to gather micro activities associated with travel experiences.

Collecting Quests
The participants collected a total of 53 quests. The average number of collected quests per user was 7.57 (SD=2.94), which was higher than we requested. Some participants (P01, P03, P04, and P07) commented that they felt as if Travel Q was a personal guide recommending the available micro activities of tourist sites. Browsing quests on Travel Q, P03 collected a quest of finding a statue of a boy fishing on the top of a building. He said the quest was useful, because he could not find such micro activities in other travel guides. Other participants (P02, P05) said that collecting quests was exciting, because it was similar to an adventure game. This result suggests that collecting quests is an interesting travel experience.

Validating Quests
The total number of validations was 153, which far exceeded our expectation. A validation is to confirm the validity of other travelers' answers to quests. At first,

we doubted whether the participant would be interested in validating quests, because just watching others' responses might be boring. However, the average number of validations per user was 21.86 (SD=4.18), far higher than we requested. Many participants (P02, P03, P05, and P06) said that validating quests was simple and easy. In addition, some participants found that validation offered the opportunity to take a peek at what other people had done. This interaction with others can enhance engagement in the community, which is crucial for voluntary community platforms.

Curating Quests
Lastly, the participants created ten quest-packs, which contains 50 quests in total. The average number of quests per quest-pack was 5 (SD = 4.08). We identified two main aspects of the created quest-packs. First, the participants made a quest-pack as a summary of travel. For example, P02 said he made a quest-pack as a travelogue. He could reminisce about the trip through selecting memorable quests among lots of quests. Second, they created a quest-pack by grouping the quests in accordance with various themes. P03 created two quest-pack, "Tasty road of three delicious foods in Seoul" and "Must-see beautiful sceneries in Seoul" (Figure 4) and said "Looking at my quests, I can scrutinize my travels in various perspectives." Curating quests in either way could promote users to rediscover their travel by linking independent quests.

Conclusion & Future Work
We aim to enhance travel experience by making the context of travel richer with various micro activities. There are two contributions of this study: 1) we identified the relationship between travel photos and micro activities through a user-centered approach.

Based on the user study, we developed the "questification" strategy for sharing micro activities with travel photos. 2) We designed Travel Q, a travel-support system, based on the questification strategy. To verify its feasibility, we conducted an early evaluation with users. The results showed that the questification was a feasible strategy for enhancing travel experience.

In the future, we plan to improve the system based on the user feedbacks. We also plan to conduct longitudinal and comparison studies to identify how Travel Q actually influence travel experience.

References
[1]   Cranshaw, J. B., Luther, K., Kelley, P. G., & Sadeh, N. (2014) Curated city: capturing individual city guides through social curation. *Proc. CHI'14.* ACM, 3249-3258.

[2]   Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011) From game design elements to gamefulness: defining gamification. *Proc. MindTrek'11.* ACM, 9-15.

[3]   Huotari, K., & Hamari, J. (2012) Defining gamification: a service marketing perspective. *Proc. MindTrek'11.* ACM, 17-22.

[4]   Kurashima, T., Iwata, T., Irie, G., & Fujimura, K. (2010) Travel route recommendation using geotags in photo sharing sites. *Proc. CIKM'10.* ACM, 579-588.

[5]   Rosenbaum, S. Curation Nation: How to Win in a World Where Consumers are Creators. McGraw-Hill, 2011.

[6]   Tammet, T., Luberg, A., & Järv, P. (2013). Sightsmap: Crowd-Sourced Popularity of the World Places (pp. 314-325). Springer.

[7]   Xu, F., Weber, J., & Buhalis, D. (2013). Gamification in tourism. In Information and Communication Technologies in Tourism 2014 (pp. 525-537). Springer.

(A)   (B)

Figure 4. Quest-packs created by P04. (A) "Tasty road of three delicious foods in Seoul" and (B) "Must-see beautiful sceneries in Seoul."