A Framework for Generating Opt-in Data Donation Map Apps Based on ManpoKit

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User-generated data has become a very important resource in spatial information services and researches for many aspects, such as enriching the contents, enhancing the service qualities, improving the human interfaces and so on. The methods of collecting user-generated data can be various in current commercial services. Most of the data are collected automatically without users' conscious based on the users' agreements. For example, history data of users' visits, text input for searching, users' positions, log data of users' operations, and so on, are often gathered in the backend. This kind of methods can collect large amounts of data, but the data may have limited types and pertinence. Users can also create and contribute data actively, for example the volunteered geographic information (VGI) is applied in online map services. However, this way often sets high requirements for users' knowledge and skills. On the other hand, traditional ways of data collection, such as online or offline questionnaires, are still widely used.
In this research, we want to explore a new approach of user data collection, which can include the following features:
(1) Higher pertinence of the required data, which means the types of data to collect and the generating methods are designed specifically according to the purposes.
(2) Opt-in based data donation, which means the users can choose and upload the data to contribute of their own will, and can also cancel the donation at any time.
(3) Lower operation burden for the users, which means users are guided to input or record the required data with ease.
The particular objects of user data to collect in this research are foreign-tourist-oriented maps, which are large-scale illustrated maps for certain sightseeing areas, and are usually printed on free leaflets provided free of charge in tourist information centers, stations and so on. The collected data will be used to improve the map designs and tourist information services. For this purpose, the users' behaviors and feedbacks are the main targets, such as:
(a) The users' moving trajectories as records of the places they have visited,
(b) Important operations when the users browse the maps,
(c) Comments on certain points or parts of the maps,
(d) Impressions of the visited places that the users are interested in.
As such data are usually difficult to obtain from the users of paper-based maps, we propose a framework for the quick development of mobile map apps that can browse such tourist maps in smartphones. With the location sensors and interactivity of the devices, the apps provide functions for viewing the maps and attached multimedia content interactively with the user's position and moving trajectory. The users can also add their own content as personal memorials or comments to the maps and places, which may include text, photos and audios, at any place of the maps with their current location.
This framework is based on a development library named ManpoKit, which is a result of our previous research on Human-Centered Mobile Mapping. ManpoKit can import analog maps and related multimedia content to mobile environments by attaching georeferences to them. With the mapping functions of

ManpoKit, developers can implement map apps easily, and create customized layers upon the map interface to realize more user interactions, such as appending users' own contents.
Prototype apps are developed for undergoing experimental projects, in order to test the feasibility of the proposed framework. One of them is a joint project with a city tourism association for improving their official tourist maps. The map app for this project is already on service. Another one tries to get users' feedback of some hand-drawn walking tour maps created by students. The intermediate results of the developments and experiments will be presented in the conference.

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