Your Friends Mention It. What About Visiting It ? A Mobile Social-Based Sightseeing Application *

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ABSTRACT

In this short poster paper, we present an application for suggesting attractions to be visited by users, based on social signal processing techniques.

1. INTRODUCTION

The work introduced in this poster paper is performed in the context of a large project named NEPTIS about ICT-based solutions for augmented fruition and exploration of cultural heritage. It focuses on cultural experiences and cultural heritage exploitation by defining and realizing the idea of *conceptouring*, i.e., from concept to cultural experience-oriented tour engineering; concretely, an integrated system prototype to create services and applications supporting smart itineraries. These itineraries offer an assisted access to citizens, tourists and visitors and a cultural heritage personalized experience before, during and after their visits to physical cultural assets. The system is a kind of authoring collaborative and Web-based tool, to be used by operators (and users) to build multimedia, interactive, dynamic, adaptive, personalized/user-adjustable and exciting cultural itineraries. The itineraries will be experienced with personal mobile devices (smartphones, tablets) and/or made available directly on cultural sites (e.g., through specific devices).

In the frame of such an ambitious objective (the project involves several Italian partners, ranging from Universities to research centers, to SMEs to large software and solution providers, with expertise in ICT, history, arts & humanities, and is being developed since 2015 till the end of 2016), our focus is on the social signal processing and mobile components. In particular, we present a set of techniques, realized in an Android application named NEPTIS Map[1], which allows *(i)* to create a knowledge base of cultural POIs and *(ii)* to perform an analysis of the user's social network with respect to the POIs in order to create recommendations [2].

Figure 1: The NEPTIS Map main window

The remaining of this paper outlines the main features of the techniques and application in Section 2, and finally presents the evolution we foresee for our application in Section 3.

2. NEPTIS MAP

The NEPTIS Map mobile app aims at supporting users in visiting the cultural heritage that surrounds them. The app

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[1]cf. NEPTIS Map on Google Play: https://play.google.com/store/apps/details?id=giovannimeschino.neptis.

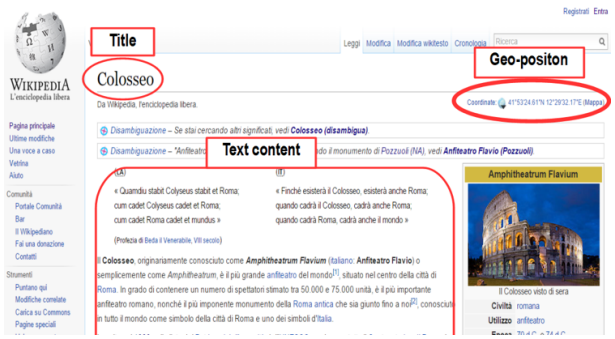

Figure 2: Extracted information from a Wikipedia page

looks like a navigation application (see Figure 1), and indeed relies for this on the most used API of the sector, i.e., Google Map API. On the map, the user can view POIs, select them and ask for more details and information. POIs are suggested to users on the basis of the social network data of the user profiles and the ones of her friends. In particular, if the user authenticates the app with her Facebook and Twitter profiles, all the posts/tweets produced by friends/persons the user follows are analyzed and POIs mentioned in them are considered. The assumption is that a user shares common interests and preferences with people within her social network; thus, if a POI appears in a comment or tweet of one of the user's followings, especially regarding a previous visit, it should be recommended to the user.

This assumption, which should be validated with many real users as future work (see Section 3), is based on the principle of *social signal processing* (see the box). POIs are grouped in a knowledge base extracted from Wikipedia. Starting from seed sites (e.g., Rome and Palermo, assuming the app is available in these two cities), Wikipedia pages are crawled and information are extracted from each of them, namely title, geographical position, text content (see Figure 2): in particular, the textual content is analyzed with the Apache Lucene tools to extract the POI keywords. Such POI keywords are those ones to be matched with the ones extracted from the social network of the user.

Figure 3 depicts the architecture of the server-side of the app. The components for crawling and social analysis are highlighted, as well as the REST interface invoked by the mobile app.

3. CONCLUDING REMARKS

The application and underlying techniques presented in this poster paper are just the initial outcome of our research, which aims at providing also *(i)* techniques and tools for optimizing the visits of users (e.g., by considering queue-time in attractions, sensed through either smart infrastructures or people-centric sensing applications [1], and planning the best tour within specific time constraints and user preferences) and *(ii)* gamification-based approaches to incentive users to visit less-known attractions, yet very interesting. Moreover, we urgently need to validate our approaches with a large user population, to this aim we are starting an extensive set of trials in the city of Palermo (Sicily) during summer 2016, in order to evaluate the correctness of provided suggestions and the appreciation of users.

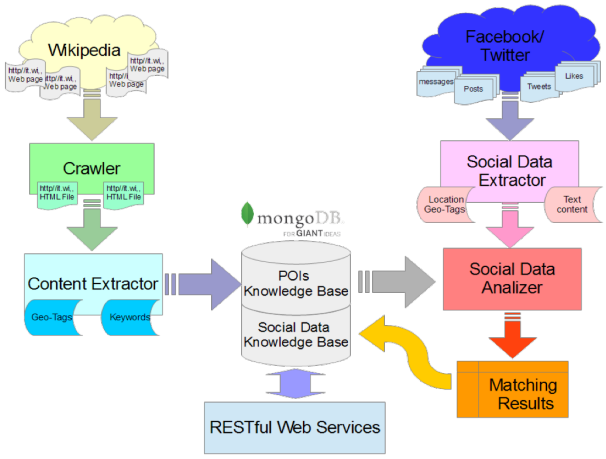

Figure 3: The architecture of the server

Social Signal Processing. In the last years, the increasing use of social networks is changing the way in which people learn, read and share information and contents. Collecting the experiential user traces on socials (e.g., visitors), their analysis and interpretation, in order to generate feedback for improving services to offer, highlight new opportunities for service offers, and evaluate the individual and collective experience of the users, is the main objective of the research on this topic. Recent developments in the area of language technologies, social media and mobile computing have transformed the approach to the collection and the evaluation of the user experience of services from the content streams generated by social media [3]; the other aspect is the collection of multidimensional data of personal life, the so-called *lifelogs* [2]: media events or objects, by recording video clips, or vocal or text notes, in the margin or geo-located photos with GPS coordinates, etc. Social analytics [1] do not only collect statistical data, but also analyze them to find concrete solutions for the improvement of offered services (often to increase revenues), building reports that can explain how visitors interact with the network, what they look, what are their intentions, what was their guided tour and much more.

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