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Exploring the Narrative Communication: Representing Visual Information from Digital Travel Stories

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***Abstract*—**We present the results of a case study aiming to assess the reflection of the tourism community in the Web and its usability to propose new ways to communicate visually. The wealth of information contained in the Web and the clear facilities to communicate personals points of view makes of the social web a new space of exploration. In this way, social web allow the sharing of information between communities with similar interests. However, the tourism community remains unexplored as is the case of the information covered in travel stories. Along the Web, we find multiples sites allowing the users to communicate their experiences and personal points of view of a particular place of the world. This cultural heritage is found in multiple documents, usually very little supplemented with photos, so they are difficult to explore due to the lack of visual information. This paper explores the possibility of analyzing travel stories to display them visually on maps and generate new knowledge such as patterns of travel routes. This way, travel narratives published in electronic formats can be very important especially to the tourism community because of the great amount of knowledge that can be extracted. Our approach is based on the use of a Geoparsing Web Service to extract geographic coordinates from travel narratives in order to draw the geo-positions and link the documents into a map image.

***Keywords*—**Social web, tourism community, visual communication, travel stories, georeferences.

I. Introduction

THE construction of new ways to present the information builds a new way of visually thinking about society and digital culture. Travel stories, created by common people, have to be explored with the new ways of processing, interpreting and mapping texts into images. The interest of analyzing travel stories made by users themselves, unlike the guidebooks, is that they give a personal point of view and a place seen and experienced by different people at different times can take us to very different points of views and realities. This is the great wealth of travel stories. This way, the transmission of knowledge is not the same, for the description of a place through the eyes of a person, in contexts, media or different cultures. For this reason, we chose the analysis of travel stories in order to show social visualization of the same places.

Our approach is based on the use of unstructured text documents: travel stories. These documents represent the observations and experiences of individuals who visited foreign countries or places and constitute a special category of primary source for people who want to visit these places. This article presents the work done to link travel stories containing personal descriptions of visited places on a map. We show the importance of having image representation of texts in order to transmit in a better way the information.

The rest of the article is structured as follows. Section 2 describes the process done to identify visual elements in travel stories. Experimental results are described in Section 3 while some conclusions and further work are shown in Section 4.

II. Identifying Visual Elements in Travel Stories

Often, when we read we imagine and produce our own images. In the case of the travel stories, when we read them, we have an idea of the place even if we don't know it. This way, even if travel stories are not linked to photos we produce them in our head. But, in our work, our intention is to take advantage of the social world to cover travel stories with images, and with other kind of visual elements. This way, by using the social world, which has entered into a hypervisuality, we are going to have a massive use of media in order to explore, describe and analyze different ways to visually construct categories, expressions and methods of transmitting knowledge and cultural information [1]. This way, the hypervisuality establish new ways not only to see images but to transform textual documents into images by using technology.

One of the resources that we can use to transform texts into images is the use of web mapping services applications like Google Maps, Google Earth, Nasa World Wind or Flickr Map. These services provide a way to organize the world's information geographically. Mapping services have been used in many areas including weather forecast, tourism and asset management. It provides geospatial visualization of information so the users can analyze, plan and take decisions based on geographic location. It helps users to understand the relationship between data and geographic location. All mapping applications provide an intuitive mapping interface with detailed street and aerial imagery data embedded. In addition, map controls can be embedded in the product to give users full control over map navigation. The primary goal behind its rapid acceptance as an Internet mapping viewer is

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the ability to customize the map to fit application specific needs.

Our approach is based on the use of a Geoparsing Web Service (GWS) which enriches content with geographic metadata by extracting places from unstructured texts, the travel stories. Geoparsing offers the ability to turn text documents into geospatial databases. This process is done in two steps: 1) entity extraction and 2) disambiguation, which is also known as grounding or geotagging. Geospatial entity extraction uses natural language processing to identify place names in text, while disambiguation associates a name with its correct location.

In order to access the GWS we have used the Yahoo Placemaker, which is a GWS that provides third-party developers the means to geo-enrich content at scale. The service identifies, disambiguates, and extracts places from unstructured and structured textual content: web pages, RSS (and Atom) feeds, news articles, blog posts, etc. It is an open API that assists developers in creating local and location-aware applications and datasets. Placemaker is a geo-enrichment service that assists developers in determining the whereness of unstructured and atomic content, making the Internet more location-aware.

To access the GWS we have used the Yahoo Query Language (YQL) which is a query influenced by the Structured Query Language (SQL) but diverges from it as it provides specialized methods to query, filter, and join data across web services.

III. Analysis of the Travel Story and Map Projection

The Web is a networked hypertext system containing different types of resources like: texts, audio, and visual data [2]. Fueled by increasing promotion in mass media and the popularity of online services, the Web, as part of the Internet, is growing at a pace faster than any previous new communication media [3]. This way, we find multiples sites containing personal travel narratives that are constructed by the users. Examples of these sites are: The backpacker[1], WorldHum[2], World Travel Stories[3], Trip Source[4] and Travel Pod[5].

To show our work, in this article, we have used the TravelPod site. From this site, we have extracted all the travel stories of France. We have chosen one story to be analyzed and extracted the geographic tags and their georeferences. These georeferences, link the descriptions of physical or social reality to particular locations or configurations in geographic space. This representation of locations and configurations is heterogeneous, as the process of its creation is as random and unstructured as its content. This way, geo-temporal criteria are important for filtering, grouping and prioritizing information resources [4].

We have implemented a system able to communicate to the GWS by using YQL in order to extract the geographic coordinates. For example for the selected page ("http://www.travelpod.com/travel-blogentries/pv_blog /1/ 124 7501645/ tpod.html") which talks about a tour done in France, we have obtained the next geographic elements (name, latitude, longitude) classified by dates (from July 4 to July 26, 2009):

- July 4 (Day 1)
  Monaco (43.7383, 7.42429)
- July 5 (Day 2)
  Monaco (43.7383, 7.42429)
- July 6 (Day 3)
  La Grande-Motte, Languedoc-Roussillon, FR (43.5617, 4.08109)
  Marseille, Provence-Alpes-Côte d'Azur, FR (43.2937, 5.37249)
- July 7 (Day 4)
  Montpellier, Languedoc-Roussillon, FR (43.6109, 3.87609)
- July 8 (Day 5)
  Perpignan Station, Perpignan, Languedoc-Roussillon, FR (42.6963, 2.87997)
  Perpignan, Languedoc-Roussillon, FR (42.6981, 2.88743)
- July 9 (Day 6)
  Barcelona, Cataluña, ES (41.3857, 2.17005)
  Montjuic, Barcelona, Catalonia, ES (41.3631, 2.15755)
- July 10 (Day 7)
  Barcelona, Cataluña, ES (41.3857, 2.17005)
  Arcalis, Cataluña, ES (42.354, 1.0841)
- July 11 (Day 8)
  Midi-Pyrenees, FR (43.8092, 1.56217)
  St.-Girons, Midi-Pyrénées, FR (42.9864, 1.14399)
  Andorra la Vella, Andorra la Vella, AD (42.5064, 1.52221)
  Ariege, Midi-Pyrenees, FR (42.9438, 1.50109)
- July 12 to July 16 (Day 9 - 11)
  Limoges, Limousin, FR (45.8288, 1.26201)
- July 16 (Day 12)
  Vittel, Lorraine, FR (48.2026, 5.94455)
- July 17 (Day 13)
  Vittel, Lorraine, FR (48.2026, 5.94455)
  Alsace, FR (48.2492, 7.53681)
- July 18 (Day 14)
  Alsace, FR (48.2492, 7.53681)

[1] http://www.thebackpacker.net/travel-guide/travel-stories/
[2] http://www.worldhum.com/features/travel-stories/
[3] http://www.worldtravelstories.com/
[4] http://www.tripsource.com/stories/stories1.htm
[5] http://www.travelpod.com/

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Besancon, Franche-Comte, FR (47.2423, 6.02568)

- July 19 (Day 15)
  Pontarlier, Franche-Comté, FR (46.9043, 6.3522)
  Verbier, Canton de Valais, CH (46.097, 7.22343)

- July 21 (Day 16)
  Bourg-St.-Maurice, Rhône-Alpes, FR (45.618, 6.77077)
  Martigny, Canton of Valais, CH (46.1014, 7.07292)

- July 22 (Day 17)
  Le Grand-Bornand, Rhône-Alpes, FR (45.9419, 6.42686)

- July 23 (Day 18)
  Annecy, Rhône-Alpes, FR (45.8988, 6.12883)

- July 24 (Day 19)
  Ardeche, Rhone-Alpes, FR (44.8153, 4.37397)

- July 25 (Day 20)
  Montélimar, Rhône-Alpes, FR (44.5556, 4.74916)

- July 26 (Day 21)
  Paris, Île-de-France, FR (48.8569, 2.34121)

With the geographic coordinates obtained we can display each position on a France map projection also linked to the travel story. This way, we show in the Figure 1 only the places visited in France including Andorra.

One of the objectives of presenting travel stories in this way is the capacity to visualize other kind of information that the given in the story [5]. For example, we can compare preferences for a particular place between two persons who have made the same trip. This is possible, by analyzing, for example, if one of them doesn't talks about a visited place. Other kind of information that we can obtain by analyzing travel stories, in this way, is the preference of people, all over the world, of doing the same travel trips.

Another important structural change that we can have with the incorporation of maps in travel stories is the concept named navigation. With this, we have other way to navigate between stories. When we read a story we do it in linear way, by using maps we can do it in a not structural way, so we can have the opportunity to jump into the places that we want to know without reading the whole story. This is called, also, hypervisuality: the capacity to jump, every time, to different points by having different visual images. From a close and compact travel story we pass to a versatile model that increases user's possibilities of visualization [6].

This way travel stories, in our days, do not consider human spatial cognition and the way people experience space, which is then reflected in the ways they communicate route knowledge in route direction narratives [7]. However, in our work we are trying, also, to reconstruct elementary scenes at decision points of a route in order to determinate user's preferences. A scene, in this context, is the description of the physical setting of environmental features surrounding the place where the decision is taking place [8]. This is very interesting to the tourism industry because we are identifying tourism preferences related to people's culture.



Fig. 1 Representation of extracted places from a previous travel story analyzed

IV. Conclusion and Future Work

This article explores the possibilities given by a Geoparsing Web Service in order to extract and contextualize unstructured text documents. Our work presents a first exploration of travel stories in order to map them into a map projection and visualize personal descriptions of the marked places.

In this article, we have presented the identification of georeferences of cities in a travel story but it can be done also with all kind of places like: restaurants, hotels, parks, etc. Further work will be done in this way.

Also, some other further work will be in the next two axes: (1) having the extracted spatial position of the travel story we will have to find new ways of extract some spatial knowledge like GeoProfiling and find new geo visualization tools and (2) the contextualization of the places named in each travel story sometimes it is not very clear so a work to contextualize and extract pertinent information of the original document with the use of ontologies is required.

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