Sensing World Heritage
An Exploratory Study of Twitter as a Tool for Assessing Reputation

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Abstract. Social media services play an important role in today’s society and are increasingly used by the scientific community to understand the human landscape, with regard to local sensitivities and the broadcasting of opinion. Collection of social media feeds has become a new data source for understanding and modelling phenomena. This article explores the possibility of understanding the relationship of people with world heritage using the information collected from Twitter. The information collected from late December 2013 to the end of January 2014, submitted to temporal, spatial and text mining analysis, shows that Twitter messages convey important meaning about local and global sensitivities regarding world heritage. Examples include the buzz regarding the possible delisting by the Australian government of the Tasmanian Wilderness World Heritage; the destruction of the heritage in Syria due to armed conflict, and the petition to include the Leuser Ecosystem in the world heritage list. It concludes that using data from social media services, such as Twitter, could improve our understanding of how people relate to world heritage, in a local and global perspective, and be a valuable tool in world heritage studies and management.

Keywords: web 2.0, spatio-temporal analysis, text mining, heritage reputation, Twitter, world heritage.

1 Introduction

Today, anyone holding a device with an internet connection has the ability to broadcast their opinions and everyday life experiences [1], functioning as a big network of citizen sensors [2]. Web 2.0 technologies and social media services, such as Twitter, are stimulating and shaping society [3] due to their growing popularity; and they are also shrinking the distance between people [4]. These services are facilitating the production and distribution of geospatial information by citizens providing unprecedented opportunities to understand users’ behaviour regarding (i) local sensitivities and needs, (ii) how the public spaces are used, and (iii) regarding significant or unexpected events (e.g. wars, natural disasters, among others) [1], [5]. Due to
location-based user-generated content, users are contributing to large quantities of geospatial data that provide unparalleled access to the public’s “patterns of behaviour, opinions and preferences, sensitivities and specific needs” [5].

While there has been an increasing interest in using Twitter to track emerging trends, common interest in specific events, and daily activity patterns, a focus on the spatio-temporal aspects of such trends is relatively recent [1], [6,7]. Twitter provides a suitable platform for spatio-temporal data mining and information retrieval and, spatio-temporal trends can be mined and analysed by classifying tweet text content into topic-based groups [6]. Spatial information included in the tweet can be within the tweet text, when users talk about a geographic place; in a descriptive form in the tweet metadata, as a city name, for example [8]; or since 2009, in the form of coordinates with latitude and longitude, that contain the location of the GPS-enabled device every time a user tweets [9]. Twitter is of particular interest to researchers due to a number of factors: (i) the profiles are public [10]; (ii) tweets can be filtered and downloaded using the Twitter APIs [10] and (iii) more than 90% of the profiles and communication history is publicly visible, and therefore available to collect and process [5].

The objective of this research is to explore the potential of the social media feeds, such as the one shared by Twitter users, to understand both local and global sensitivities regarding heritage sites, specifically, those that are considered as world heritage by the United Nations Educational, Scientific and Cultural Organization (UNESCO); and to assess the heritage reputation using the framework in Figure 1 using the citizen sensing from the social media service Twitter [11].

![Fig. 1. Heritage Reputation Framework](image-url)