

Cultural Heritage Rating: An approach based on big-data analysis

Stefano Vena, Fabio Tarantino, Giuseppe Naccarato.

Rating and suggest cultural assets in cities in an objective way is not easy.

The diversity of cultural backgrounds and origins of tourists make the rating more complicated.

However, there is an increasing trend of people leaving digital traces through social media.

This reality opens new horizons for urban studies and indicates a way to make assumptions about attractiveness of a place.

With this kind of data, we can detect many aspects of how tourists live their stay in cities and can also automatically suggest what are the most visited places.

In particular, their digital trails can be used to investigate tastes of individuals, and what attracts them choose a city where to spend their vacation.

In this paper we propose an unconventional way to study how tourists experience the city, using information from geotagged photographs that people take at different locations and post on social network such as Twitter, Instagram and Flickr.

For each Italian city, we collected two weeks of data from twitter filtering only tweet with location declared and an attached picture. We have also collected geotagged photos published on Flickr and Instagram. For each item collected we take in account also user nationality.

After the collecting data phase, we applied clustering algorithm to the dataset in order to identify areas with much interactions. We observed that there are a lot of social interactions near point of interest and cultural places. At that point we posed a charge at the centre of each cluster with a module equal to cluster weight. We modelled the city as an electric field and the relative electric potential in a point in the city, associated to a cultural place, is the Rank we assigned to that venue.

The result of our research is a model that can represent the attractiveness of a city and all the contained point of interest starting from natural interactions that exist through social media.

We also obtain a valid index to automatically detect area of interest inside an unknown cities.

Stefano Vena, Computer Engineer, has a PhD in Psychology of Programming and Artificial Intelligence. It deals since 2003 unconventional computation and has specific expertise in simulations based on Cellular Neural Networks and Cellular Automata. It has extensive experience in developing educational projects based on multimedia and 3d data visualization based on both mobile and web platforms.

Fabio Tarantino, graduated in Statistics and Economics, is an expert in statistics and data processing. It deals since 2000 Computational Statistics, data processing, classification problems, extraction and selection of variables, open data, analysis of socio-economic systems.

Giuseppe Naccarato, Project Manager, has a PhD in Psychology of Programming and Artificial Intelligence with specific expertise in the field of digital technologies geared to the valorisations of cultural heritage and the use of the archaeological sites in Virtual Reality and Augmented. He has worked on methods and models for the personalization of cultural itineraries and development of customized electronic guides on mobile devices based on Augmented Virtual Reality.