

# Generating Sentiment Maps of Touristic Locations based on Visitors' Reviews and OSM

Sarah Tauscher and Karl Neumann  
TU Braunschweig, Institute of Information Systems

**Abstract**—The amount of user reviews, available in the web is growing constantly and reviews gain more and more influence for peoples decisions. Nowadays reviews are not restricted to classical topics like films and books. You find easily lots of reviews about nearly every commercial product as well as activities like holiday experiences. Despite the difference of the subjects of reviews, their presentation is more or less the same: A list of single reviews consisting each of a title followed by the reviewtext along with a rating for the product and sometimes an additional rating for the reviews helpfulness. In case of reviews about locations like tourist attractions the user does not have necessarily a special attraction in mind about which she or he wants to know the opinion of people who have already been there. It is more interesting to know which area would be worth a visit, so you need an overview about all attractions nearby as well as peoples opinions about them.

Fortunately georeferenced review data offer a much more convenient way to be presented: Clearly as a map! Therefore, it is necessary to present the opinions expressed in the reviews graphically. Before you can do so you have to crawl the reviews and perform natural language processing to permit an automatic interpretation. To achieve this, two tasks have to be accomplished: Determine the place that is reviewed and determine how positive or negative the opinion is which is expressed there. Afterwards an appropriate graphical representation have to be designed that can be automatically generated based only on the geometry of the reviewed object and the positive or negative sentiment values calculated from the reviews. We have implemented a corresponding prototype, which determines sentiment values of touristic locations in the mentioned way. Then it combines the sentiment values with OpenStreetMap data and creates a map like presentation. Below you see a visualization of user reviews of eight touristic attractions in Reykjavik (capital of Iceland), generated by our prototype. Touristic locations having positive reviews are colored green and locations with negative reviews red. The intensity of the colors depends on the calculated positive and/or negative sentiment values. For example, on the right side you see in the middle the location of the famous church Hallgrímskirkja, which was rated positive.



Sentiment Map of Reykjavik based on visitors' reviews