

Real time Twitter Vigilance: Models and Tools for Monitoring City Events

Paolo Nesi, Gianni Pantaleo, Imad Zaza

DISIT Lab, Distributed [Systems and internet | Data Intelligence and] Technologies Lab

Dep. of Information Engineering (DINFO), University of Florence, Italy,

Fax: 0039-055-2758570, tel: 0039-3355668674

<http://www.disit.dinfo.unifi.it>, <http://www.disit.org/tv>, <http://www.disit.org/rttv>, paolo.nesi@unifi.it (

Extended abstract of the presentation

Social Media Monitoring is a powerful tool to monitor events on the cities: spread of contagious diseases, voting results, business, etc. Twitter-based metrics have been used to predict and estimate the number of people in locations like airports, the so called crowd size estimation. Other Twitter accomplishments have been exploited in the risk analysis performance. In other works, averaged value of audience and Twitter data (contribution per minute) have been used for predicting audience on political TV shows. Most of the works are grounded on the estimation of volume of tweets, number of retweets, relationships among users, etc.

As regard the smart city context the SM can be used for collecting information regarding the quality and the appreciation of services, the distribution and movements of citizens in the city context, the language evolution in the city, etc. In addition to the classical social and governmental issues, a large area of application can be the usage of social media for assessing local awareness on environmental topics or social impacts of certain unusual climatic events.

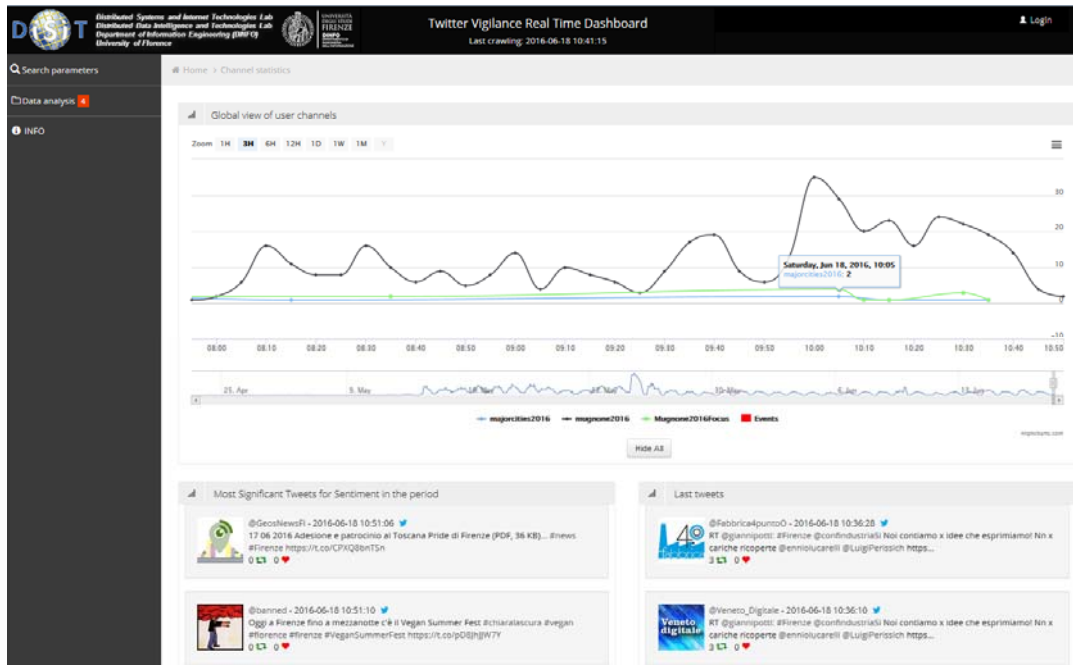
On this line, Twitter Vigilance tool has been developed and made operative H24 in the 2015. It is an intelligent multi user tool for creating personal dashboards and study events and trends on Twitter that becomes a mining tool to "Twitter channels" contents. Each channel can be tuned to monitor one or more Search Queries on Twitter with a sophisticated and expressive syntax. The tool has been adopted in smart city projects (such as [Sii-Mobility](http://www.sii-mobility.org) SCN www.sii-mobility.org , [RESOLUTE](http://www.resolute-eu.org) EC H2020 project <http://www.resolute-eu.org> , ...). Different Channels opportunely named and corresponding to specific multi-keys queries of Twitter are active and operatively running. It is used for monitoring city services, critical events and conditions, user behavior, city response to events, transportation, environment, pharmacology, civil protection, weather, business, TV channel, EXPO 2015, etc. Some of the channels under monitoring are accessible for public perusal (according to the decision of the channel curator) in full respect of Twitter data policies via <http://www.disit.org/tv/>, the reference page for help and news is <http://www.disit.org/6693>. The analytical solutions proposed on the basis of the collected tweets and metrics allowed us to set up new twitter based metrics and new models for prediction and early detection. Registered users of DISIT Twitter Vigilance tool and service are able to:

- Create one or more channels ("canale"), as reported in the figure each channel can be tuned to monitor one or more Search Queries on Twitter with a sophisticated and expressive syntax. The simplest query can be the single keyword, tag or user.
- Create and activate multiple channels, that may use new or the same Search Queries;
- Provide public access to their channels analysis (as in the channels accessible without registration);
- Download data sets (through API service) for refined analysis;
- Full access at the channel history of User's content per channel, per search, per users, etc.;
- Perform visual view throughput graphs and to export them in different graphic format;
- Perform analyses at level of channel, search, users, tweets, retweets, etc.:
 - trends of the Search Queries as reported in the above figure;
 - distributions on population and activities of users;
 - distributions about other tags/keywords;

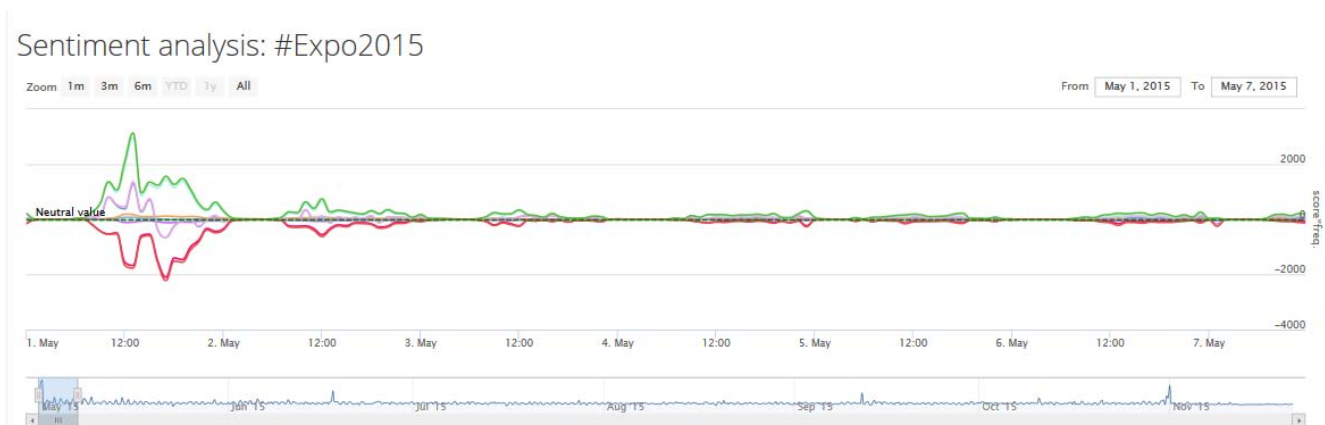
- o geographic distribution of twitters of single or multiple channels;
- o distributions regarding tweet and re-tweets.

In this short summary, two evolutions of DISIT Twitter Vigilance are presented.

The first consists of a real time version of the former version which allow to provide resulted analysis in real time: the so called Real Time Twitter Vigilance <http://www.disit.org/rttv>:



The second consists of the enforcement into Twitter Vigilance and Real Time Twitter Vigilance of an automated Sentiment Analysis support:



They are early solutions for fully automating the social media analysis chain in real time and bringing immediately at the attention of the decision makers the inception of problems may grow in the city. These first results are grounded on more than one year of data collection and analysis, thus now the proposed solutions is capable to provide correct alarms in almost all cases and in much shorter time with respect to traditional solutions. It could be path to reduce the costs, increase resilience in the city, and thus make them smarter.

A wide number of research and trial activities on these data and tools are under development.