

Analysing GeoLocated Data from Social Media with QGIS

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What do we want to do?

- Nowadays social media is a major source for information sharing. In some cases the user also shares some attributes, such as **geolocation**. By using this information as a proxy for human presence, and with the adequate methods, we are able to provide powerful representations of the distribution of social media users within the territory.

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- Due to its willingness in sharing data, Twitter has been a prime *playground*, for researchers and practitioners around the world.
- The objective of this workshop is to provide a workflow for enhancing the visualization of geolocated Tweets.

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3D Viz

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- Produce clusters from the heatmap.
- Produce a 3D visualization, on a webpage.

Objective

Stack

- MongoDB
- QGIS + Python Plugins

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 - Qgis2threejs

Approach

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- View the complete presentation here:

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- **For the impatient:** If you don't want to wait for everyone to complete, you can attempt to complete the exercises on your own ;-) View the complete presentation here:
- **For the guru:** If you have finished everything and are bored, you may try to complete the tutorials or read the references, on the last page;-)

Twitter Data

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- A proportion of these tweets is available to researchers and practitioners through public APIs, free of any charges.
- Approximately 1% of all Tweets published on Twitter are geolocated.



Twitter APIs

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- REST APIs.

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- These APIs are accessed only via authenticated requests (OAuth).

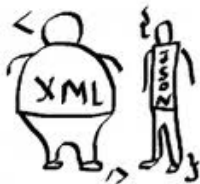
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- These APIs are accessed only via authenticated requests (OAuth).
- Access to APIs is also limited to a specific number of requests within a time window (rate limit).
- Responses from Twitter are in JSON format.

JSON in a Nutshell



JSON

```
{  
  "siblings": [  
    {"firstName": "Anna", "lastName": "Clayton"},  
    {"lastName": "Alex", "lastName": "Clayton"}  
  ]  
}
```

XML

```
<siblings>  
  <sibling>  
    <firstName>Anna</firstName>  
    <lastName>Clayton</lastName>  
  </sibling>  
  <sibling>  
    <firstName>Alex</firstName>  
    <lastName>Clayton</lastName>  
  </sibling>  
</siblings>
```


Mongo loves JSON

- NoSQL Database.
- Document-Oriented Storage.



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- Tool: Mongodb command line client.
- Database properties:
 - host: 54.72.72.228 (on aws).
 - database: tweets_workshop
 - username: workshop
 - password: geohipster
 - collection: tweets
- Reference: <http://docs.mongodb.org/manual/#>.

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- Reference: <http://docs.mongodb.org/manual/#>.
- *mongo -host 54.72.72.228 tweets_workshop -u workshop -p geohipster*
- *db.tweets.find().limit(1)*

Hands-on (cont.)

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- Take notice of the long, lat fields.
- Exit the client.
- Use mongoexport to write the values on a text file.
- Reference: <http://docs.mongodb.org/manual/core/import-export/>.

Hands-on (cont.)

- Objective: Export tweets coordinates into a csv file.
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- Use mongoexport to write the values on a text file.
- Reference: <http://docs.mongodb.org/manual/core/import-export/>.
- *mongoexport -host 54.72.72.228 -u workshop -p geohipster -db tweets_workshop -collection tweets -csv -out out_tweets.csv -fields geoLocation.longitude,geoLocation.latitude -query 'geoLocation: \$ne: null'*
- View the exported file:e.g.: *cat /tmp/out/out_tweets.csv*

QGIS

QGIS is a Free and Open-Source GIS System:



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Bug Affecting the Heatmap Plugin

Problem with QGIS Heatmap Plugin - Geographic Information Systems Stack Exchange - Mozilla Firefox <2>

gis.stackexchange.com/questions/139828/problem-with-qgis-heatmap-plugin

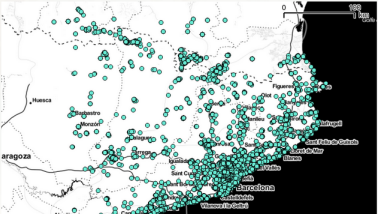
Geographic Information Systems

Questions Tags Users Badges Unanswered Ask Question

Problem with QGIS Heatmap Plugin

I am experiencing some issues with the Heatmap Plugin (0.2) on QGIS 2.8.1, and I wanted to double-check if I am doing something wrong, or if there is some sort of bug lying around. As a background, I have to mention I was able to produce heatmaps before.

I have a Shapefile with tweet locations.



Asked Today
Viewed 7 Times

Featured on Meta

☐ Let's improve our site navigation

Linked

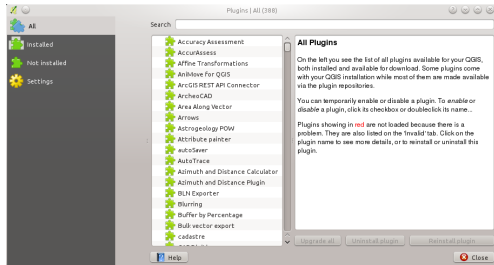
- How to use Heatmap plugin and its output?

Related

- Heatmap plugin slow/unresponsive in QGIS 1.8
- Stats problem. QGIS heatmap
- Which parameter values should I use with QGIS Heatmap plugin?
- How to create a Human

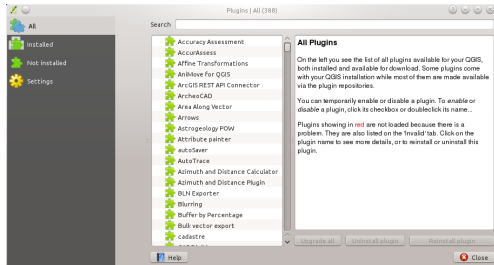
There is a Plugin for Everything

- The core of QGIS is extended through user-submitted Python plugins.



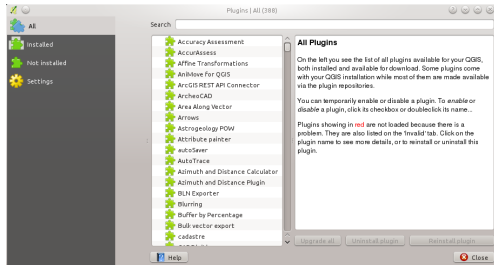
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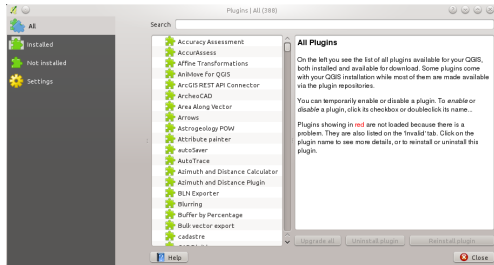
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- Plugins can be easily installed through the plugin manager.



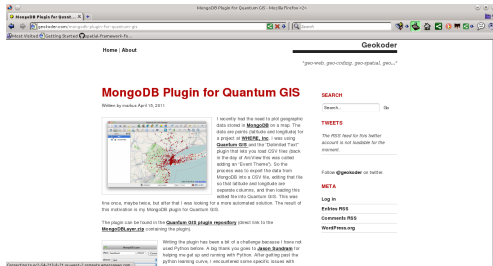
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- Plugins can be easily installed through the plugin manager.
- In this workshop we will use three plugins (one is already installed).



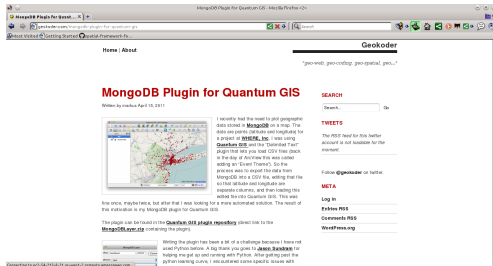
Isn't there a Plugin to connect to MongoDB?

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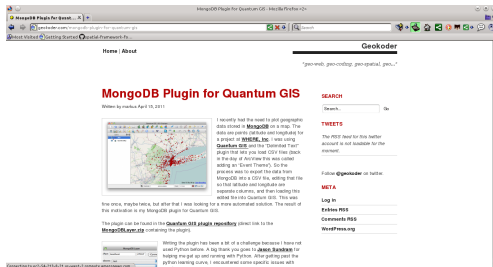
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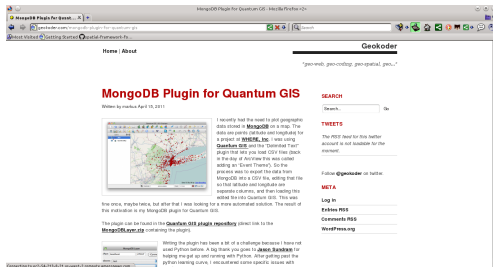
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- There seemed to be some issues with it, and sadly it hasn't been ported to the latest versions of QGIS.
- The project appears to be now dead.
- The community would really welcome a new attempt for a mongoDB connector on QGIS.

Hands-on

- Objective: Display the tweets coordinates in QGIS, with background map.
- Tool: QGIS + OpenLayers plugin.
- Steps:



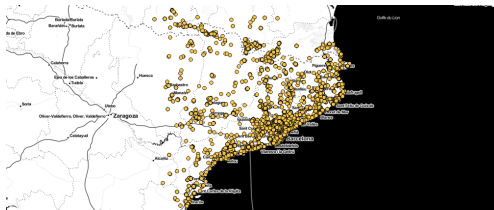
Hands-on

- Objective: Display the tweets coordinates in QGIS, with background map.
- Tool: QGIS + OpenLayers plugin.
- Steps:
 - Start QGIS and create a project.
 - Download and enable the *OpenLayers* plugin (Plugins – > Manage and Install Plugins).
 - Choose a background map (e.g.: OSM, Bing Maps, etc).
 - Import the json file, using the Text Layer Importer (Layer – > Add Layer – > Add Delimited Text Layer).



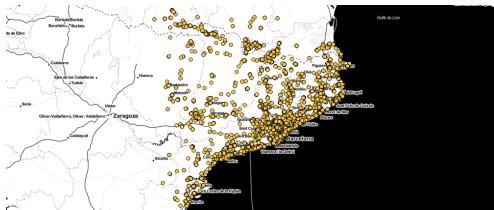
Hands-on (cont.)

- Objective: Save the tweets from the region of Catalunya, in a Shapefile.
- Steps:



Hands-on (cont.)

- Objective: Save the tweets from the region of Catalunya, in a Shapefile.
- Steps:
 - Zoom into the desired location using the zoom tool (View – > Zoom in) .
 - Select the visible points using the select tool.
 - Save the selected features in a Shapefile.
 - Pay attention to the crs.
 - Make sure you save **only** the selected features.



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TODO

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TODO

Hands-on

References

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Tutorials