



**POLITECNICO  
DI TORINO**

# GROUP C

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Lanza C., Ravera A.

# **Effect of urbanistic action on social perspective**

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Capture the user's perception of a city  
exploiting its digital footprints  
and study how the city zones evolved  
looking at the geo-tagged contents



# Effect of urbanistic action on social perspective

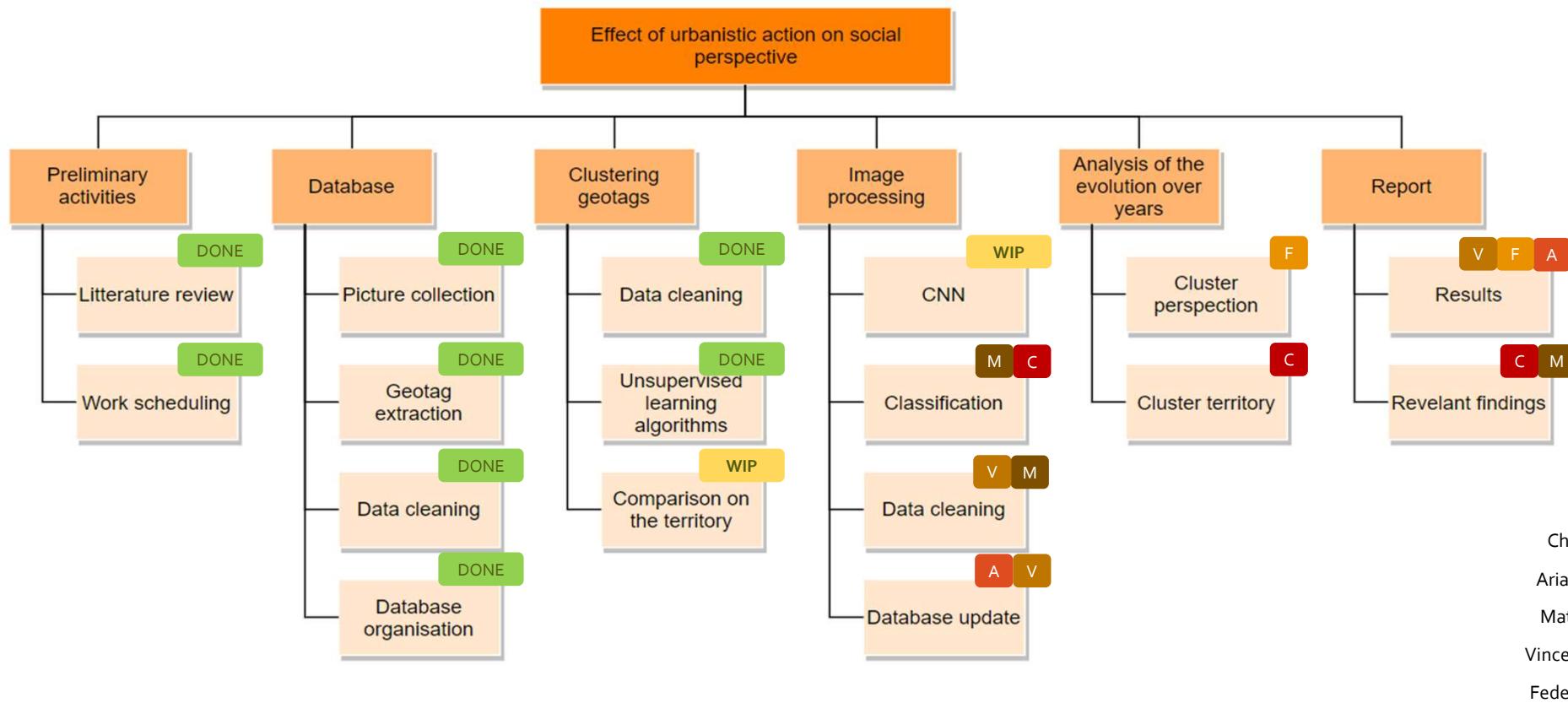
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Report and presentation for the administration

- to show the effectiveness of the adopted territorial policies
- to suggest future improvements and investments



# WORK PLAN



# Preliminary Design Review (PDR)

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- **Data Collection**
  - **Estimated time :** 3 weeks
  - **Tools :** MongoDB, python, Flickr API, Instagram API, Dropbox
  - **Requirements :**
    - ✓ DB organization

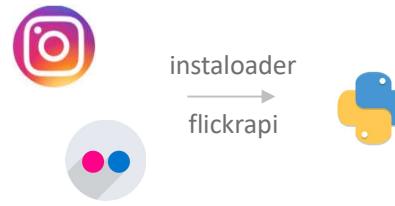


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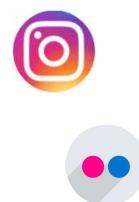


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  - ✓ Insert data into DB



instaloader  
flickrapi



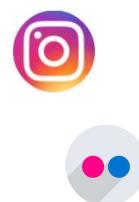
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instaloader  
flickrapi



pymongo



# Preliminary Design Review (PDR)

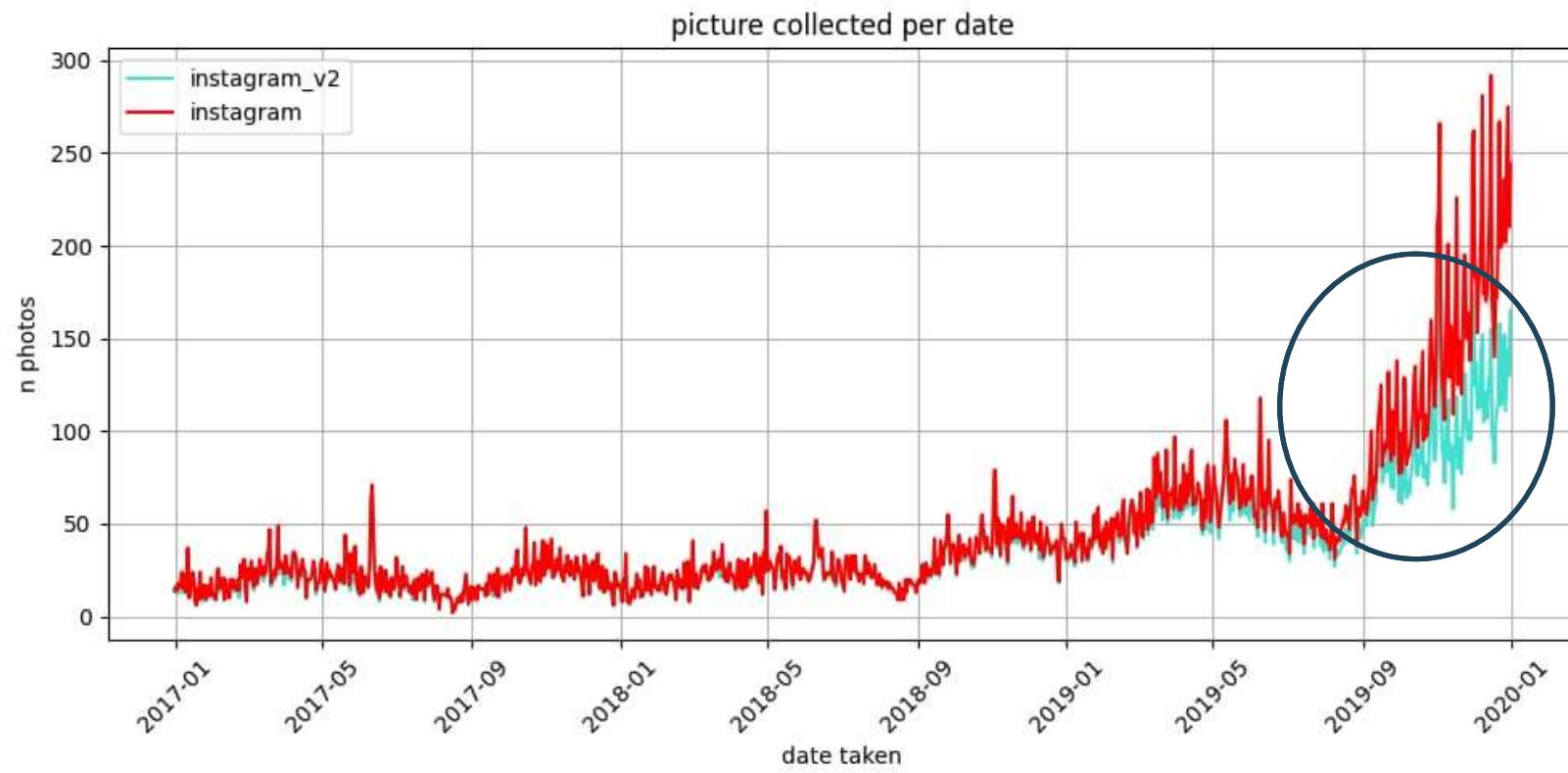
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  - ? Data cleaning



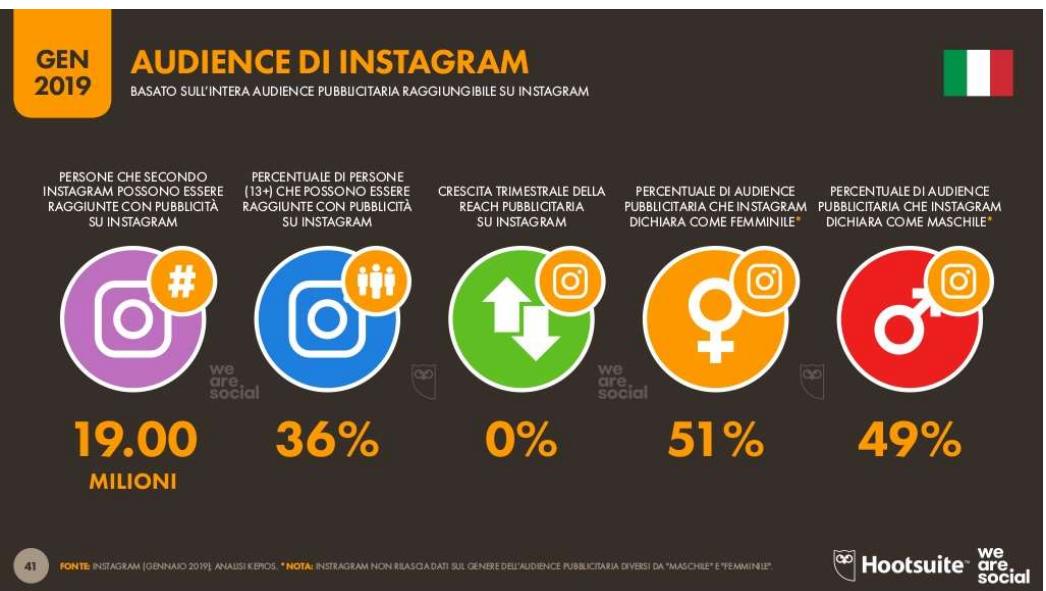
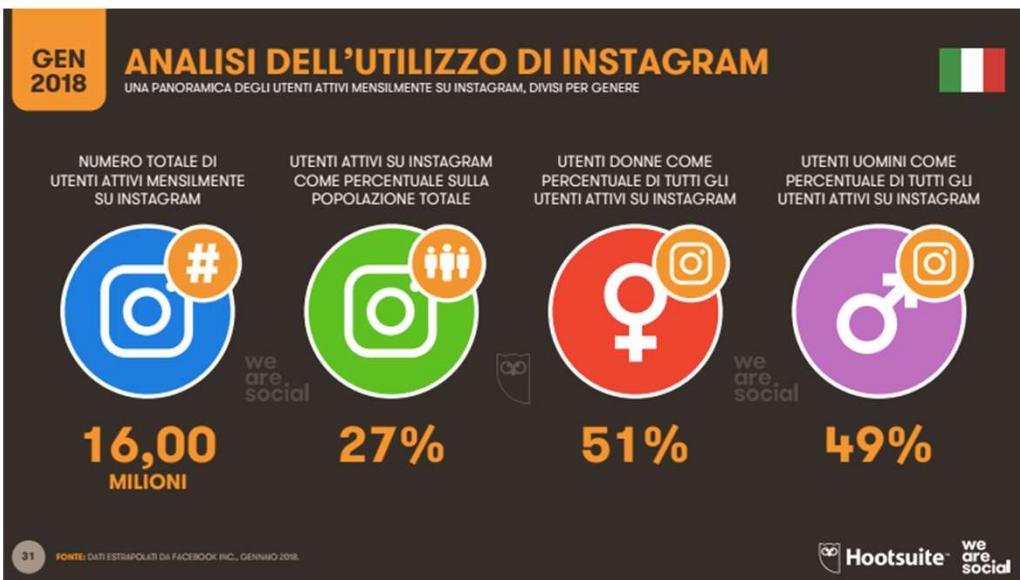
# *Data consistency*





# A real trend...

# we are. social





*...or a collection bias?*

An Instagram post from the account eat.in.turin. The post features a photograph of a gift basket filled with various food items, including a bottle of wine, a jar of jam, and several small packages of snacks. The caption reads: "eat.in.turin • Segui già La Drogheria Pugliese ... eat.in.turin • La Drogheria Pugliese (Via Mazzini 34): il mio consiglio per i regali di Natale? Qualcosa di utile (come il cibo) acquistato nei negozi locali! Ecco quindi le cassette della Drogheria con le migliori specialità dell'enogastronomia pugliese! Nel negozio e sul loro sito trovate alcuni cesti già composti (notate che carini, in legno naturale, rustico...), ma potete anche scegliere i prodotti che ... Piace a pasticceria\_santa\_rita e altri 244 5 GIORNI FA Aggiungi un commento... Pubblica"/>

The Instagram profile page for eat.in.turin. The bio reads: "Eat in Turin Community Ecco i miei consigli su dove mangiare a Torino! Tagga @eat.in.turin. Per collaborazioni scrivimi in direct! #eatinturin @elisa\_abrate Account seguito da eriasansalvario e valeria\_cavanni". The profile has 212 posts, 27,2 mila followers, and 3.989 following. Below the bio are five suggested accounts: RegaliNatale, Gaffarel, Genepy, Excellent, and Mis. The main feed shows several photos of food, including a gift basket and various dishes.



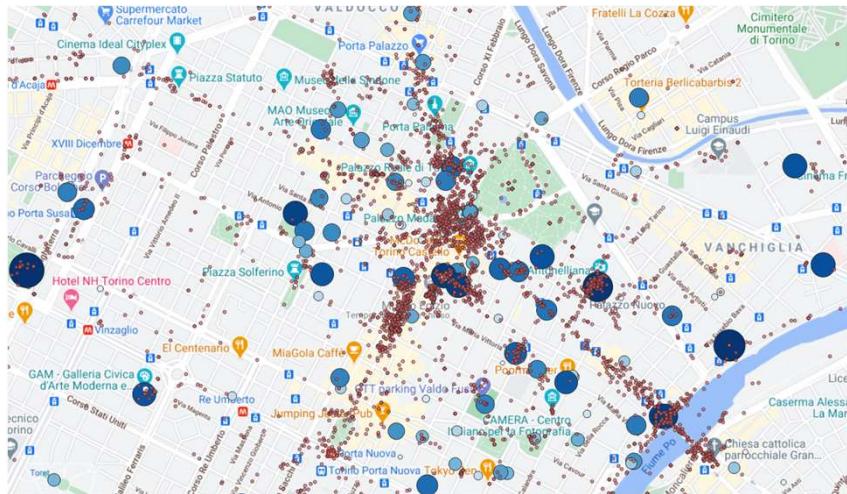
- Locations ID are collected chronologically
- InstagramAPI blocks the queries after a while



New places (and relative photos) are preferred



## Other issues



- No list of locations ID available
- Each user can create its own location
- Discrete locations

Instagram :
○ 1   ● 203   ● 506   ● 1024
Flickr :
● 1

Clusterization might have been inconsistent



# Preliminary Design Review (PDR)

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    - ✓ Study of different methods

Kmeans  
Dbscan  
Gaussian mixtures



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    - ✓ Definition of the best method to be adopted

Dbscan: clean outliers  
minor clusters identification



Kmeans: study on the core cluster  
(the most numerous)



# Preliminary Design Review (PDR)

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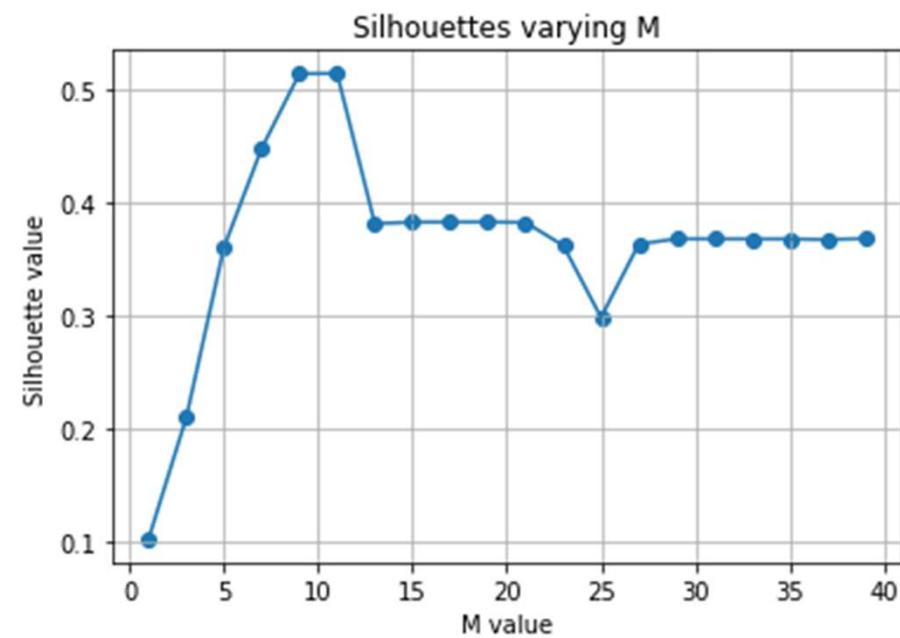
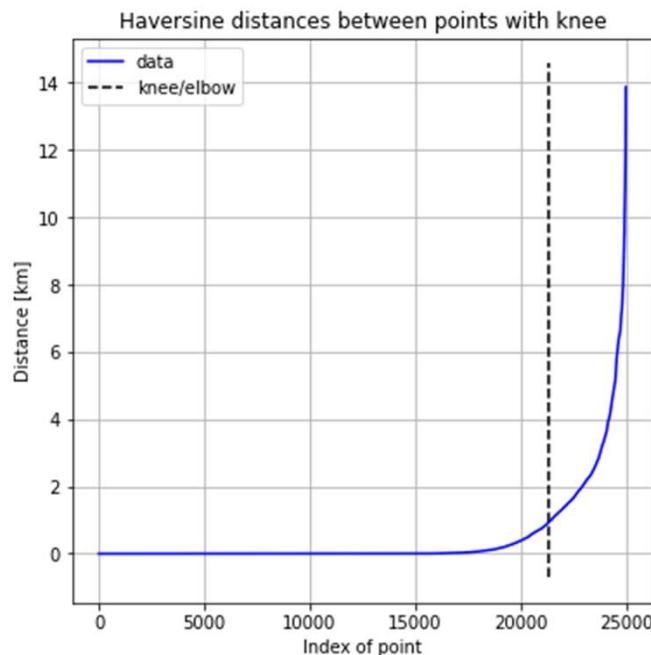
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    - ✓ Definition of the best method to be adopted
    - ✓ Fine parameters' tuning

Elbow method  
Silhouette



# Fine parameters' tuning – DBSCAN

- ✓  $\varepsilon$  : radius of search to be reachable from other points
- ✓  $M$  : min number of points within  $\varepsilon$  to be a core point

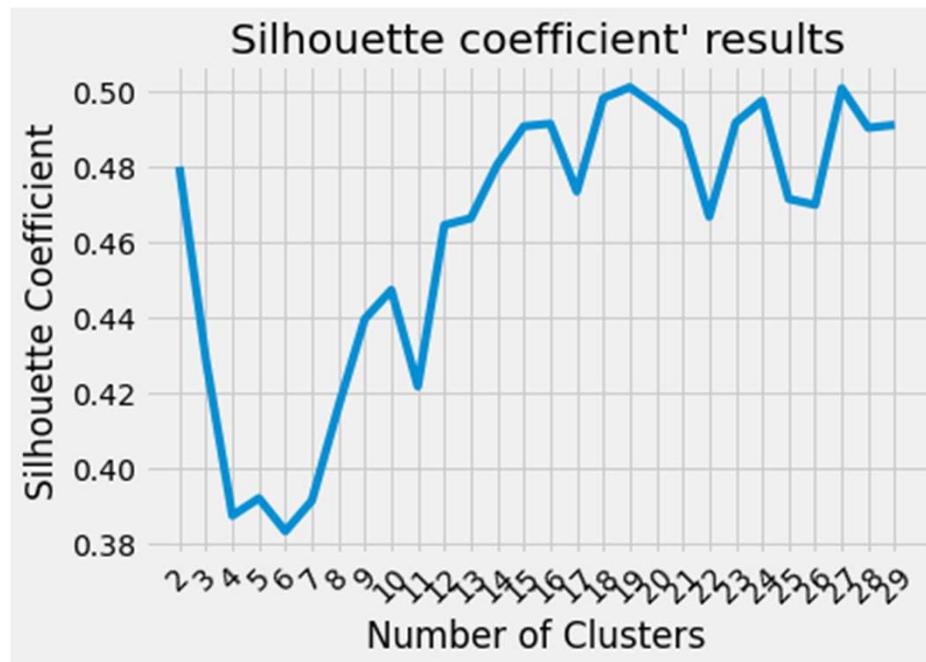




## *Fine parameters' tuning – K-means*

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✓ N : number of clusters





# Preliminary Design Review (PDR)

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    - ✓ Study of different methods
    - ✓ Definition of the best method to be adopted
    - ✓ Fine parameters' tuning (minimization of the inertia)
    - ✓ Data extraction and processing with the chosen method
    - ✓ Study and conclusive analysis of the results

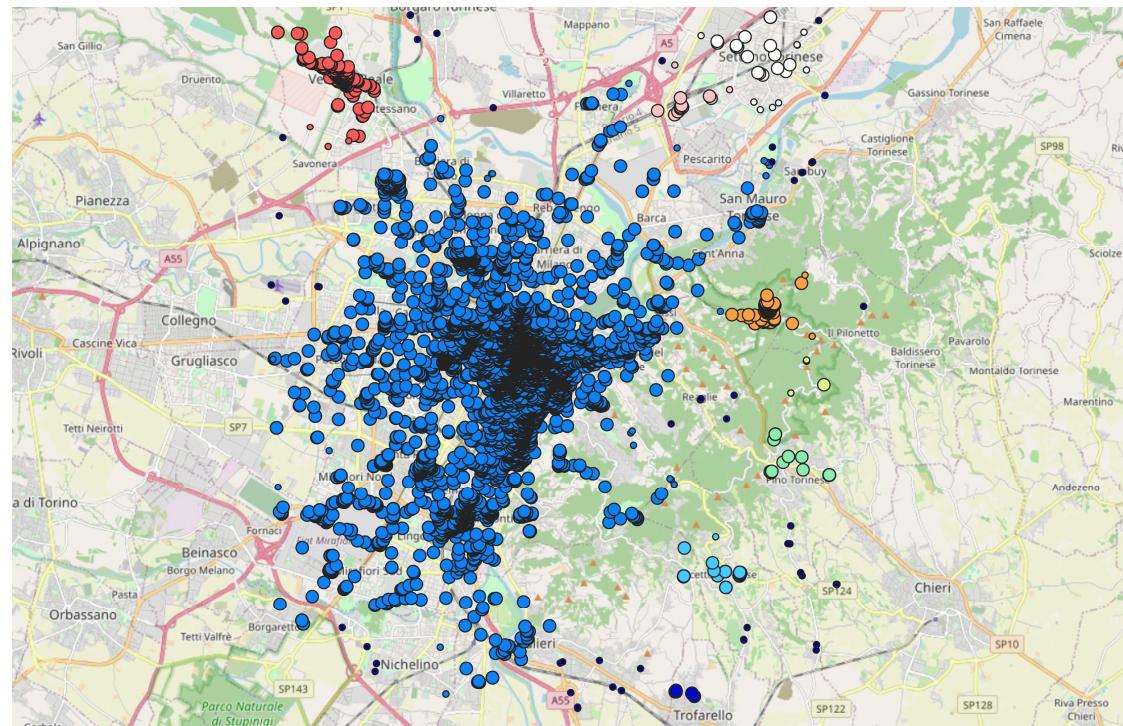




# *DBSCAN on the whole Flickr dataset*

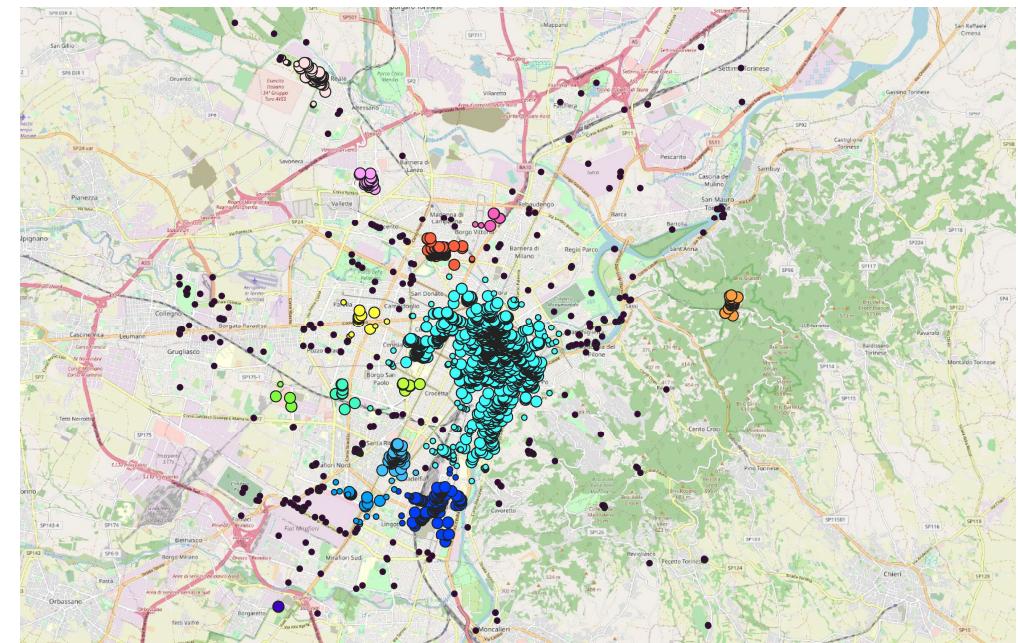
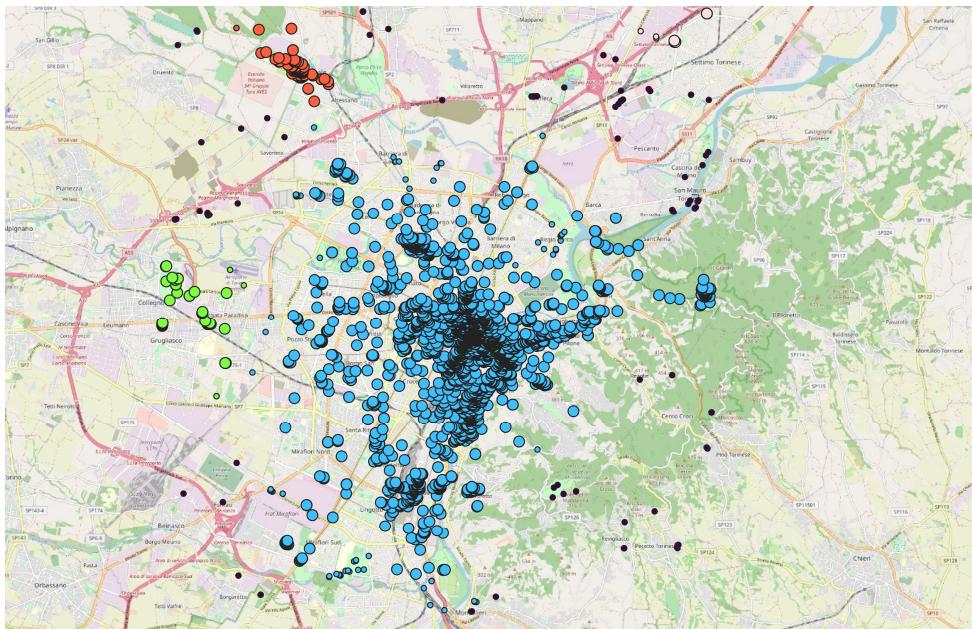
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2017 + 2018 + 2019



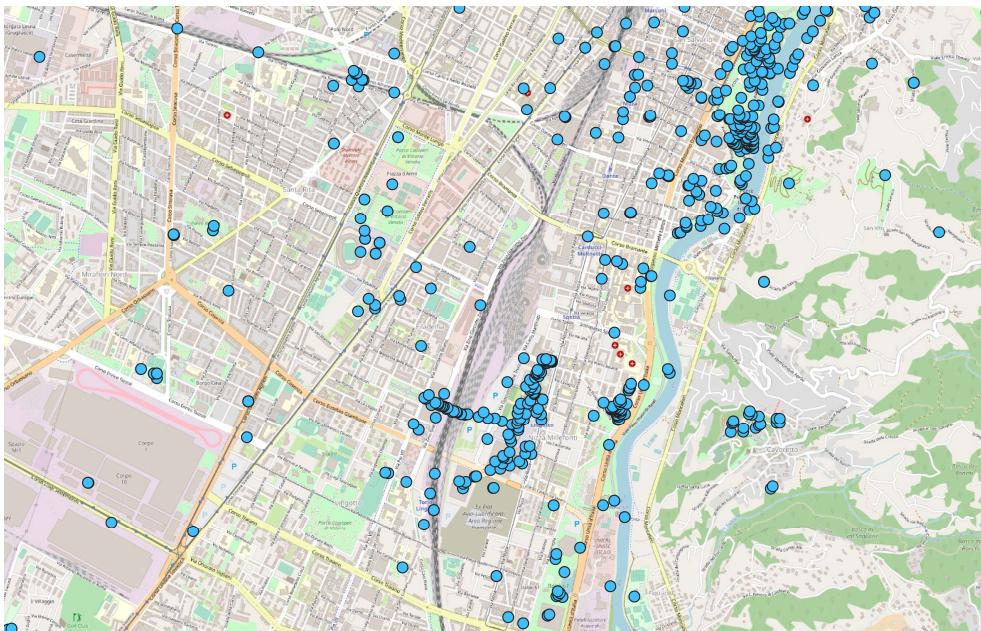


# DBSCAN



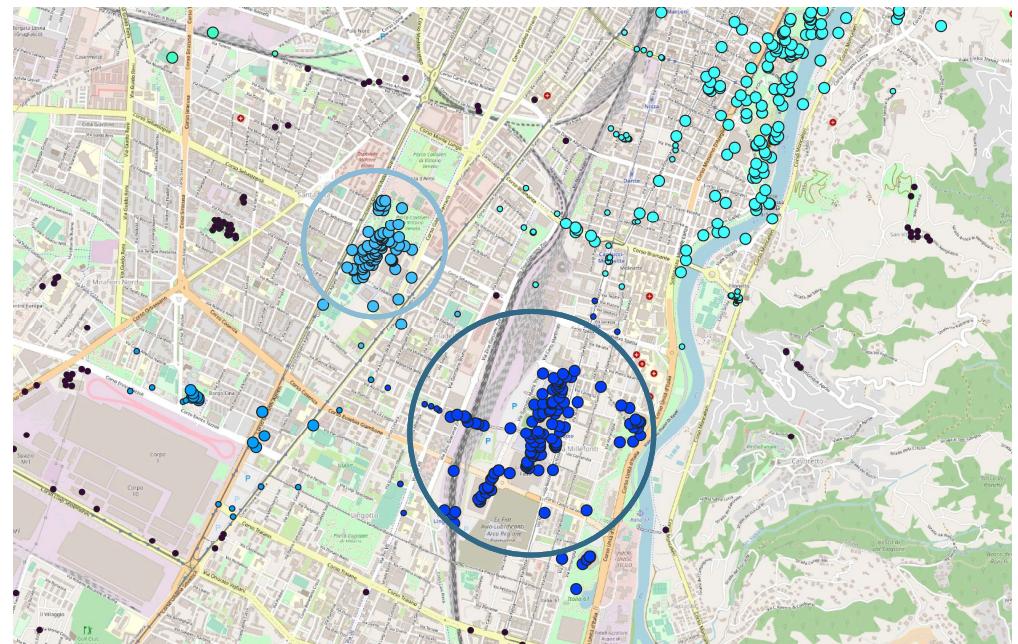


# DBSCAN detail



$\varepsilon = 0.51 \text{ km}$   
 $M = 35$

2019

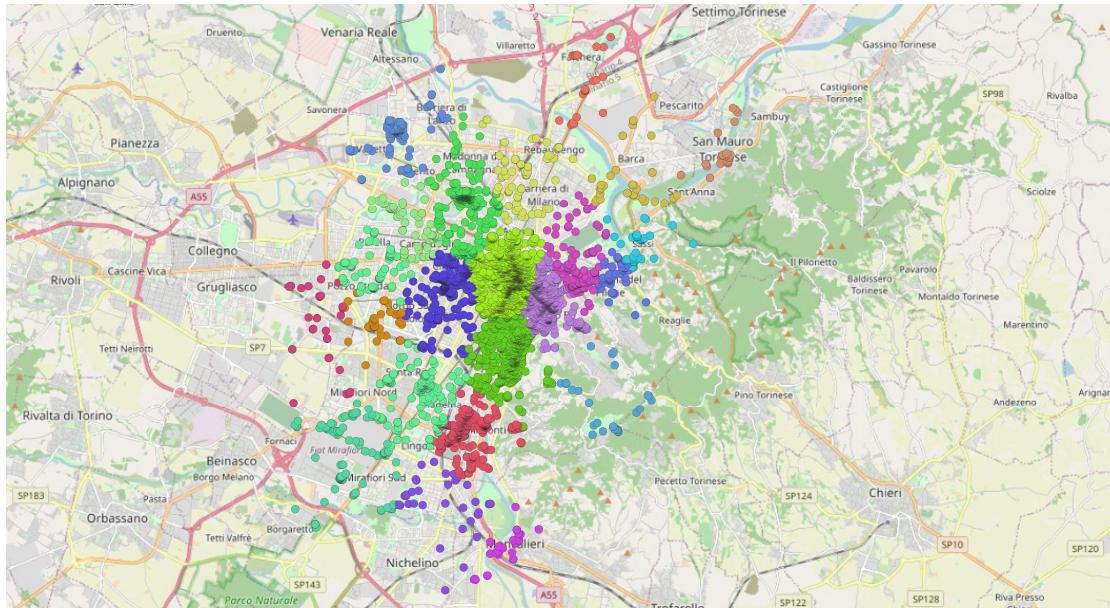




# *K-means on the whole Flickr dataset*

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2017 + 2018 + 2019

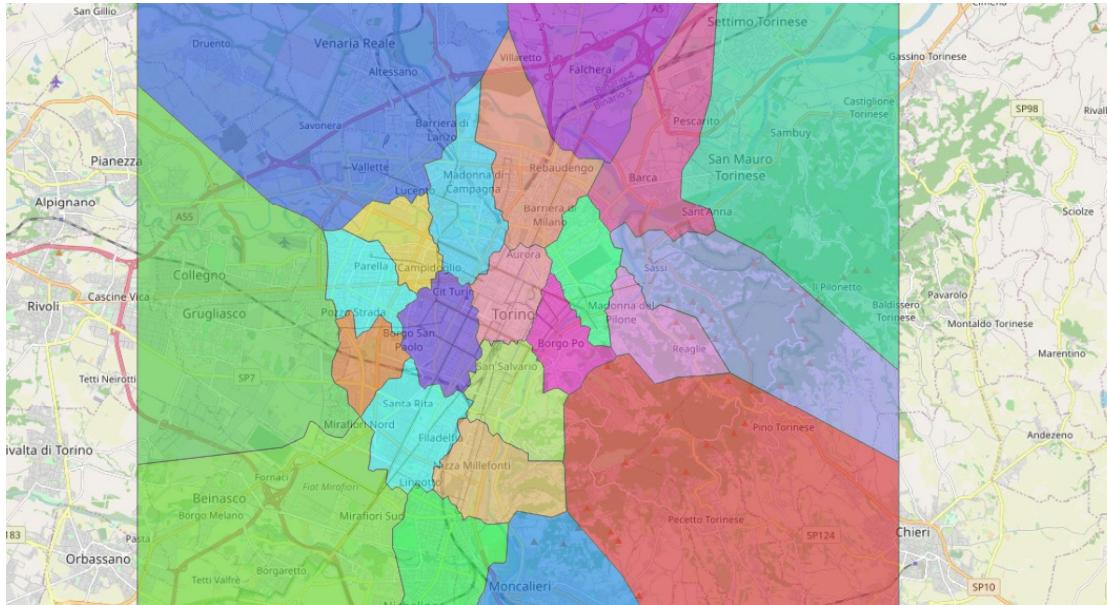




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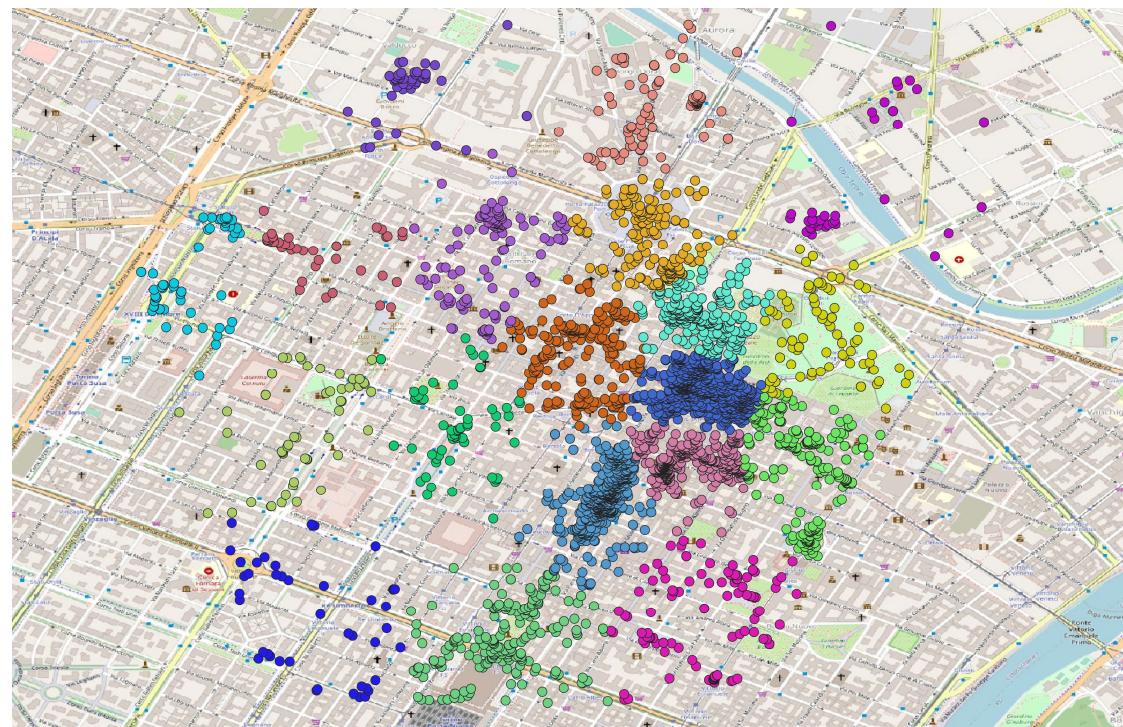




# *K-means on the city centre*

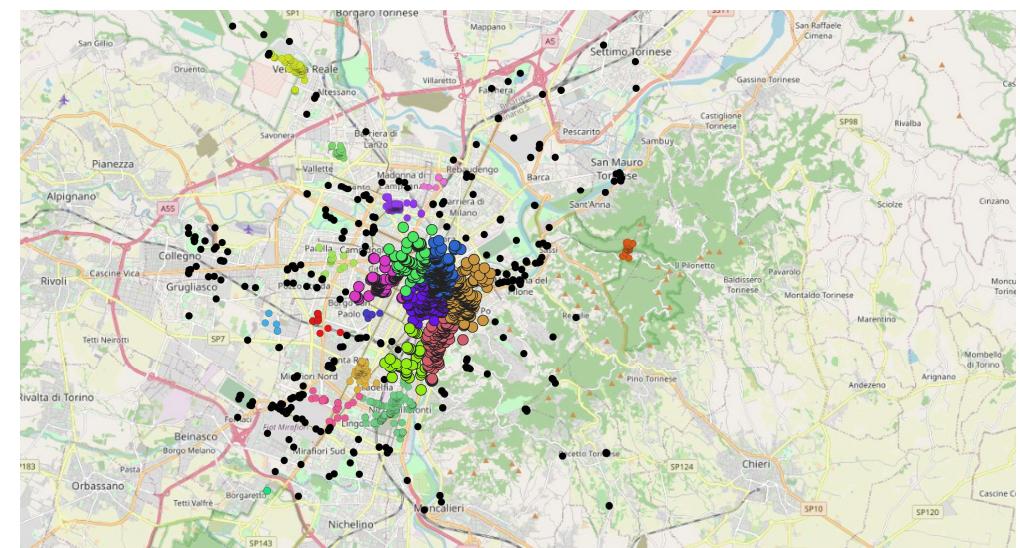
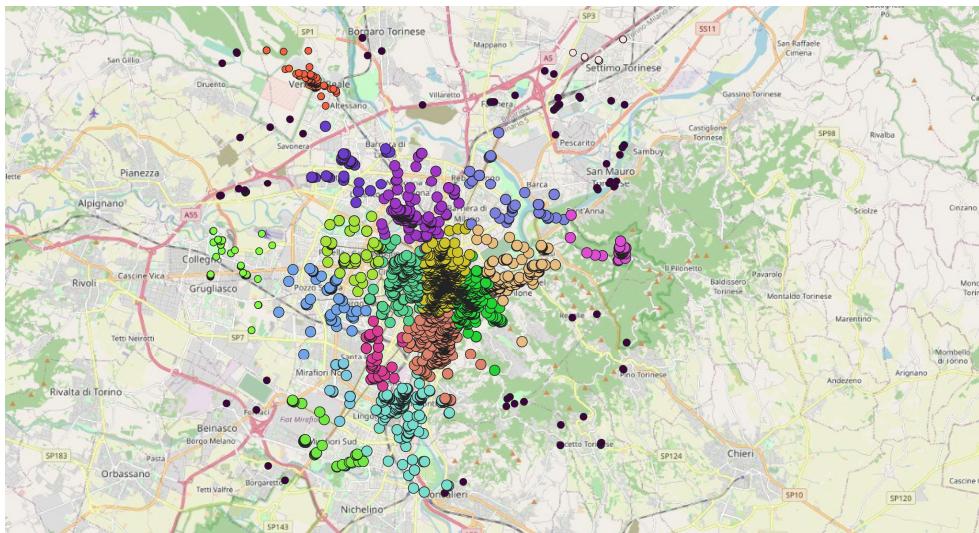
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2017 + 2018 + 2019





# DBSCAN + K-means



# Preliminary Design Review (PDR)

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  - **Tools** : Python, Transfer learning, TensorFlow , Colab, Dropbox

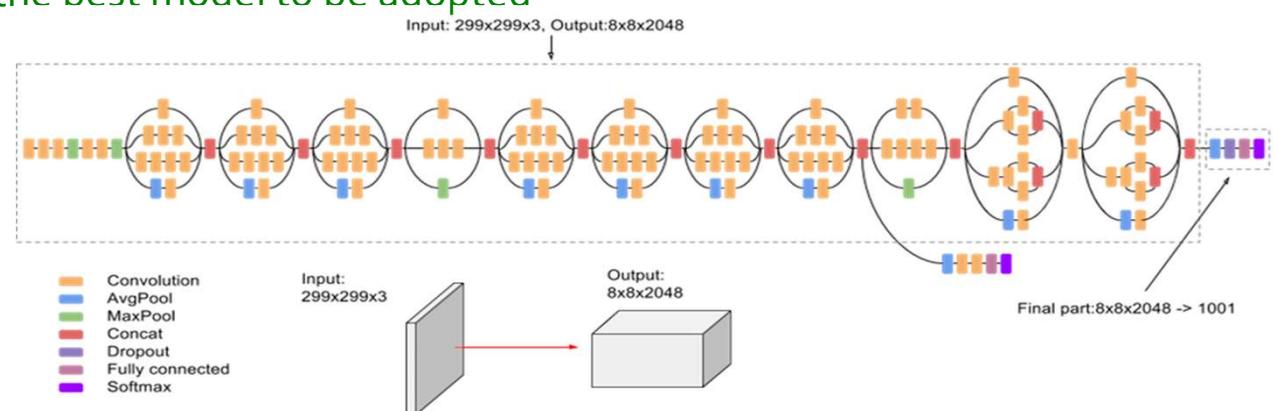
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  - ✓ Study of possible deep learning pre-trained models
  - ✓ Definition of the best model to be adopted

Inception v3



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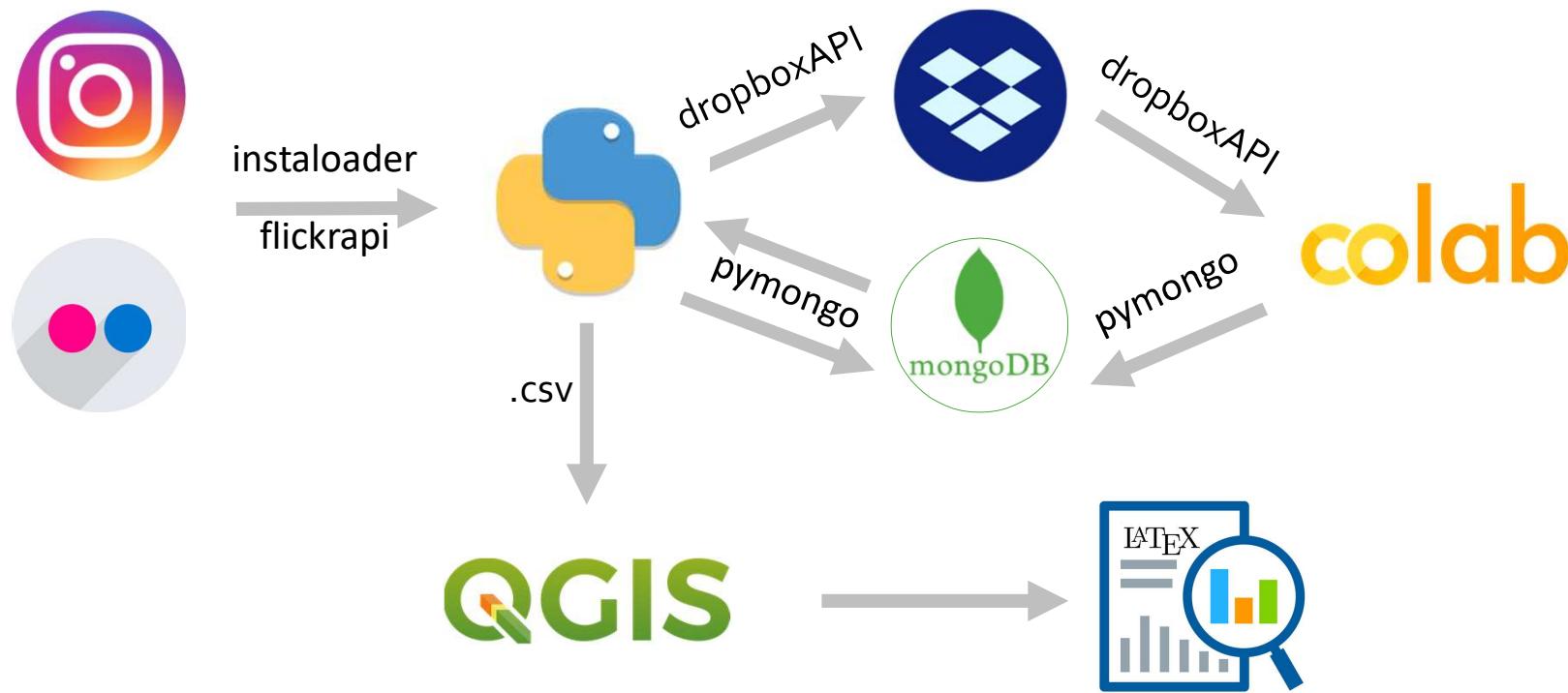
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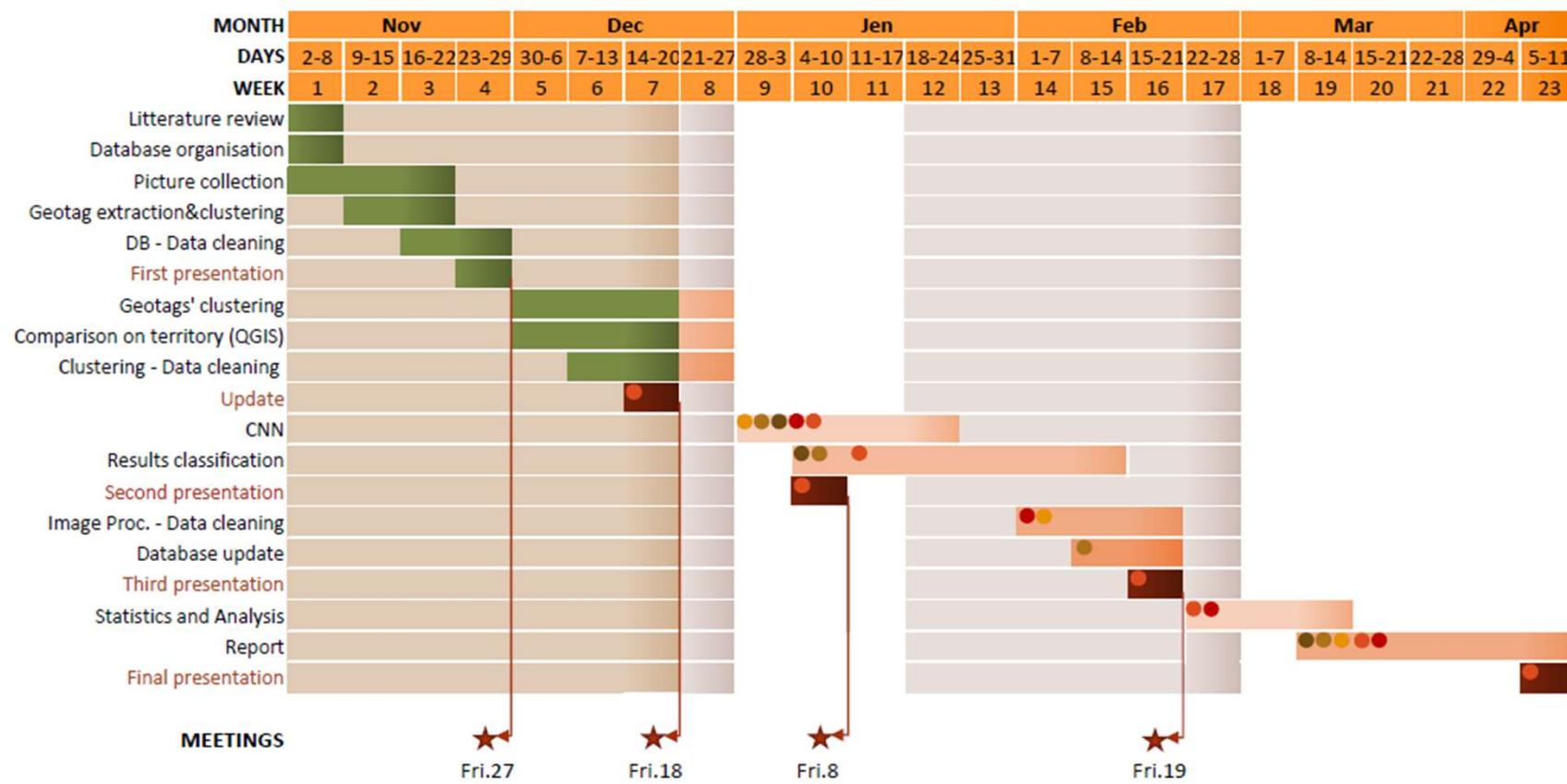
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  - ✓ Definition of the best model to be adopted
  - ❑ Complete image processing of the images into DB
  - ❑ Cleaning of non-useful images
  - ❑ Study and analysis of results

# Preliminary Design Review (PDR)

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# GANTT



**THANK YOU**  
for the attention