Capstone Project: Battle of the Neighbourhoods

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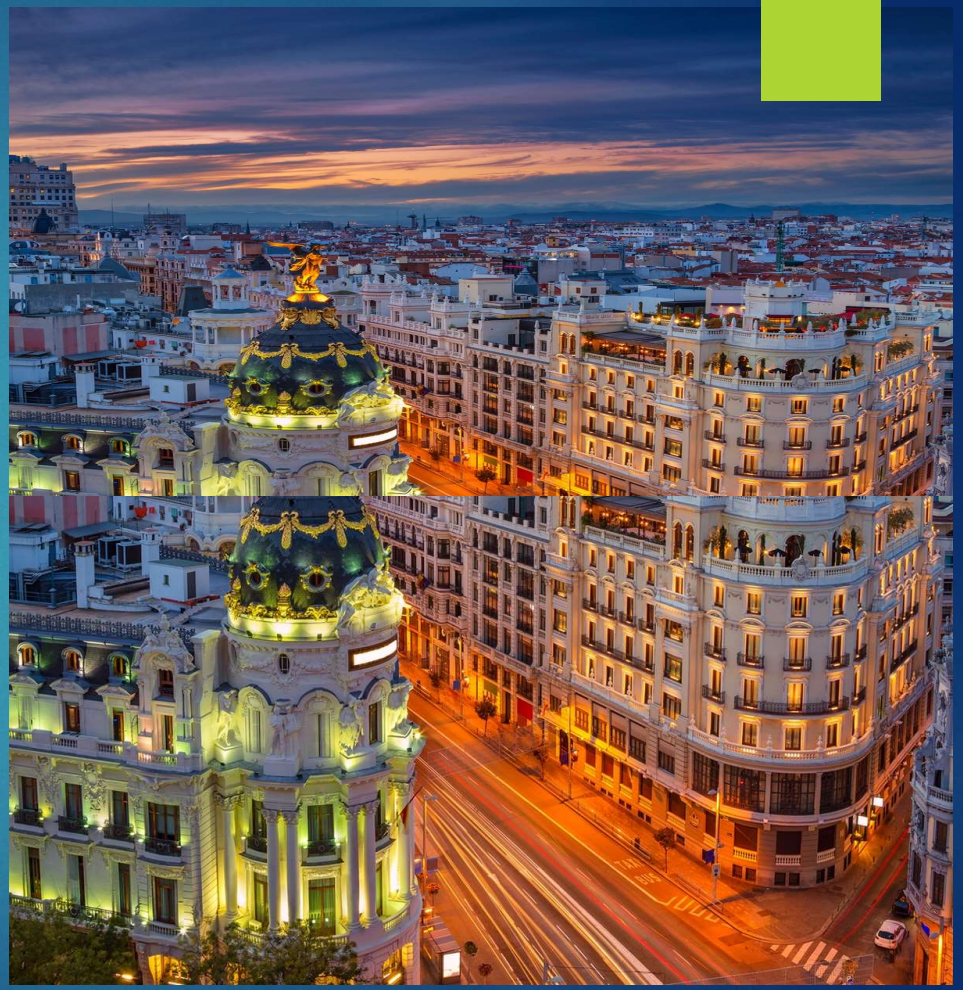
Aim of this project: Find a location for a new hotel in Madrid, Spain

- Madrid is a very popular city for tourists:
  - Good weather
  - Lovely parks
  - Amazing food
  - Friendly people
  - Great nightlife



How will candidate locations be chosen?

- Neighbourhoods in Madrid will be analysed to find number of hotels in that neighbourhood.
- The ideal location will be close to the city centre and within a certain distance of the main attractions in Madrid.
- Additionally, it will be not too close to other hotels and will also be in an area where real estate prices are not too high.

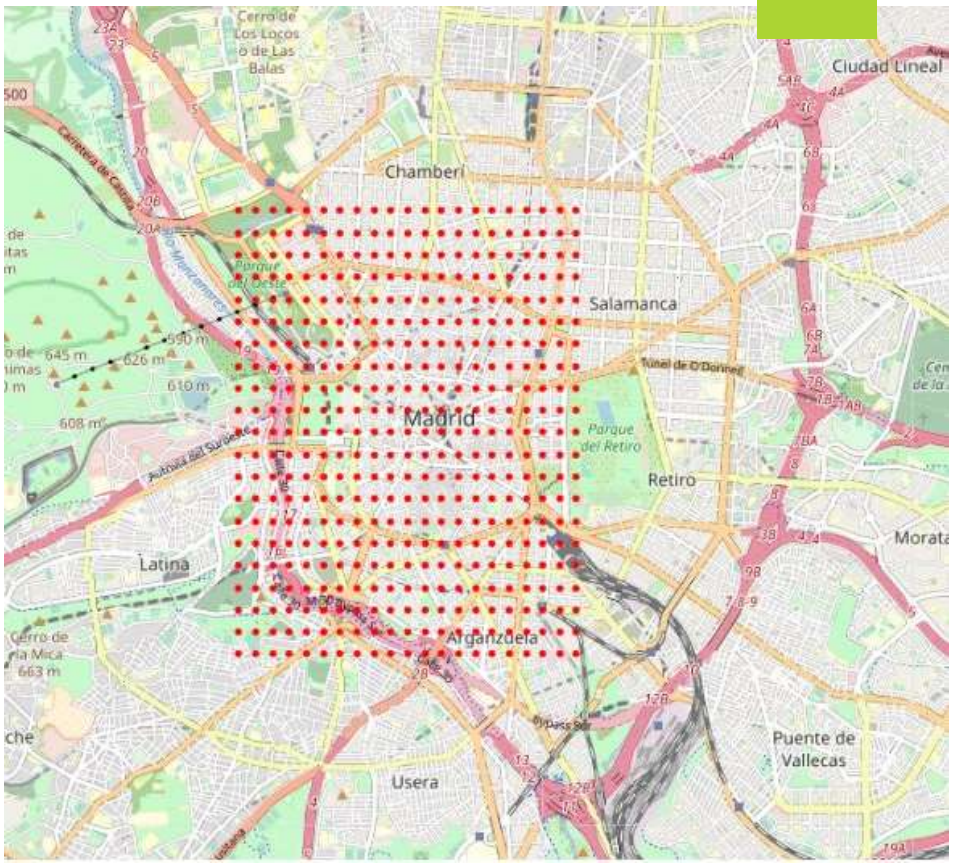
Data acquisition

The data needed will be the following:

- Hotel location data, obtained from the Foursquare API, to find where hotels are located and how many hotels there are in each neighbourhood.
- Madrid main tourist attractions, obtained by web-scraping popular tourist information websites.
- Madrid average real estate prices by district, obtained from www.statista.com.

Hotel data using Foursquare API

- First, a grid of points around centre of Madrid was created.

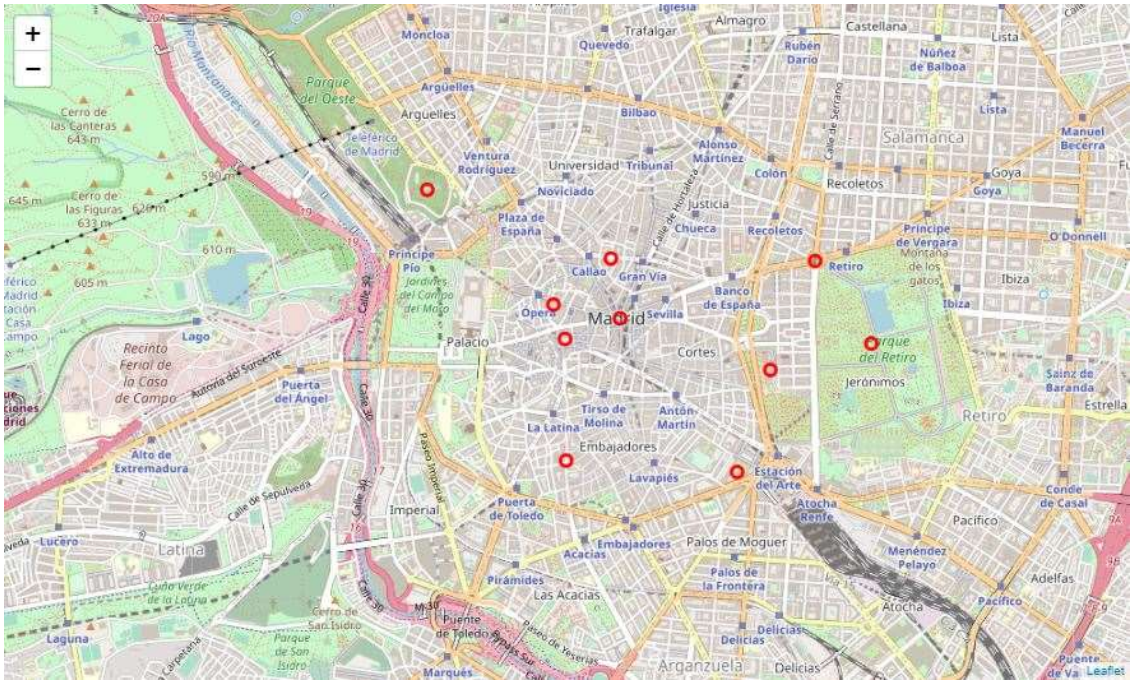


Hotel data using Foursquare API

- Then, for each of those points, a request was sent to Foursquare API to get nearby hotel locations.
- A Heat Map was created of those hotel locations.

Main attractions in Madrid data

- A popular tourist information website was scraped for top 10 attractions in Madrid, whose locations can be seen here.



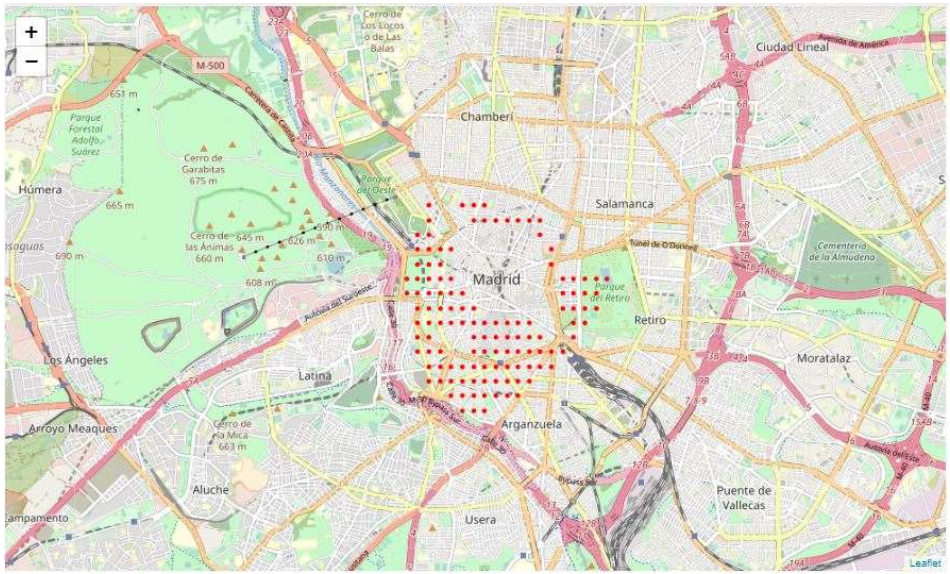
Choosing ideal hotel locations

For the grid of points the following conditions were chosen:

- The distance to all main attractions in Madrid must be less than 3km.
- The number of hotels within 200m must be less than 5.
- The average price per square metre must be less than €4500.

Candidate locations

- Out of our original grid, the points that meet the criteria are showed in red.



Clustering using K-Means

- The candidate points were clustered to find cluster centres of good locations (in red).
- The Heat Map of existing Hotels was superimposed to visualize where these clusters are in relation to existing hotels.

Approximate investment required

- Given the candidate locations, the location price data was used to look at how much a hotel of x rooms will cost (approximately) in these locations.

ROOMS	INITIAL INVESTMENT
10	€829,540.00
20	€1,659,080.00
30	€2,488,620.00
40	€3,318,160.00
50	€4,147,700.00
60	€4,977,240.00
70	€5,806,780.00
80	€6,636,320.00
90	€7,465,860.00
100	€8,295,400.00

Conclusion

- The aim of this project was to identify some candidate locations for a new hotel in Madrid, based on three main ideas: not being too close to existing hotels, being close to main tourist attractions and the price of the real estate not being too high.

- Using the data acquired, many locations were found that satisfied all the criteria. A clustering algorithm was then used to create 10 cluster centres based on those locations.

- This list of 10 locations will be passed to interested parties, as a guide, so they can make informed decisions on which neighbourhoods to look for properties in. To make their final decision on a hotel location, however, they will consider other factors which were not included in this study, such as availability of property, attractiveness of locations, available capital, etc.