

EV Charging Station Network Analysis – the city of Milan

IMB Data Science Professional Certificate – Capstone Project

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Abstract

My capstone project is focused on the analysis of the Electric Vehicle (EV) charging station network within the city of Milan. In order to consider the attractiveness of a charging station I will consider the proximity between them and other POI like bars, restaurant and cafe. Since the average EV owner will need to make quick charge stop during the day the best clusters will be the ones with a good concentration of bar and other venues near the charging point where the EVs owners could spend their time during the charging process. I will use a clusterization model (DBSCAN) to find 4 cluster with different characteristic and I will identify the best ones following my assumptions.

Introduction: Business Problem

The Mobility and Automotive sector are facing crucial changes both in term of business and technologies. These changes are led by the introduction of the Electric Vehicles (EV). Since these vehicles require a public and private charging network the institutions and governments need to enlarge and create efficient charging points networks.

In particular, to gives to the people the chance of charging the EV during the day enabling them to make long travel without coming back home, it is important to have the right number of charging point in the cities. Moreover, these infrastructures must be localized inside strategic area. In the future, people who travel from a city to another or even in the same city will need to charge the EV for short time in order to store the energy needed to come back home or to another charging point. To do that, the charging point must be localized near infrastructures that allows the people to stay for less than one hours working or enjoying a meal or drink.

In my project, I will analyze the actual charging network in the city of Milan. I will divide the network in different clusters based on the proximity of the charging stations to interesting POI like bars and restaurants. I will also take in consideration the reputation of that POI and the number of available charging point in that cluster. In this way, I will be able to find the best location (and cluster) to charge the EV during the day.

Therefore, I am interested to find the clusters where the charging infrastructures (and the charging points) are close to a high number of popular bars and restaurant.

This analysis has a different scope for different stakeholders:

- It could help people to find the best charging spot
- It could help the municipality to orientate the charging network development
- It could orientate the opening of new bars and POI near the more isolated charging stations