Project Final

Luiz Henrique Quinelato

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Introduction

This project will be refer about what is the most comuns venues around Paris. The main of this final job is to Know what is the best route to visit the most places in Paris. Knowing where we have more places nearby The first step is to get the data about venues around Paris. We'll use fousquera API to get this.Then we are apply K-means to get cluster, which means that we are going to discover which places are more closest to each others. To finish we're making some describle about this cluster and may be we can get some interesting discoveries

Data

Here we're going to get data about some most popular venues around Paris. To make sure that we got differents venues I choosed some specifics places to startpoint.See below de head of the dataset:

	name	categories	address	lat	lng
0	Créa'Bain	Construction & Landscaping	Le Monge	43.553142	0.447015
1	LES SERRES DU CEDON	Construction & Landscaping	11, Chemin De Fleurian	43.576551	0.516636
2	BOTTALICO ESPACE VERT	Construction & Landscaping	Chemin De Boy	43.576629	0.520713
3	Chateau De Camille	Restaurant	NaN	43.574599	0.526075

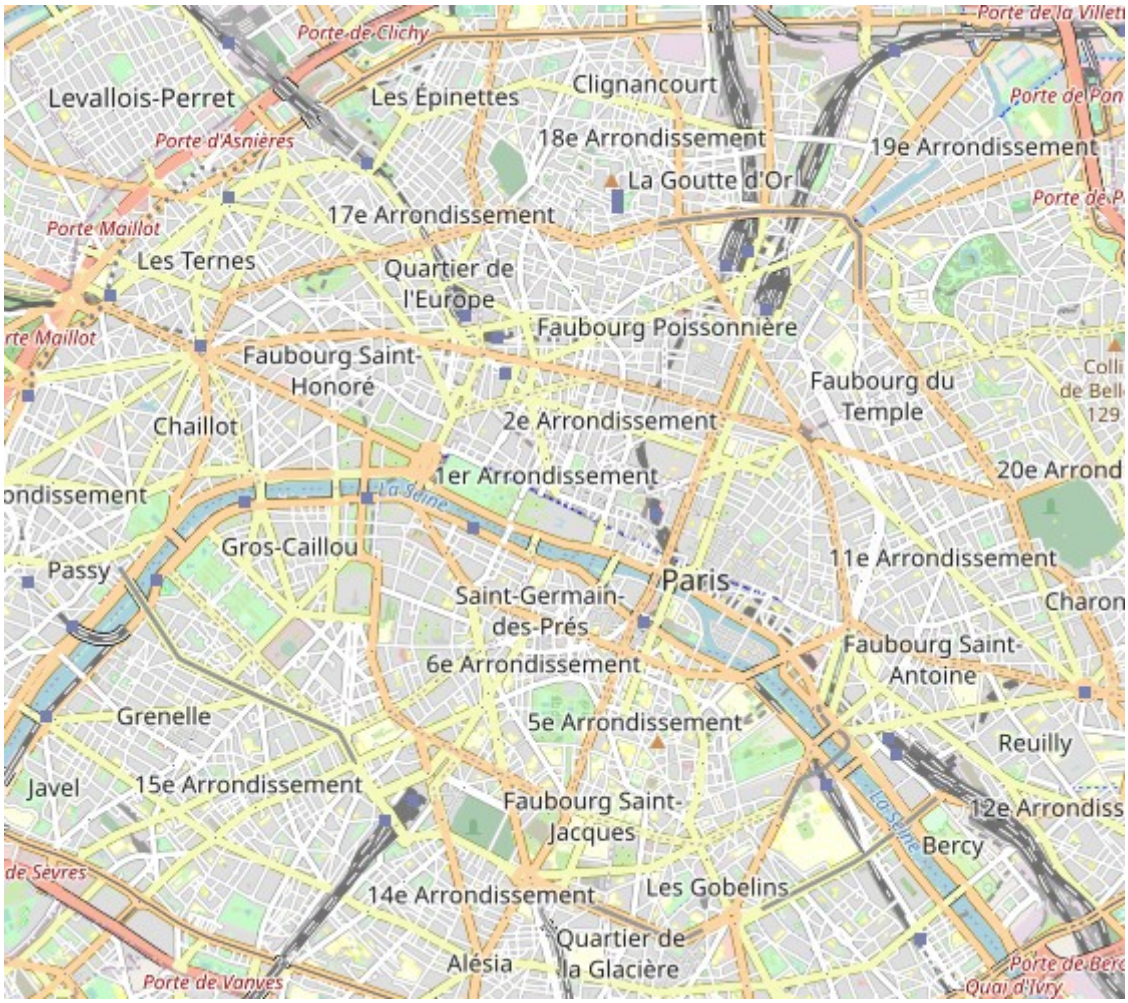
Here we can see the most frequency about category of venues:

French Restaurant	16
Hotel	14
Italian Restaurant	11
Plaza	9
Bakery	8
Vietnamese Restaurant	7
Park	7
Bookstore	6
Coffee Shop	6
Wine Bar	6
Vegetarian / Vegan Restaurant	5
Bar	5
Garden	5
Historic Site	4
Restaurant	4
Art Museum	4
Cocktail Bar	4
Burger Joint	3
Scenic Lookout	3
Indie Movie Theater	3
Beer Bar	3
Japanese Restaurant	3
Café	3

Frequency

Maps

The region choosed for this application it's



Frequency

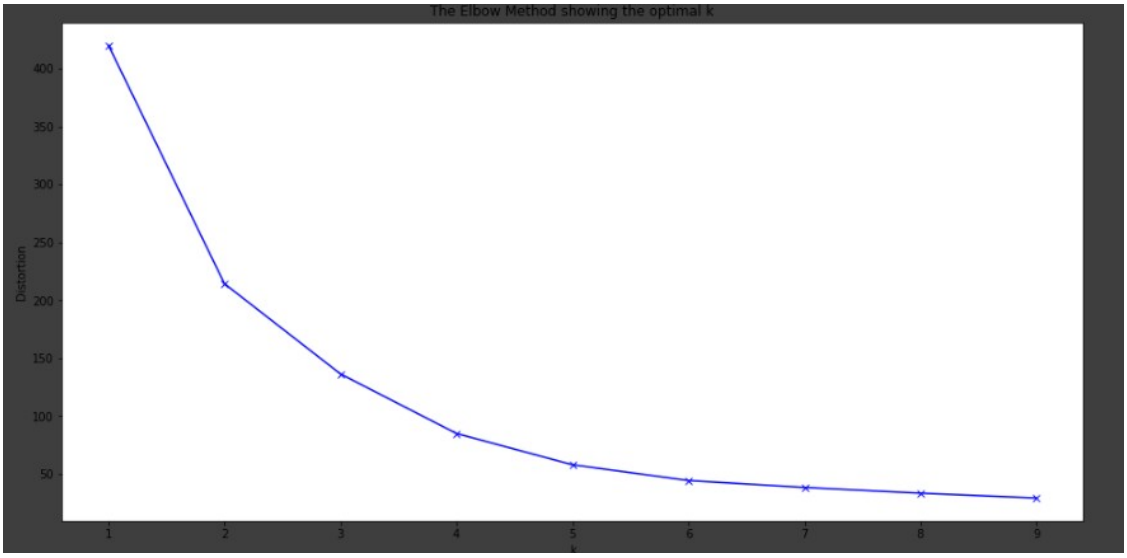
Method

Analysis of Cluster is a method of statistics also call unsupervised classification. We're using this method to discover where we have more places nearby to each other using latitude and longitude as attributes

Results

First we used elbow method to choose what K is the best for this application.So after we do that , we can conclude by looking the picture below that the best k is 4 groups .

Elbow Method:



To finish we plot the latitude and longitude by cluster, so we can see where the cluster by color

Scatter plot:

Discussion

Below the characteristics of each cluster

0	Vietnamese Restaurant	7
	Park	6
	French Restaurant	4
	Italian Restaurant	3
	Lounge	2
	Recording Studio	2
	Multiplex	2
	Mediterranean Restaurant	2
	Plaza	2
	Coffee Shop	2
	Hotel	2
	Brazilian Restaurant	2
	Korean Restaurant	1
	Performing Arts Venue	1
	Restaurant	1
	Botanical Garden	1
	Café	1
	Indie Movie Theater	1
	Bookstore	1
	Science Museum	1
	Cambodian Restaurant	1
	Thai Restaurant	1
	Beer Garden	1
	Wine Bar	1
	Tea Room	1
	Chinese Restaurant	1

1	French Restaurant	6
	Italian Restaurant	6
	Hotel	6
	Bakery	4
	Plaza	3
	Café	2
	Coffee Shop	2
	Scenic Lookout	2
	Corsican Restaurant	2
	Indie Movie Theater	2
	Gastropub	2
	Restaurant	2
	Japanese Restaurant	2
	Vegetarian / Vegan Restaurant	2
	Breakfast Spot	2
	Bar	2
	Deli / Bodega	2
	Taco Place	2
	Burger Joint	2
	Beer Bar	2
	Wine Bar	2
	Pastry Shop	1

2	Hotel	6
	Garden	5
	Historic Site	4
	Plaza	4
	French Restaurant	4
	Art Museum	3
	Boutique	2
	Ice Cream Shop	2
	Art Gallery	2
	Bistro	2
	Bar	2
	Bookstore	2
	Fountain	2
	Peruvian Restaurant	1
	Cupcake Shop	1
	Gourmet Shop	1
	Pastry Shop	1
	Tailor Shop	1
	Korean Restaurant	1
	Lebanese Restaurant	1
	Concert Hall	1
	Cheese Shop	1
	Liquor Store	1
	Department Store	1

3	Cocktail Bar	4
	Bookstore	3
	Wine Bar	3
	Bakery	3
	Vegetarian / Vegan Restaurant	3
	Italian Restaurant	2
	French Restaurant	2
	Cheese Shop	1
	Trattoria/Osteria	1
	Restaurant	1
	Burger Joint	1
	BBQ Joint	1
	Supermarket	1
	Seafood Restaurant	1
	Canal	1
	Art Museum	1
	Bar	1
	Asian Restaurant	1
	Tattoo Parlor	1
	Coffee Shop	1
	Speakeasy	1

If we explore more about this cluster, we can discover some interesting similarities within the cluster. For the group 3, we can see that it is more likely tourist place where you can visit some museum and know the art. The group 0 and 2 we can infer that is more likely for people who can wants to eat in different restaurant, and to finish the group 1 that is more likely for places that people who wants to drink