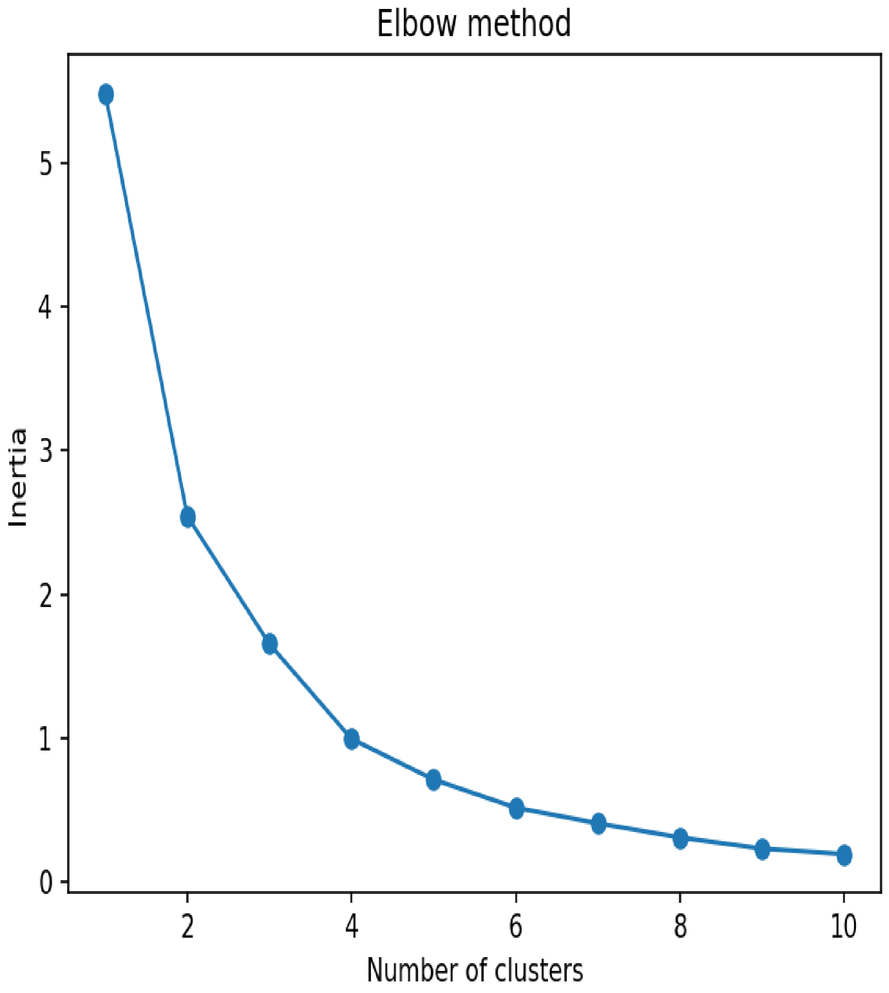
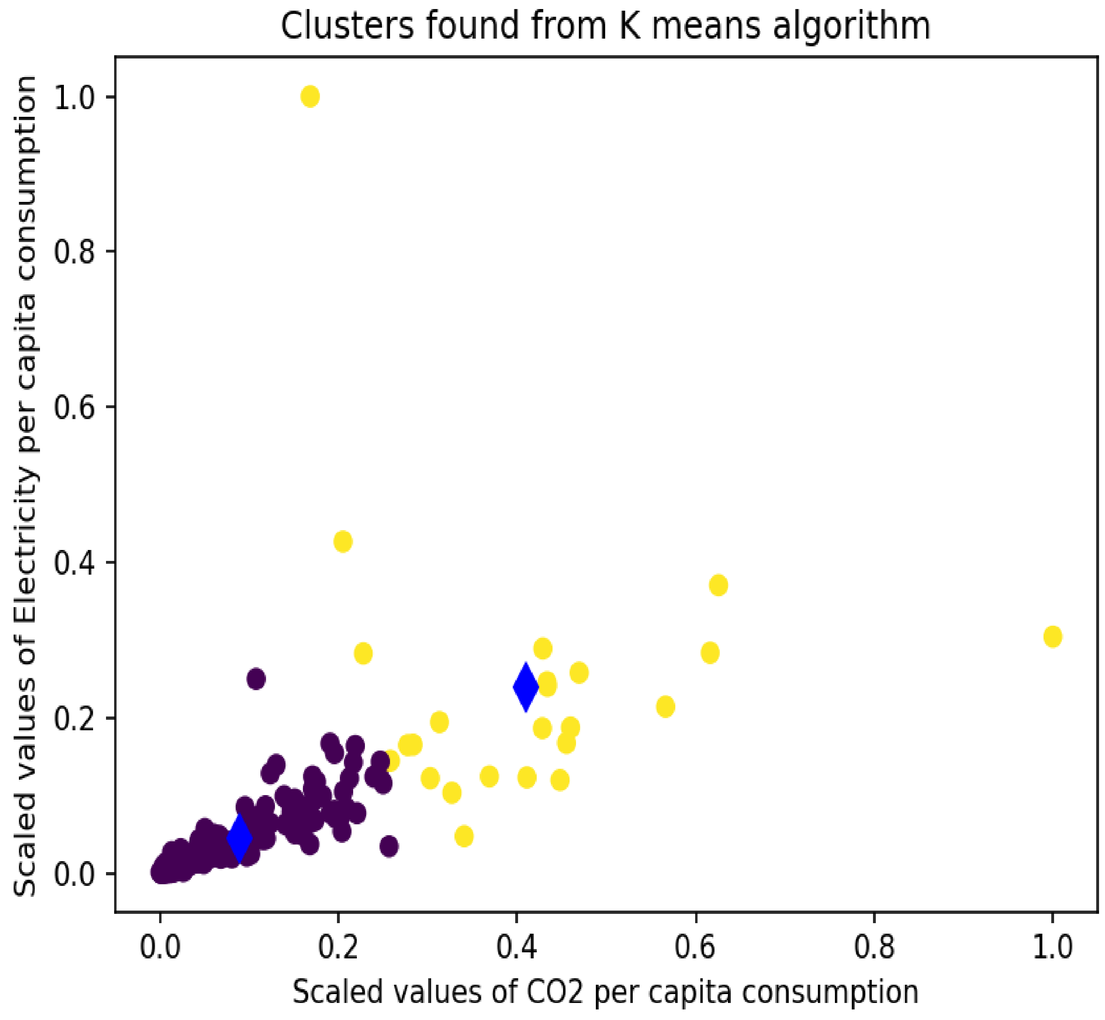
Applied Data Science and Analytic Clustering and Fitting

- **CO2 levels in the atmosphere is an important indicator of climate change. We need to find out the root causes of CO2 emission so that we can try to reduce its level and thereby stop climate change. In this project, I analyzed per capita electricity consumption and per capita CO2 emission of various countries and grouped them into clusters. This helps us to draw some pattern about the relationship between them.**



Grouping the CO2 and electricity data of various countries into 2 clusters with the help of k means clustering is the plot to the right

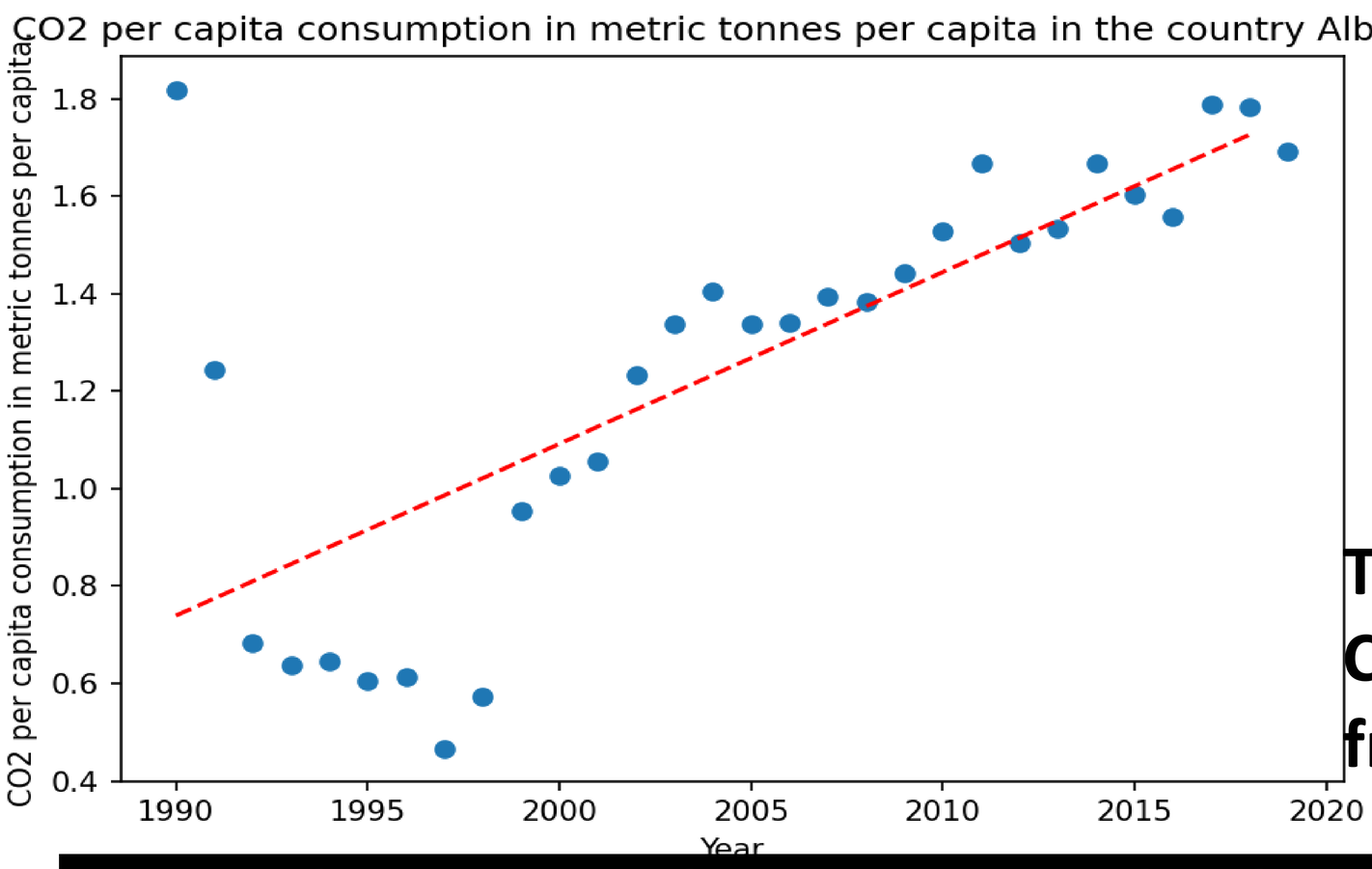


The above plot shows elbow method used to determine the optimal number of clusters = 2.

The Silhouette score of the clusters = 0.685973637235771

Comparing the data of 2 countries belonging to 2 different clusters

	Countries	CO2 Per Capita Consumption	Electricity Per Capita Consumption
1	Africa Eastern and Southern	1.006938	680.150341
8	United Arab Emirates	20.910029	11562.988520



From the k means cluster plot we can conclude that amount of CO2 emission is directly proportional to the amount of electricity consumption.

The curve to the left fits the CO2 emission data in Albania from 1990 – 2019.

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The predicted per capita CO2 consumption in Albaina in 2025 is 1.973815258372099
The predicted per capita CO2 consumption in Albaina in 2030 is 2.150156441748706
The predicted per capita CO2 consumption in Albaina in 2035 is 2.32649625125313
The predicted per capita CO2 consumption in Albaina in 2040 is 2.502838085019344
The predicted per capita CO2 consumption in Albaina in 2045 is 2.679179918785415
The predicted per capita CO2 consumption in Albaina in 2050 is 2.8555211752551486
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