

Machine Learning

Exercise Sheet 10

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Exercise 19: K-Means Clustering (5 Points)

- Explain the optimization function of the K-Means clustering in your own words.
- What is the primary difference between K-Means and K-Medoids?
- Apply the K-Means Clustering for two iterations on the data in Table 1 for $k = 3$. The first cluster center was randomly chosen to be $(5, 5)$.

x	y	x	y
-5	5	-5	-5
-5	4	-5	-4
-4	5	-4	-5
5	5	4	5
5	4		

Exercise 20: Gaussian Mixture Models (5 Points)

- What do Gaussian Mixture Models and K-Means have in common? What are the differences.
- Design a data set that is clustered correctly using Gaussian Mixture models but not using K-Means.