

MATH 567: Mathematical Techniques in Data
Science
Lab 11

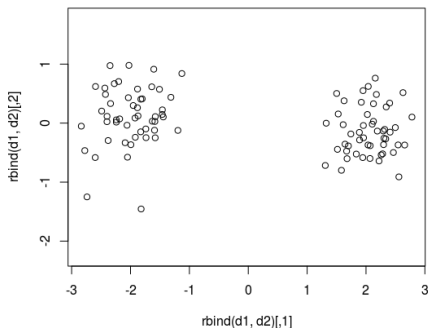
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Exercise 1: K-means

- 1 Use the `mvrnorm` command to construct a dataset of $n = 100$ points in \mathbb{R}^2 with two clusters.



- 2 Read the documentation of the `kmeans` command.
- 3 Use the `kmeans` command to cluster your data. Examine the centers, `withinss`, and `betweenss` of the resulting clustering.

Exercise 2: Spectral Clustering

- 1 Load the kernlab library.
- 2 Load the spirals dataset and plot the data.
- 3 Use the K-means algorithm to find $K = 2$ clusters, and display the resulting clustering:

```
library(grDevices)
mypal = rainbow(2)
plot(spirals, col=mypal[c$cluster])
```

- 4 Repeat the above exercise using spectral clustering:

```
sc = specc(spirals, centers=2)
plot(spirals, col=mypal[sc])
```

Exercise 2: Spectral Clustering (cont.)

