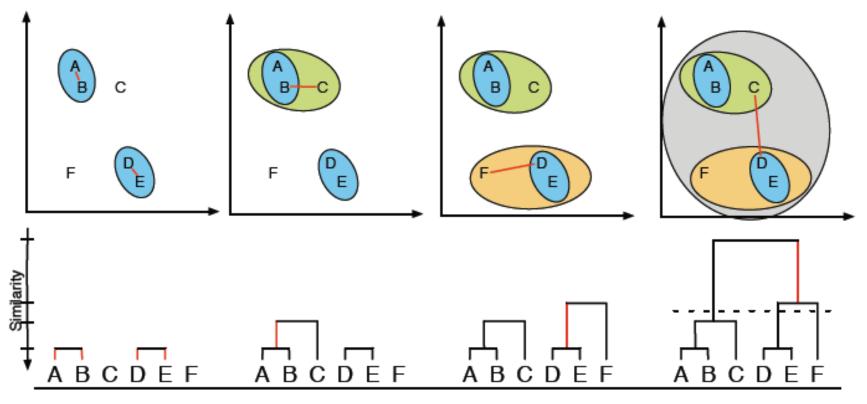
MACHINE LEARNING WITH PYTHON

HIERARCHICAL CLUSTERING

Themistoklis Diamantopoulos

Agglomerative Hierarchical Clustering

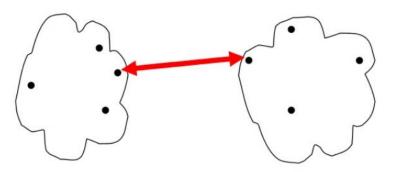
- Connect points according to their distance
- Select cut-off point to split to clusters



Source: https://www.researchgate.net/figure/Example-of-hierarchical-clustering-clusters-are-consecutively-merged-with-the-most_fig3_273456906

Single vs Complete Linkage

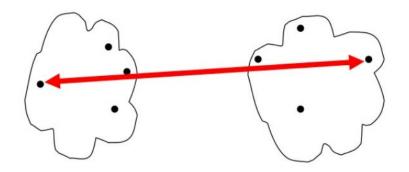
- Single-link
 - Smallest distance between an element in one cluster and an element in the other



- Produces large clusters
- Sensitive to outliers

Complete-link

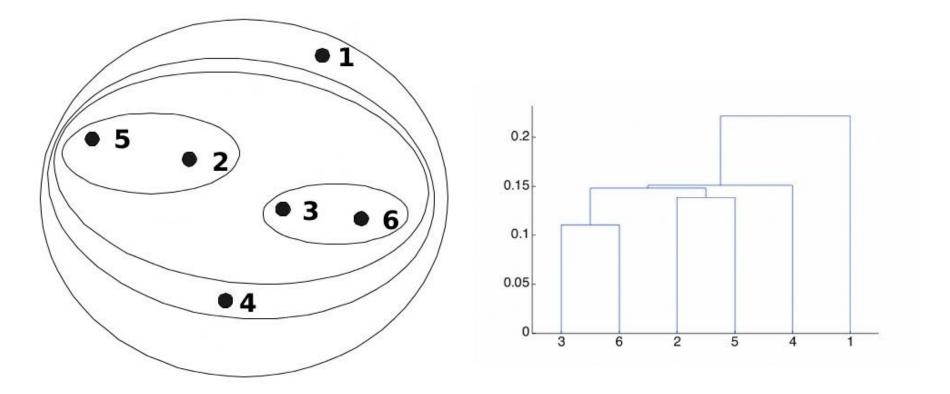
 Largest distance between an element in one cluster and an element in the other



- Produces balanced clusters
- Breaks large clusters

Single-link

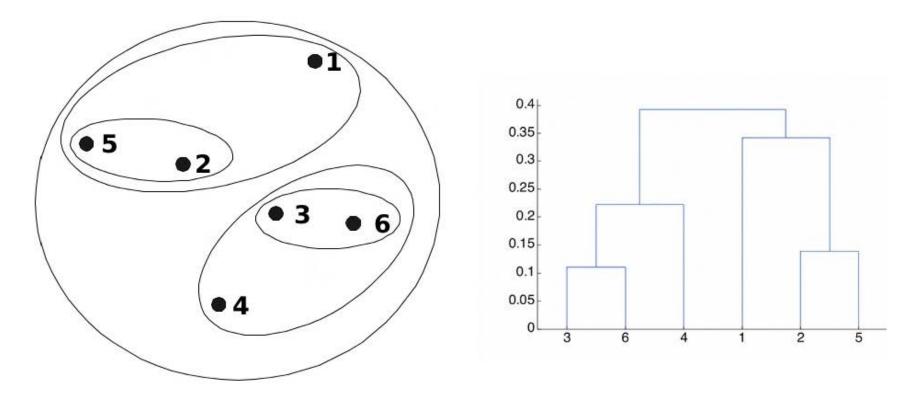
• Example



Source: https://www.slideshare.net/ChaToX/hierarchical-clustering-56364612

Complete-link

• Example



Source: https://www.slideshare.net/ChaToX/hierarchical-clustering-56364612