Unione europea
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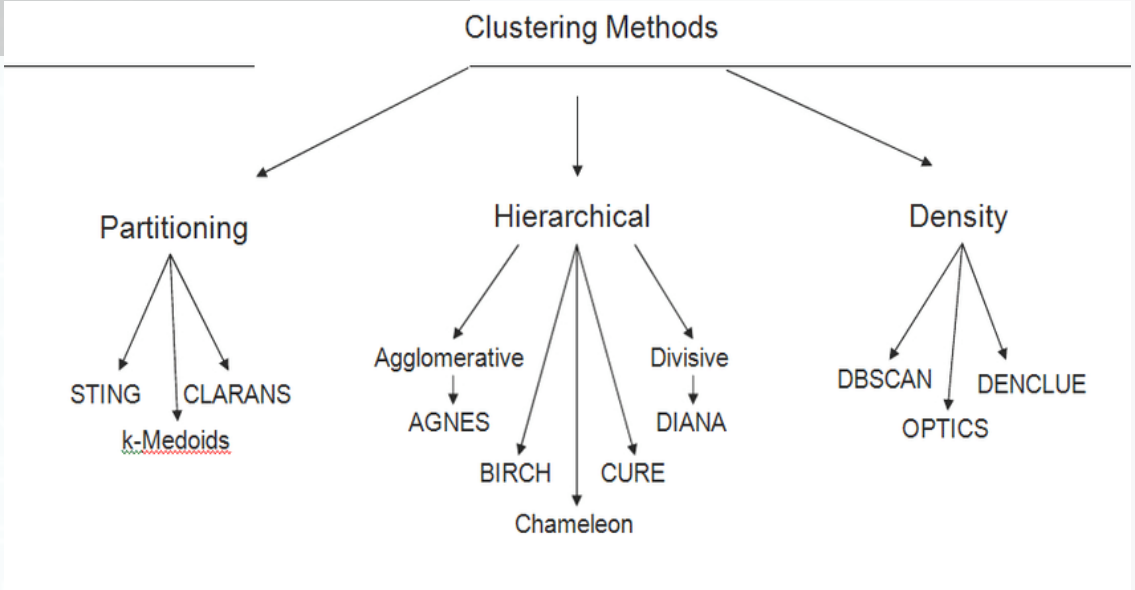
RegioneEmilia-Romagna

RETE POLITECNICA
La tecnica per crescere

Materiale didattico per partecipante al corso "**TECNICO ESPERTO NELL'ANALISI E NELLA VISUALIZZAZIONE DEI DATI**" – Rif.P.A. 2021-15998/RER – approvata con DGR n. 1263 del 02/08/2021 di IFOA – Istituto Formazione Operatori Aziendali

1. Clustering

Tipi di clustering

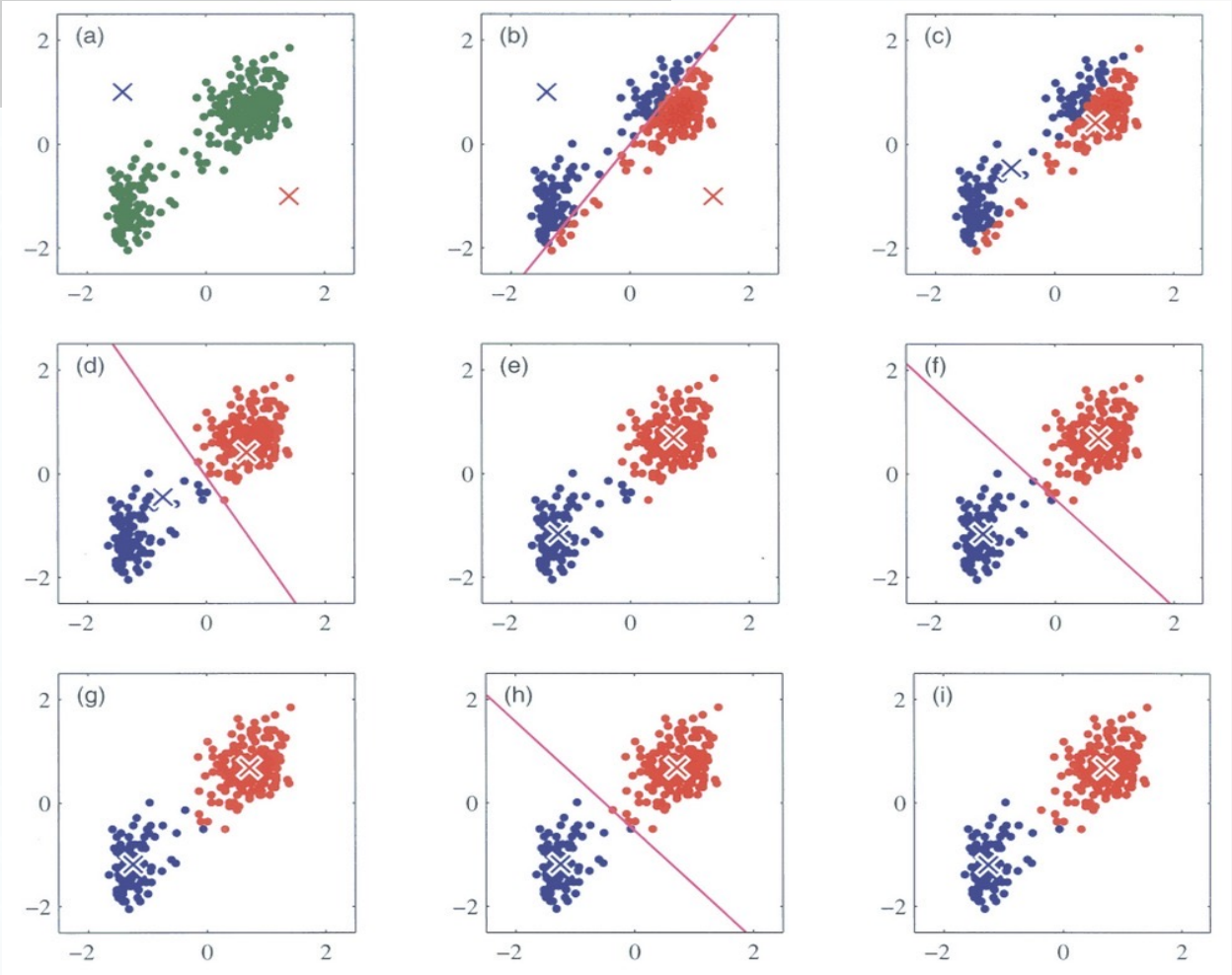


Partition based Clustering
- generano cluster simil-sferici
- Sono relativamente efficienti
- Funzionano bene con dataset medi/grandi
- Esempi: K-Means, Fuzzy C-Means, K-Media

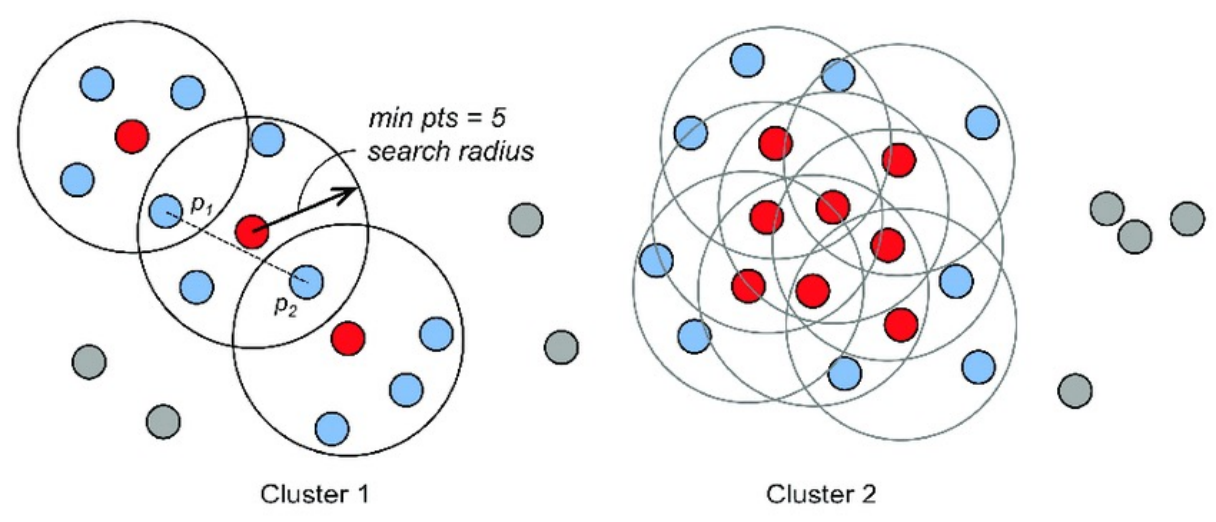
Hierarchical Clustering
- Generano ‘alberi’ di cluster
- sono molto intuitivi
- Funzionano generalmente bene con dataset piccoli
- Esempi: Agglomerative, Divisive

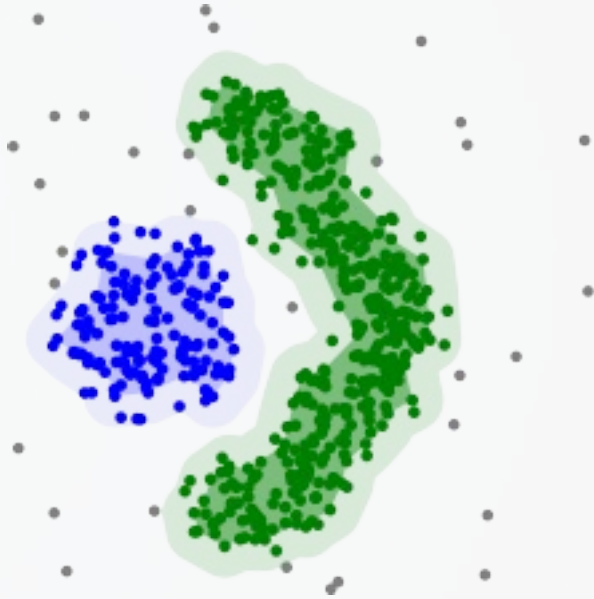
Density-based Clustering
- Generano cluster con forme di tutti i tipi
- funzionano meglio quando i dati hanno poco ‘rumore’
- Esempi: DBSCAN, OPTICS

K-MEANS

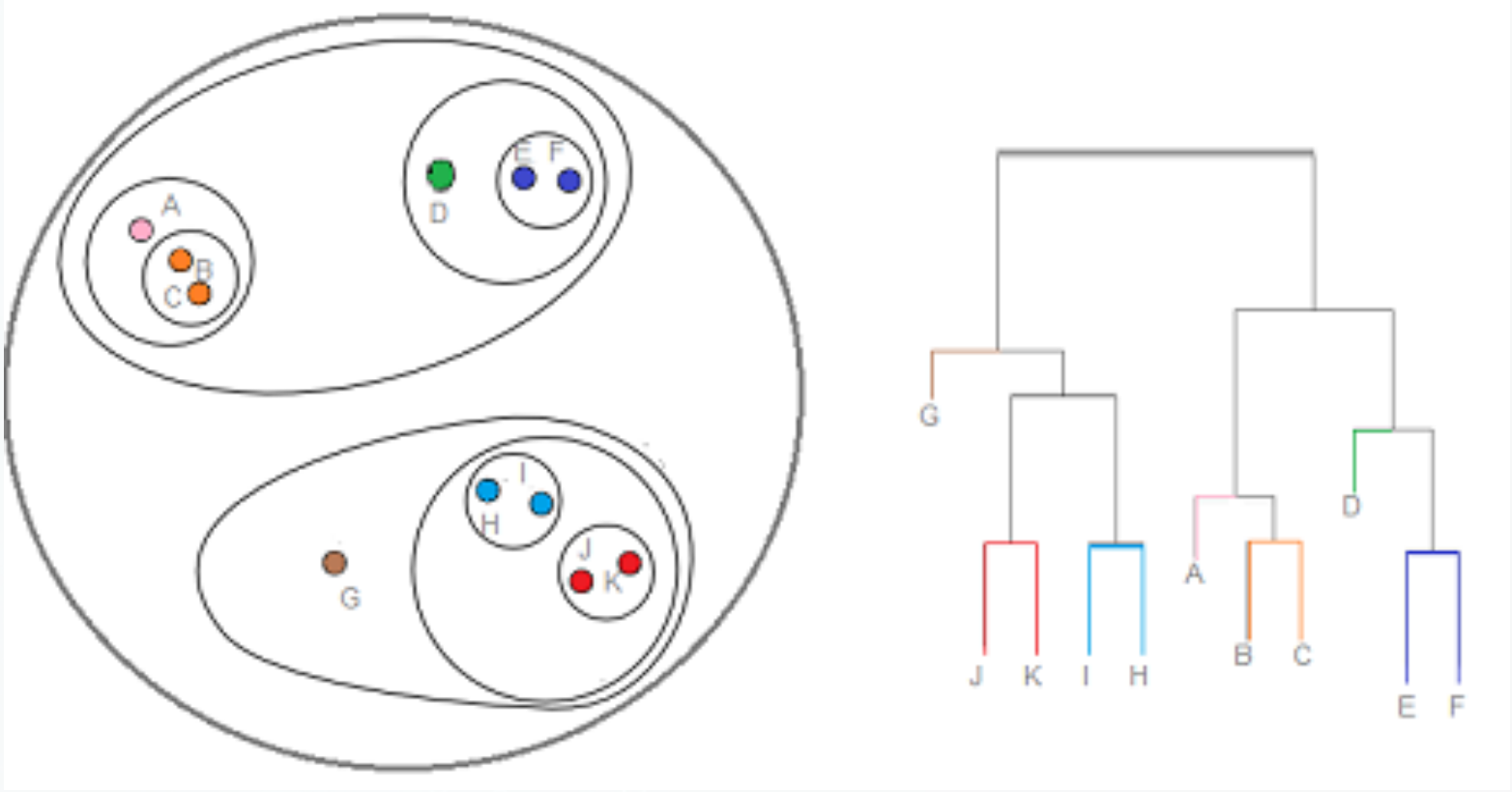


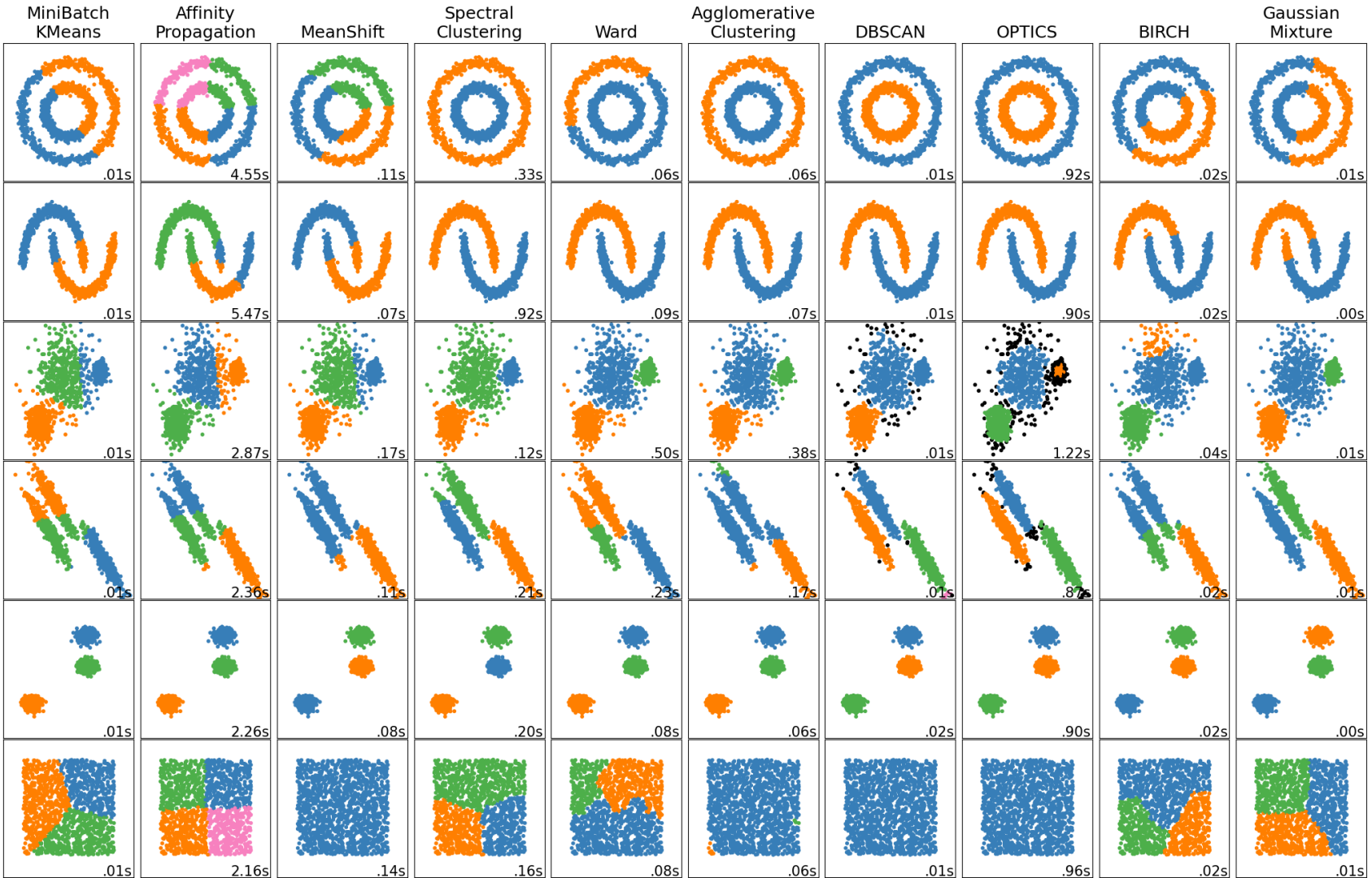
DBSCAN





AGGLOMERATIVE CLUSTERING




MiniBatch KMeans
Affinity Propagation
MeanShift
Spectral Clustering
Ward
Agglomerative Clustering
DBSCAN
OPTICS
BIRCH
Gaussian Mixture
.01s
4.55s
.11s
.33s
.06s
.06s
.01s
.92s
.02s
.01s
.01s
5.47s
.07s
.92s
.09s
.07s
.01s
.90s
.02s
.00s
.01s
2.87s
.17s
.12s
.50s
.38s
.01s
1.22s
.04s
.01s
.01s
2.36s
.11s
.21s
.23s
.17s
.01s
.87s
.02s
.01s
.01s
2.26s
.08s
.20s
.08s
.06s
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.90s
.02s
.00s
.01s
2.16s
.14s
.16s
.08s
.06s
.01s
.96s
.02s
.01s