[320] Unsupervised ML Recap

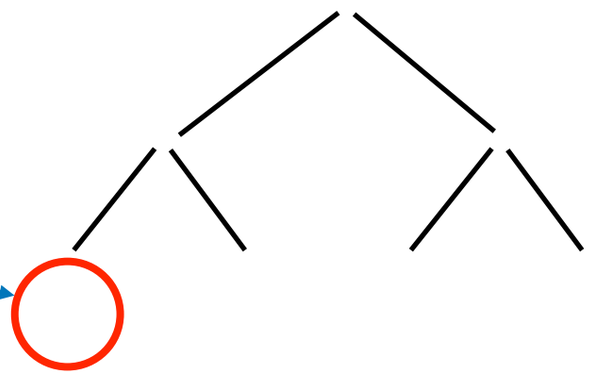
Meenakshi Syamkumar

????

A	B	C	D
50	50	110	90
...	...	...	...

...hundreds of rows...

Tree



????

A	B	C	D
50	50	110	90
...	...	...	...

...hundreds of rows...

Centroids

A	B	C	D
250	0	15	12
45	45	100	102
0	95	24	80

????

A	B	C	D
50	50	110	90
...	...	...	...

...hundreds of rows...

50

10

Component Rows

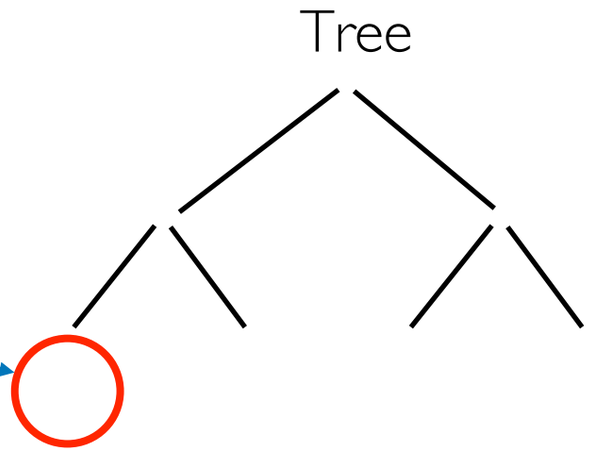
A	B	C	D
1	1	2	2
0	0	1	-1

Hierarchical Clustering

(for example, AgglomerativeClustering)

A	B	C	D
50	50	110	90
...	...	...	...

...hundreds of rows...



Non-Hierarchical Clustering

(for example, KMeans)

A	B	C	D
50	50	110	90
...	...	...	...

...hundreds of rows...

Centroids

A	B	C	D
250	0	15	12
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Decomposition

(for example, PCA)

A	B	C	D
50	50	110	90
...	...	...	...

...hundreds of rows...

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Component Rows

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Hierarchical Clustering
(for example, AgglomerativeClustering)

A	B	C	D
50	50	110	90
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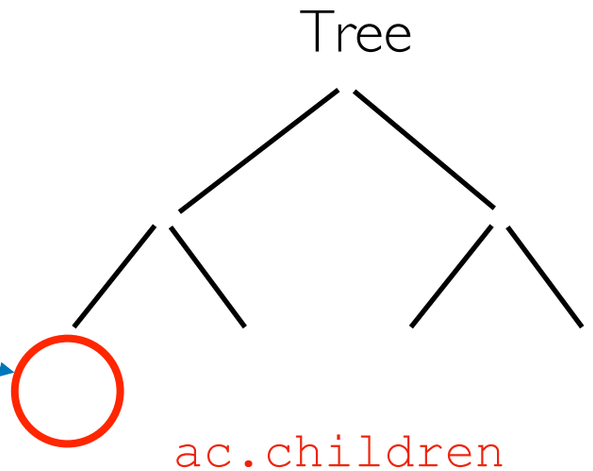
...hundreds of rows...



`ac.children_`

Non-Hierarchical Clustering
(for example, KMeans)

A	B	C	D
50	50	110	90
...	...	...	...

...hundreds of rows...

Centroids

A	B	C	D
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`km.cluster_centers_`

Decomposition
(for example, PCA)

A	B	C	D
50	50	110	90
...	...	...	...

...hundreds of rows...

50

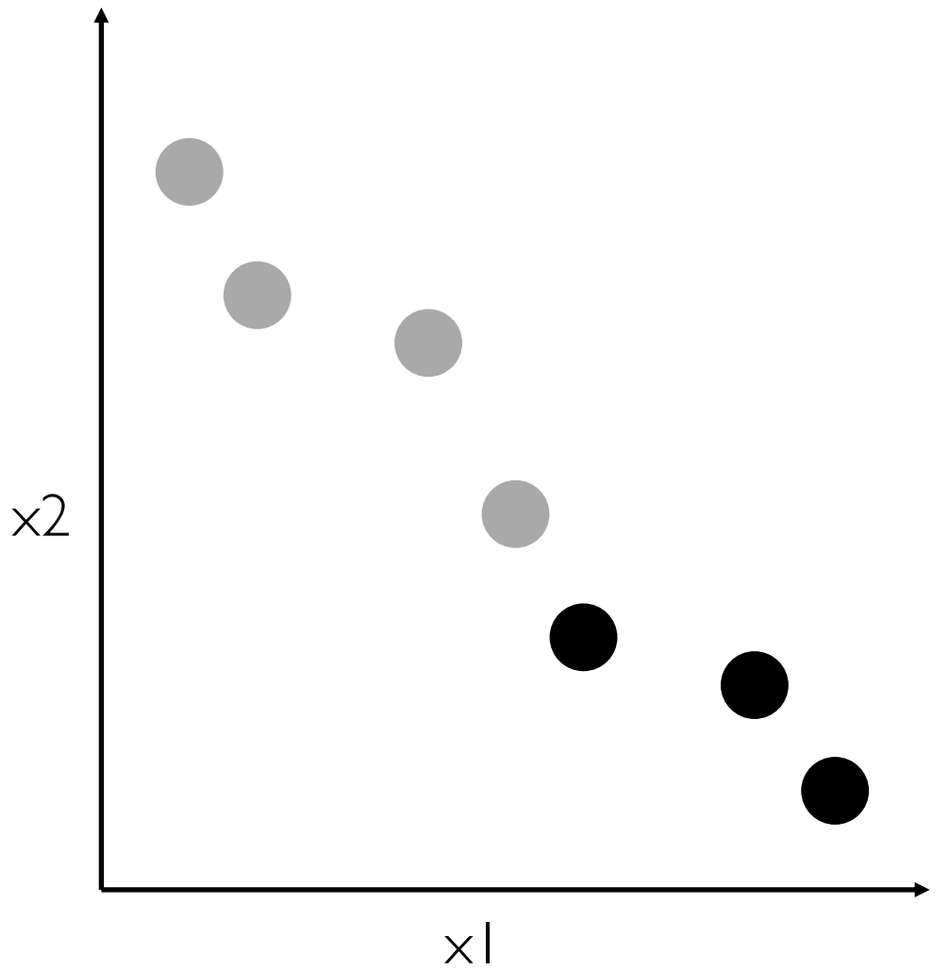
10

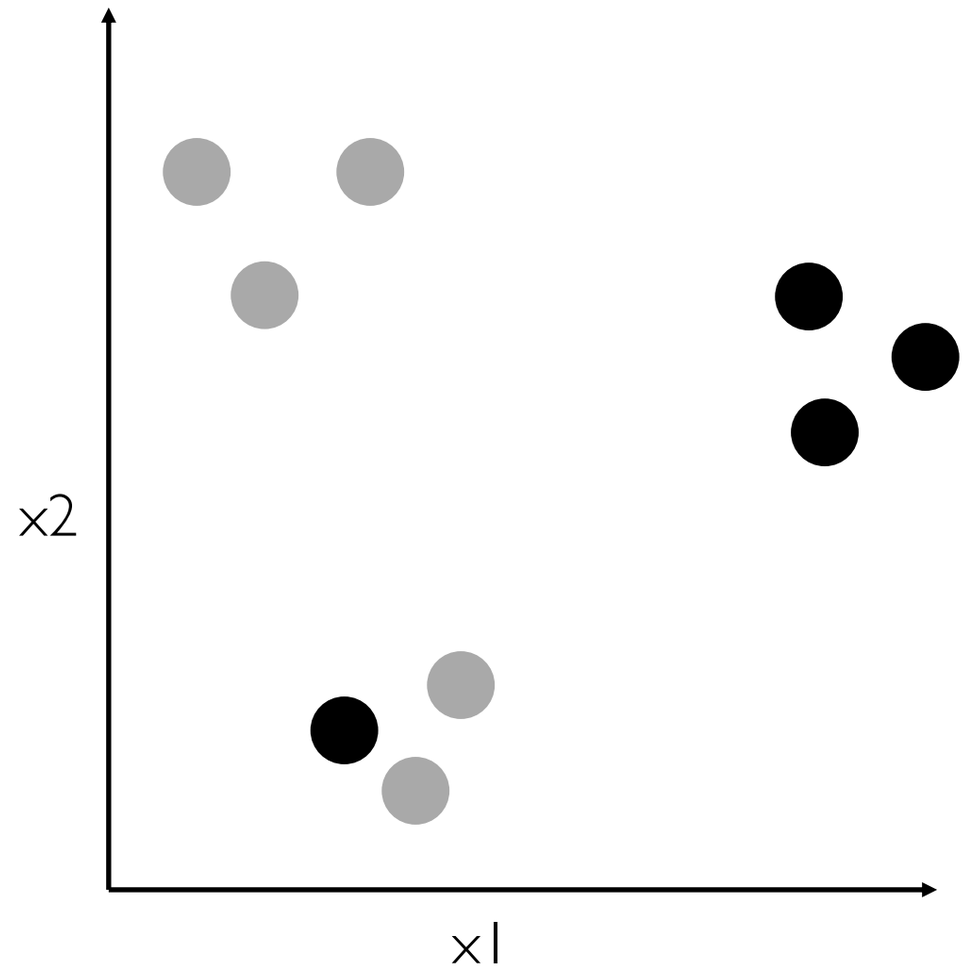
Component Rows

A	B	C	D
1	1	2	2
0	0	1	-1

`pca.components_`

Preprocessing: Clustering or Decomposition?

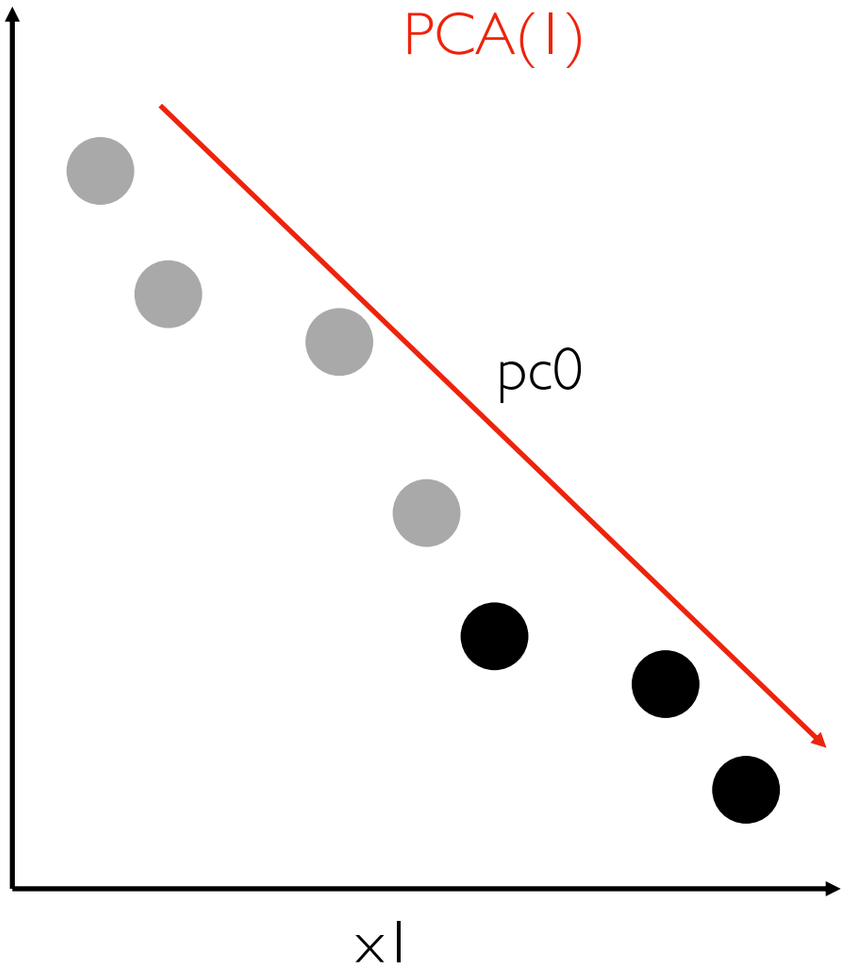


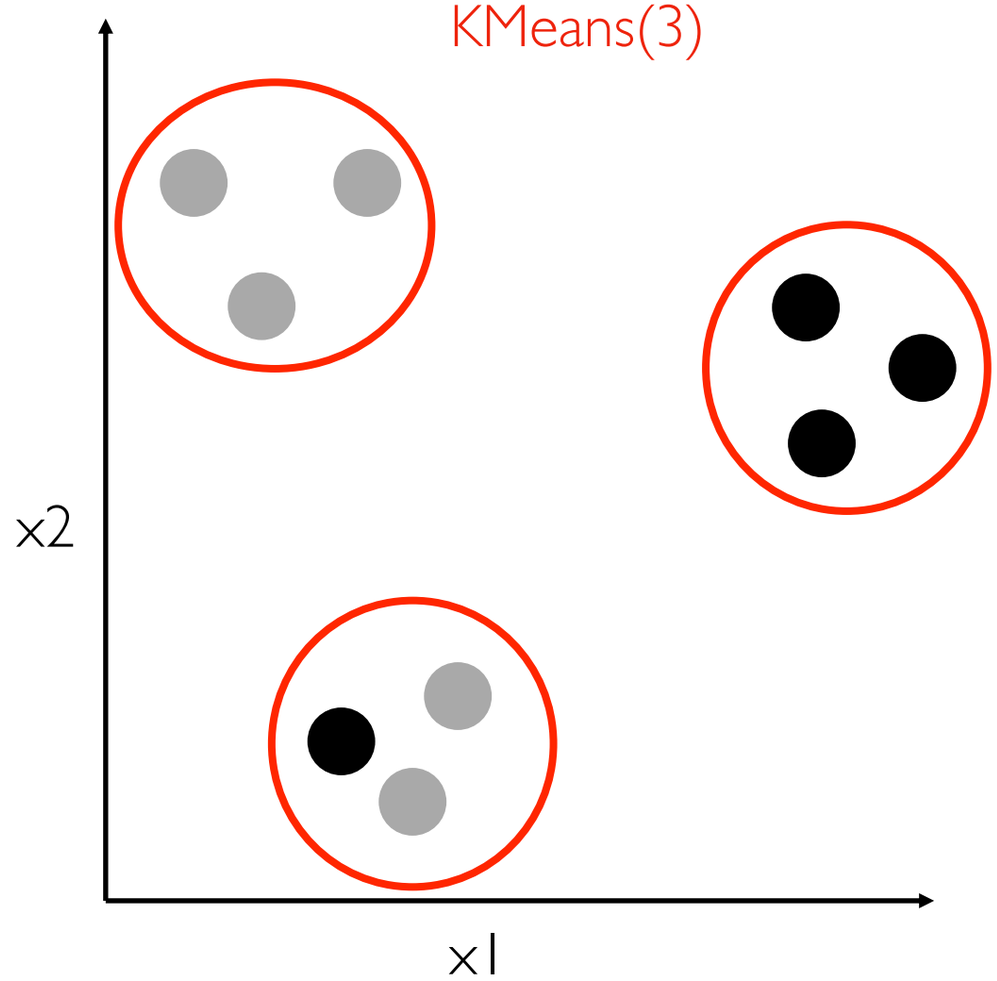


x1	x2	y
10	5	TRUE
…	…	…

```
model = Pipeline([
    ????,
    ("lr", LogisticRegression())
])
```

Preprocessing: Clustering or Decomposition?





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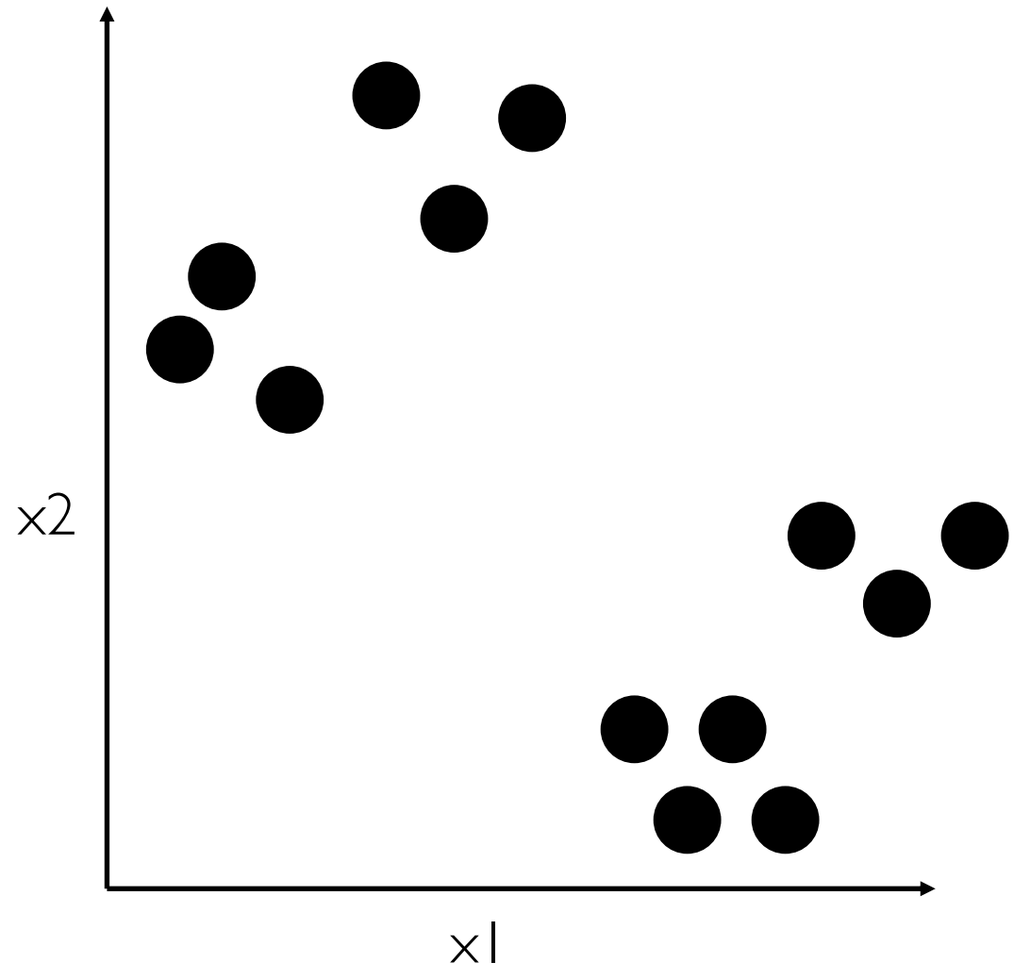
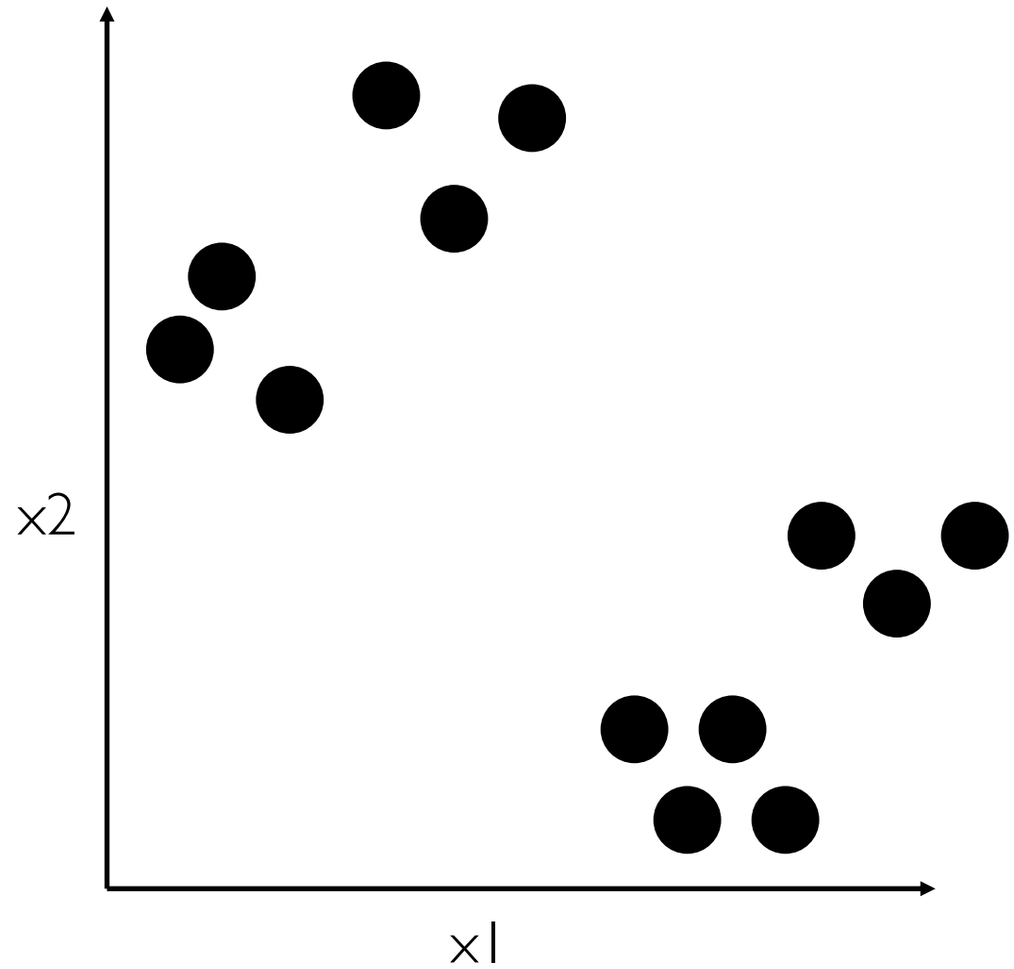
KMeans or Agglomerative Clustering?

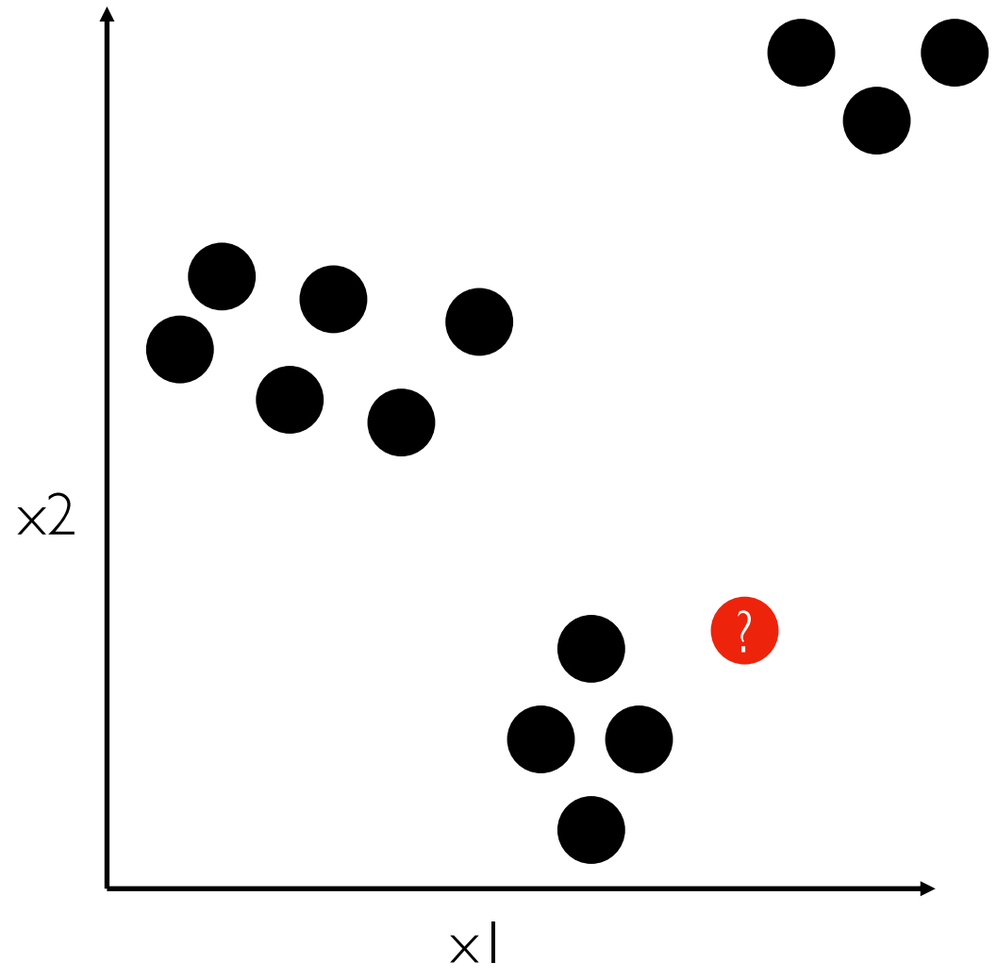


KMeans or Agglomerative Clustering?



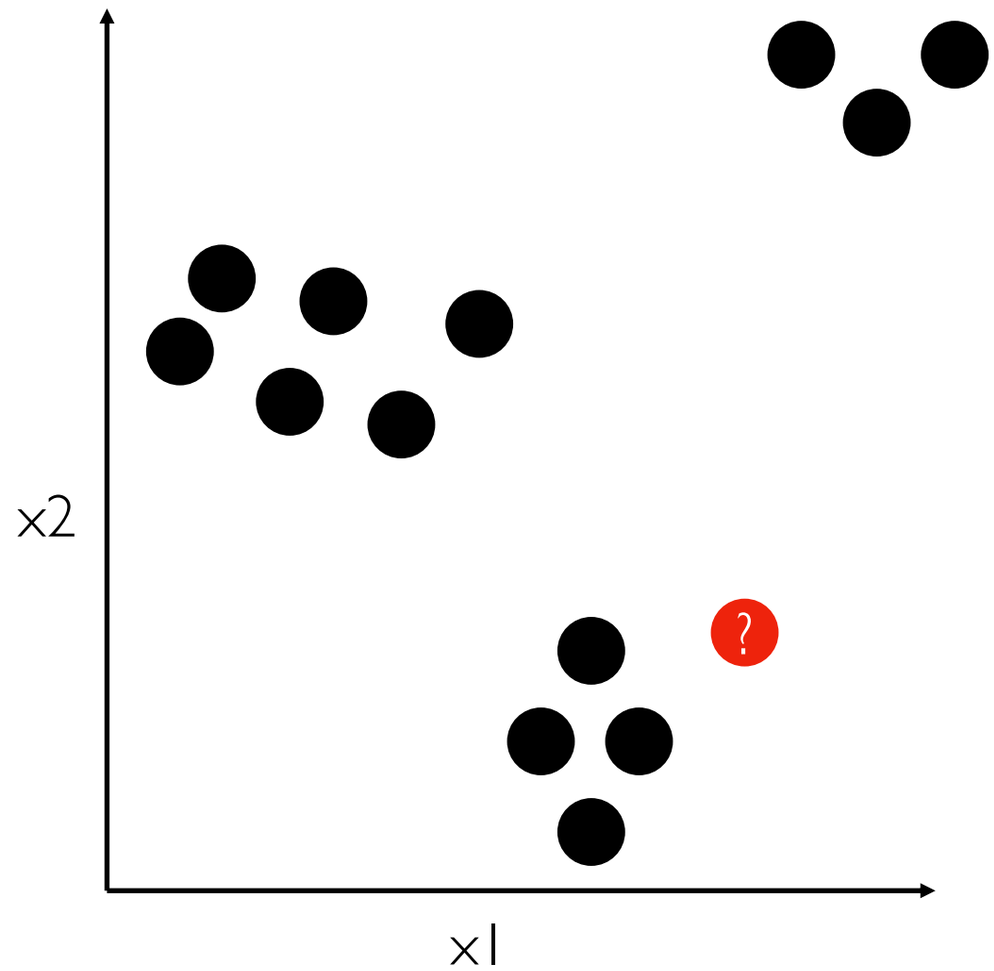
AgglomerativeClustering can show us that the two big clusters contain sub clusters.

KMeans or Agglomerative Clustering?



After identifying some clusters from initial data, we will need to look at new data points and find what cluster is the best match

KMeans or Agglomerative Clustering?



Use **KMeans**, because it can do fit and predict on separate datasets.
AgglomerativeClustering can only do fit_predict on a single dataset.