

Dimensionality Reduction

Covariance Matrix

Scalar Product Between σ_x and σ_y

$$\text{cov}(X, Y) = (1/n) \Sigma (X - \text{mean}(X))(Y - \text{mean}(Y))$$

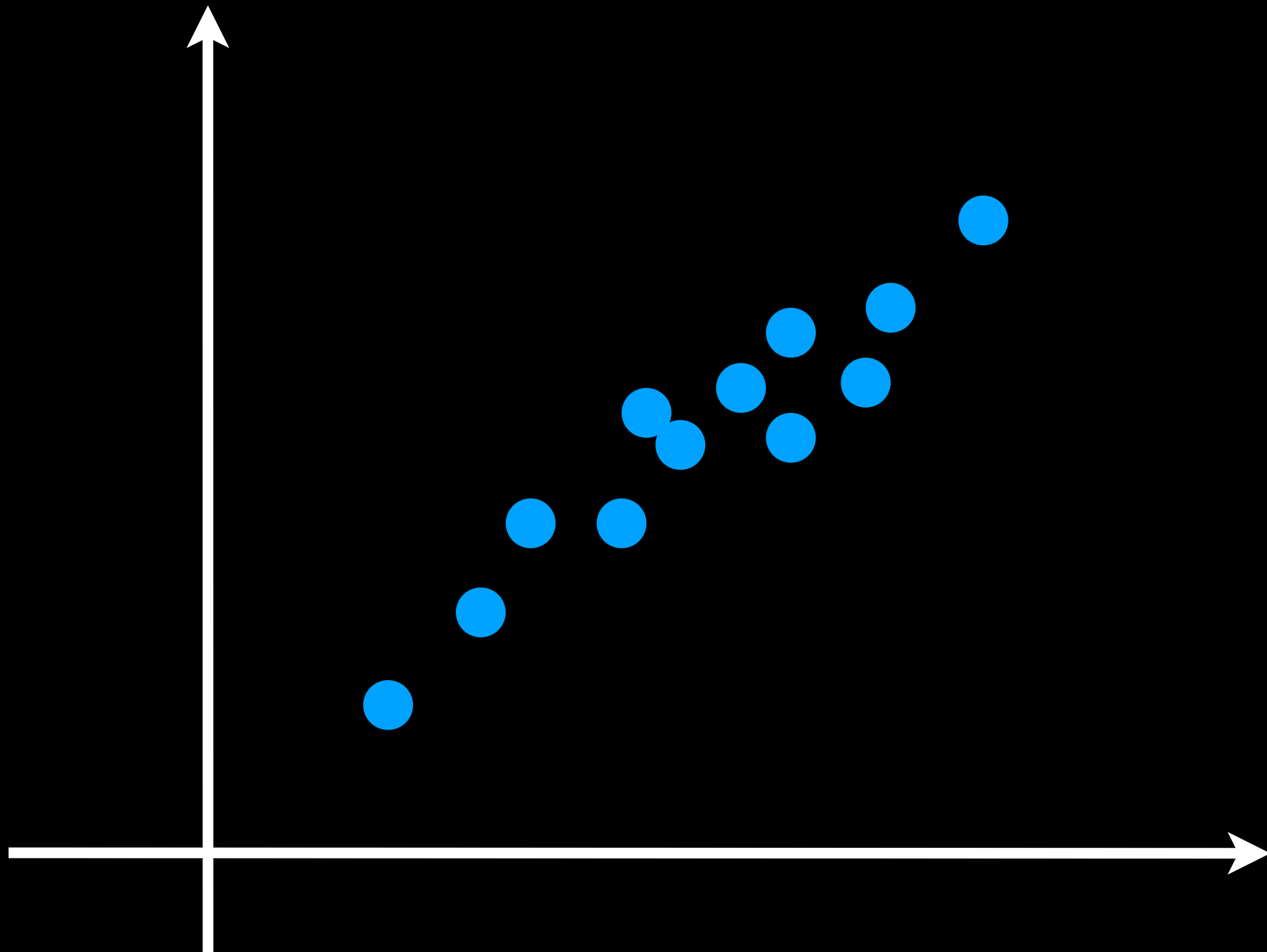
$\text{cov}(X[1], X[1])$ $\text{cov}(X[1], X[2])$ $\text{cov}(X[1], X[N])$

$\text{cov}(X[2], X[1])$ $\text{cov}(X[2], X[2])$ $\text{cov}(X[2], X[N])$

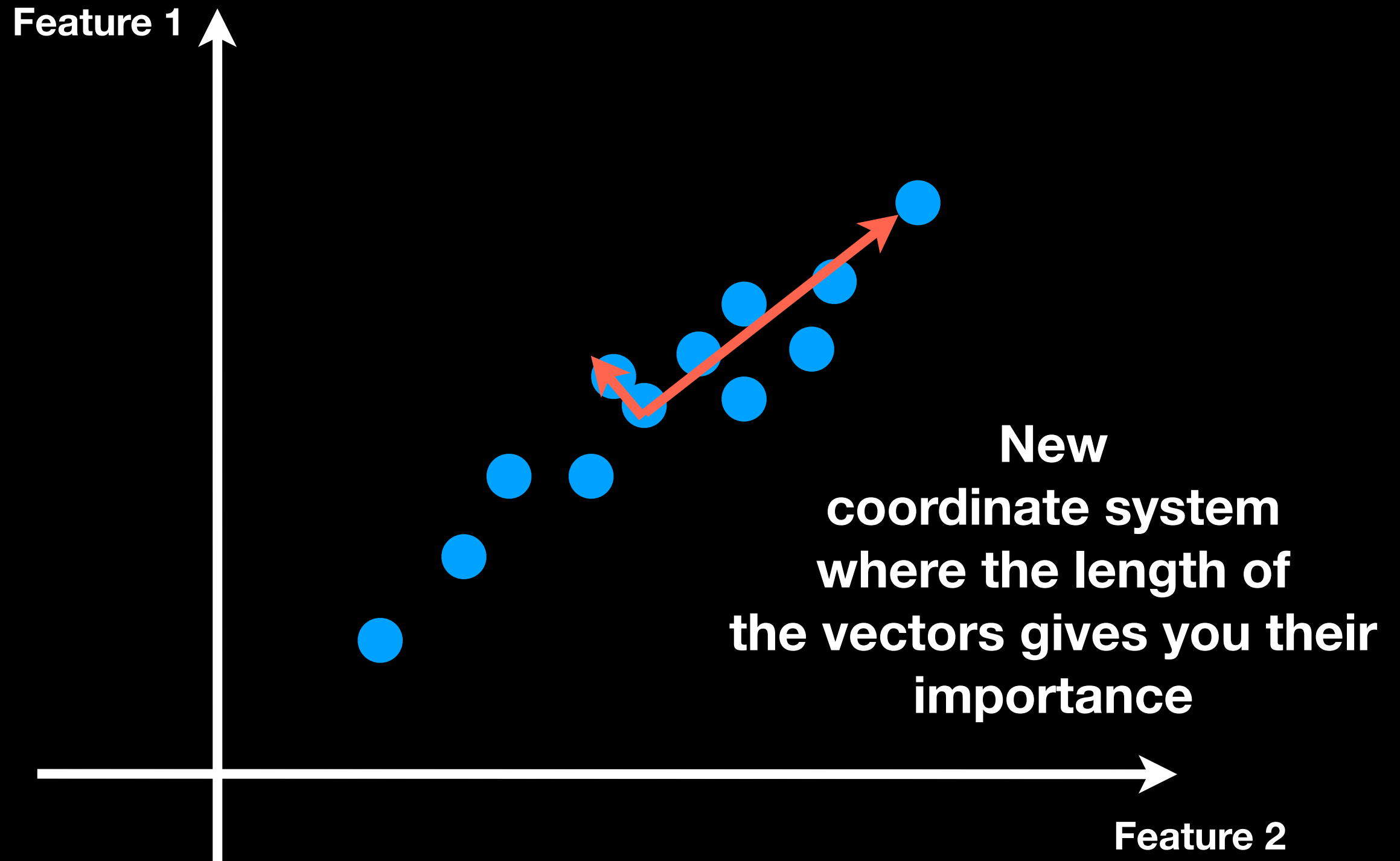
$\text{cov}(X[3], X[1])$ $\text{cov}(X[3], X[2])$ $\text{cov}(X[3], X[N])$

$\text{cov}(X[N], X[1])$ $\text{cov}(X[N], X[2])$ $\text{cov}(X[N], X[N])$

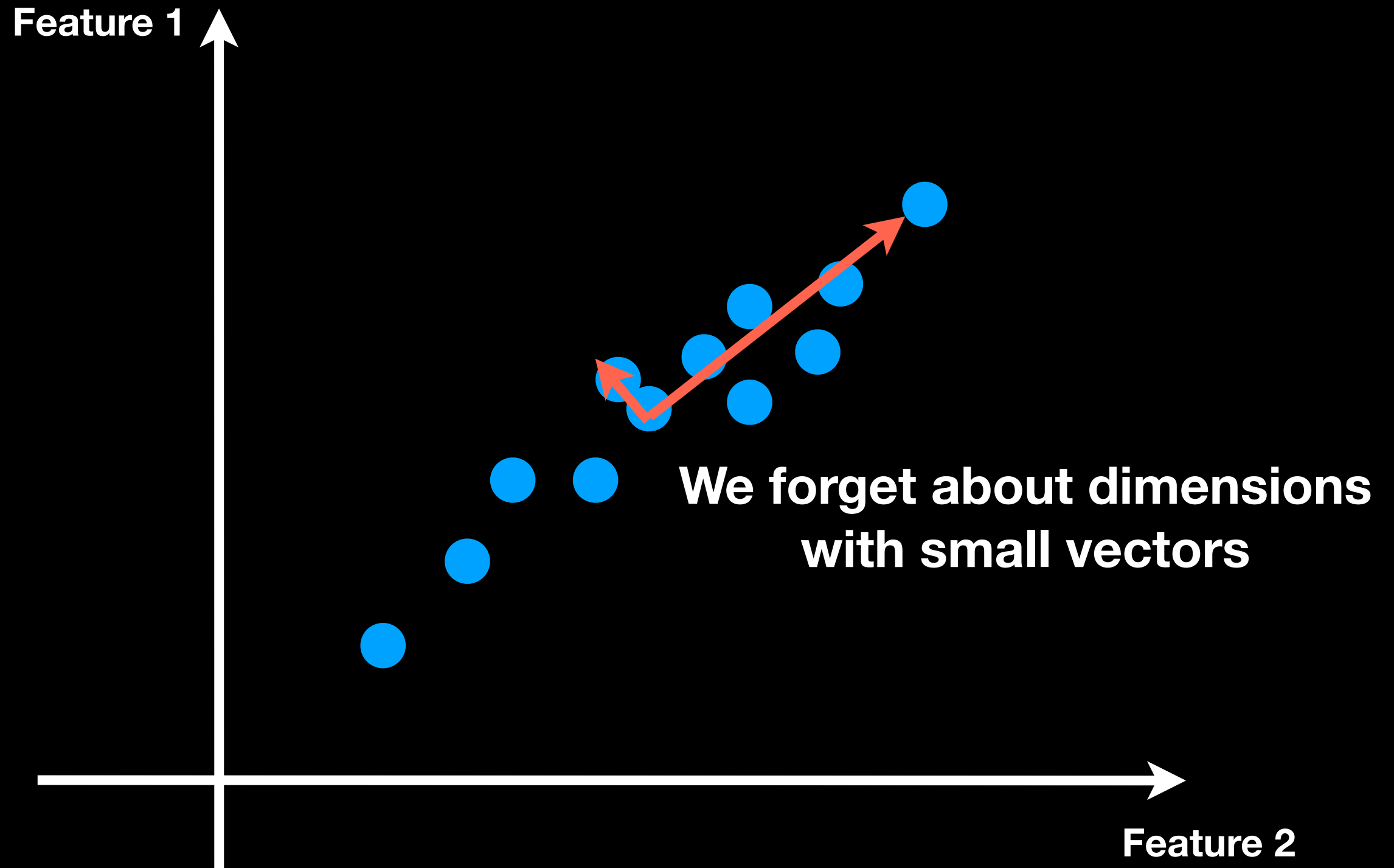
What is PCA



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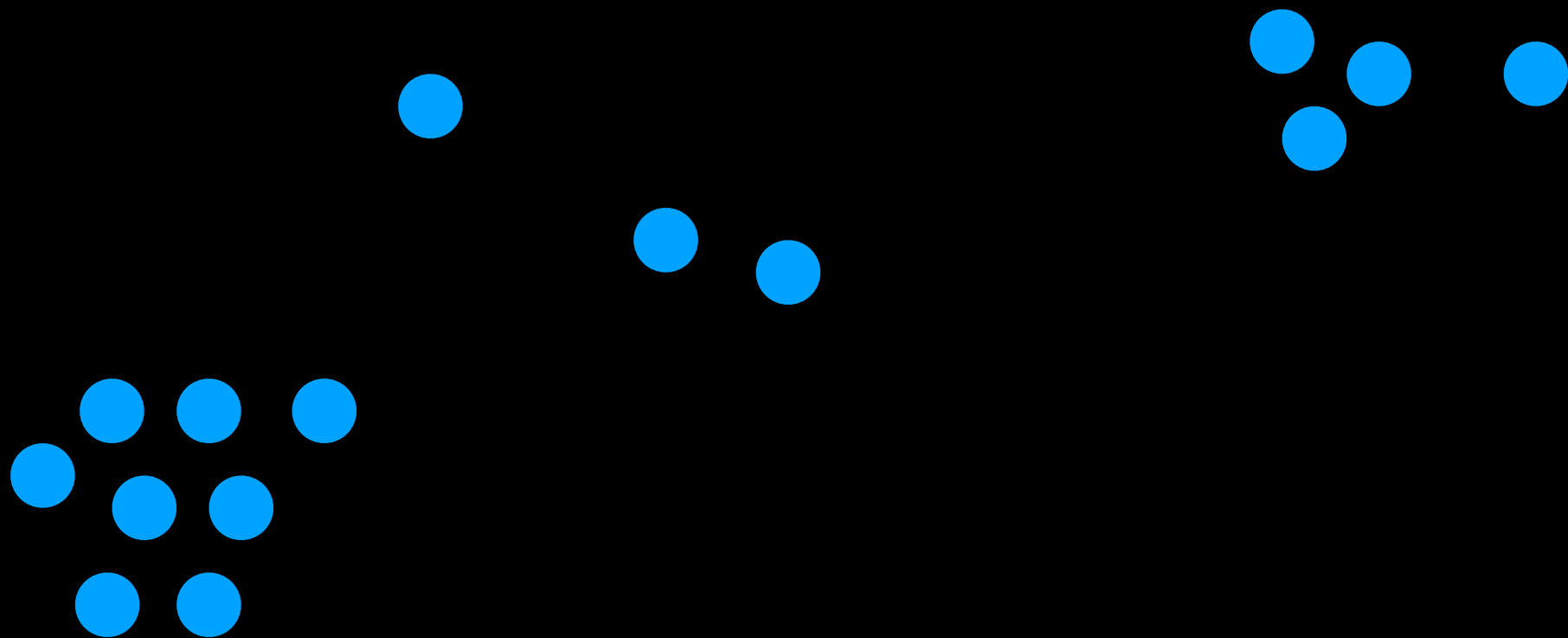
Unsupervised Learning

Clustering

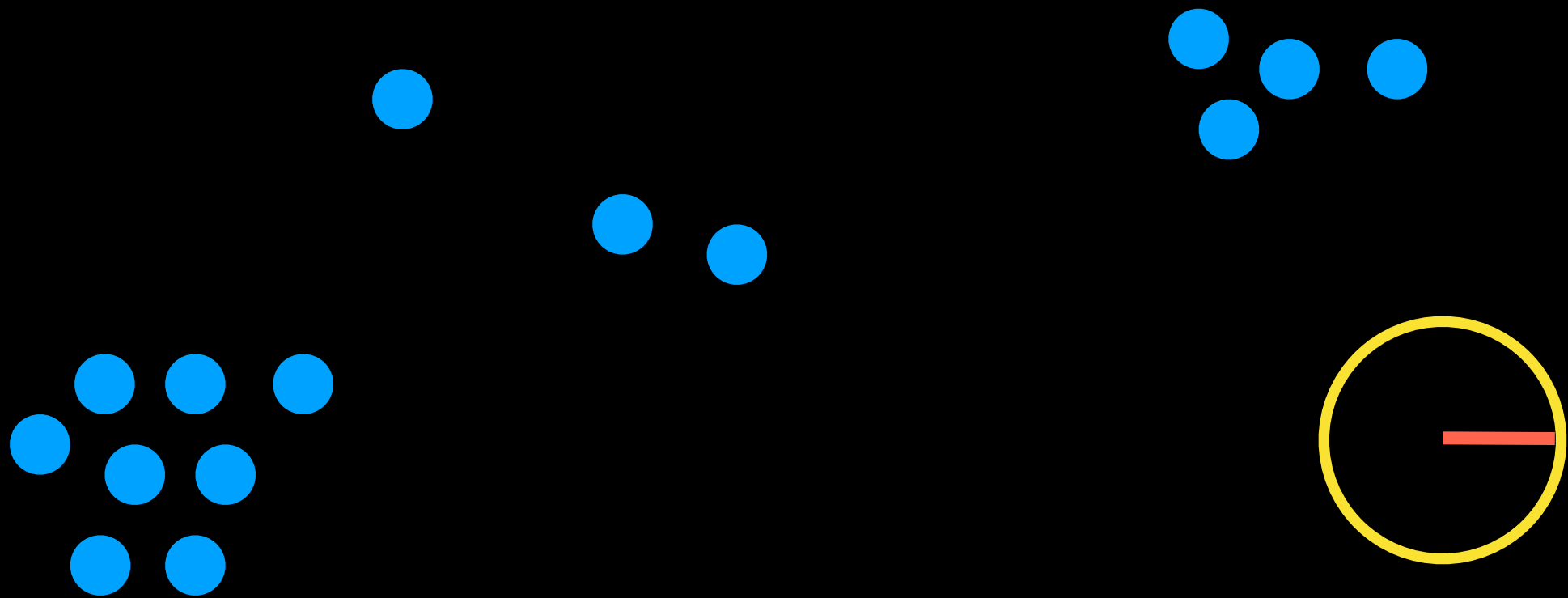
Example DBSCAN

Density
Based
Spatial
Clustering of
Applications with
Noise

How does it work:

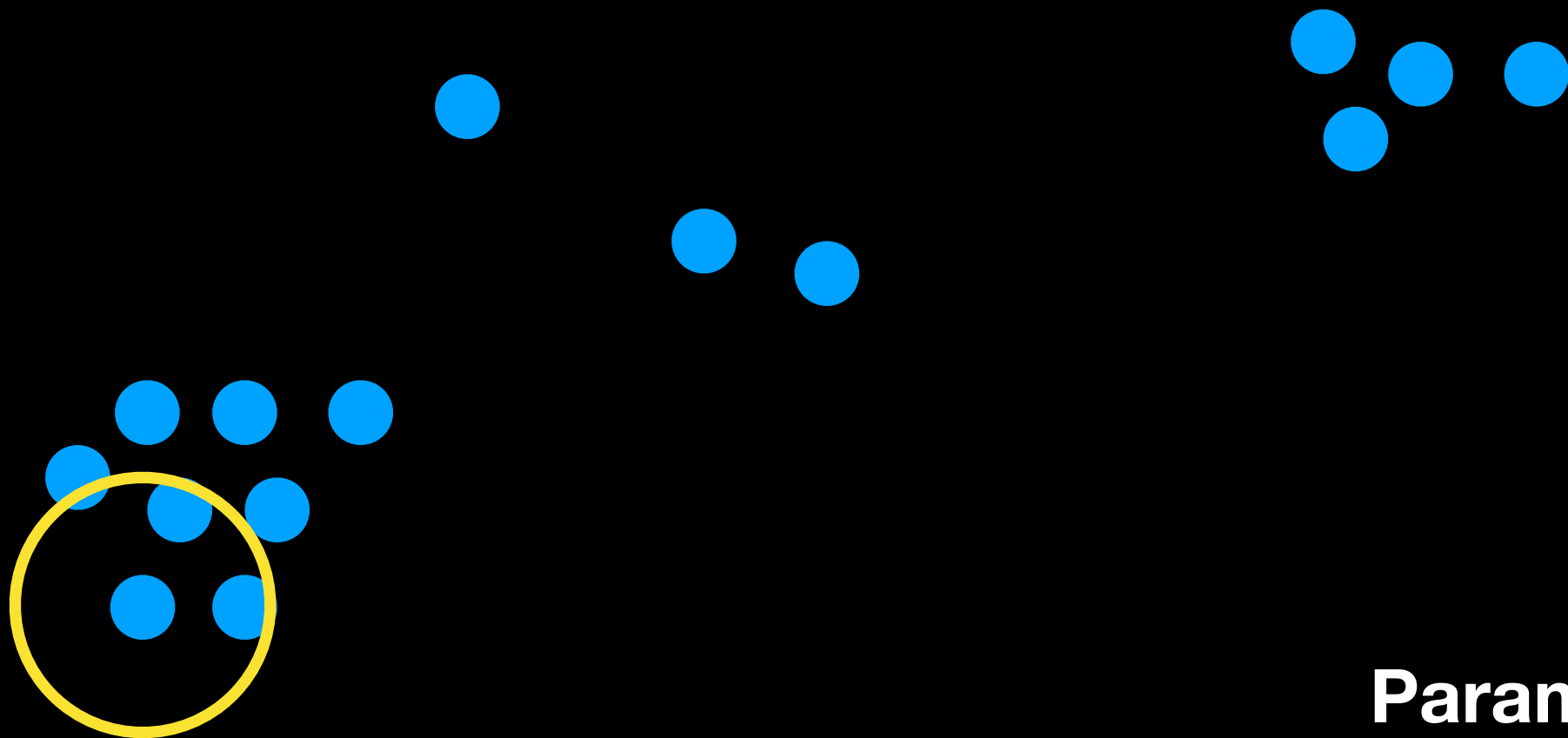


How does it work:



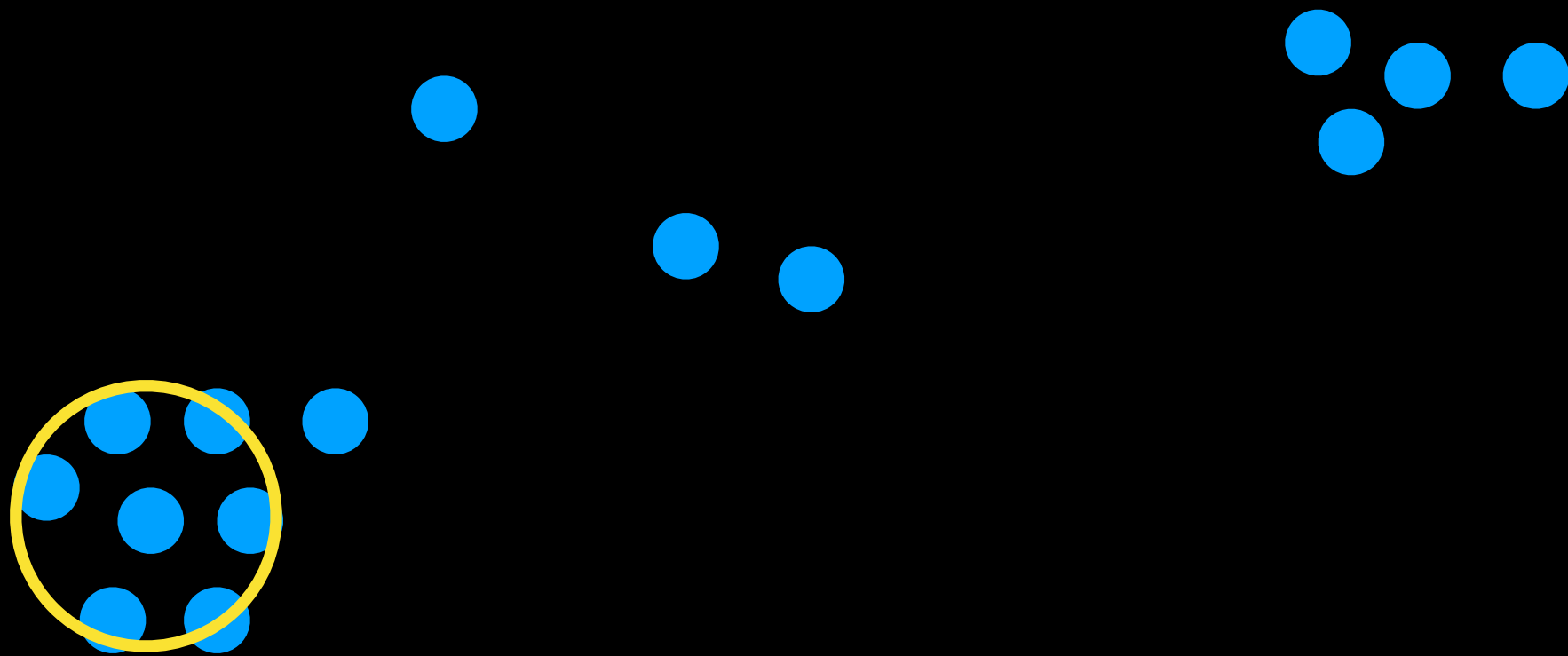
Parameters:
 ϵ , minpts=3

How does it work:



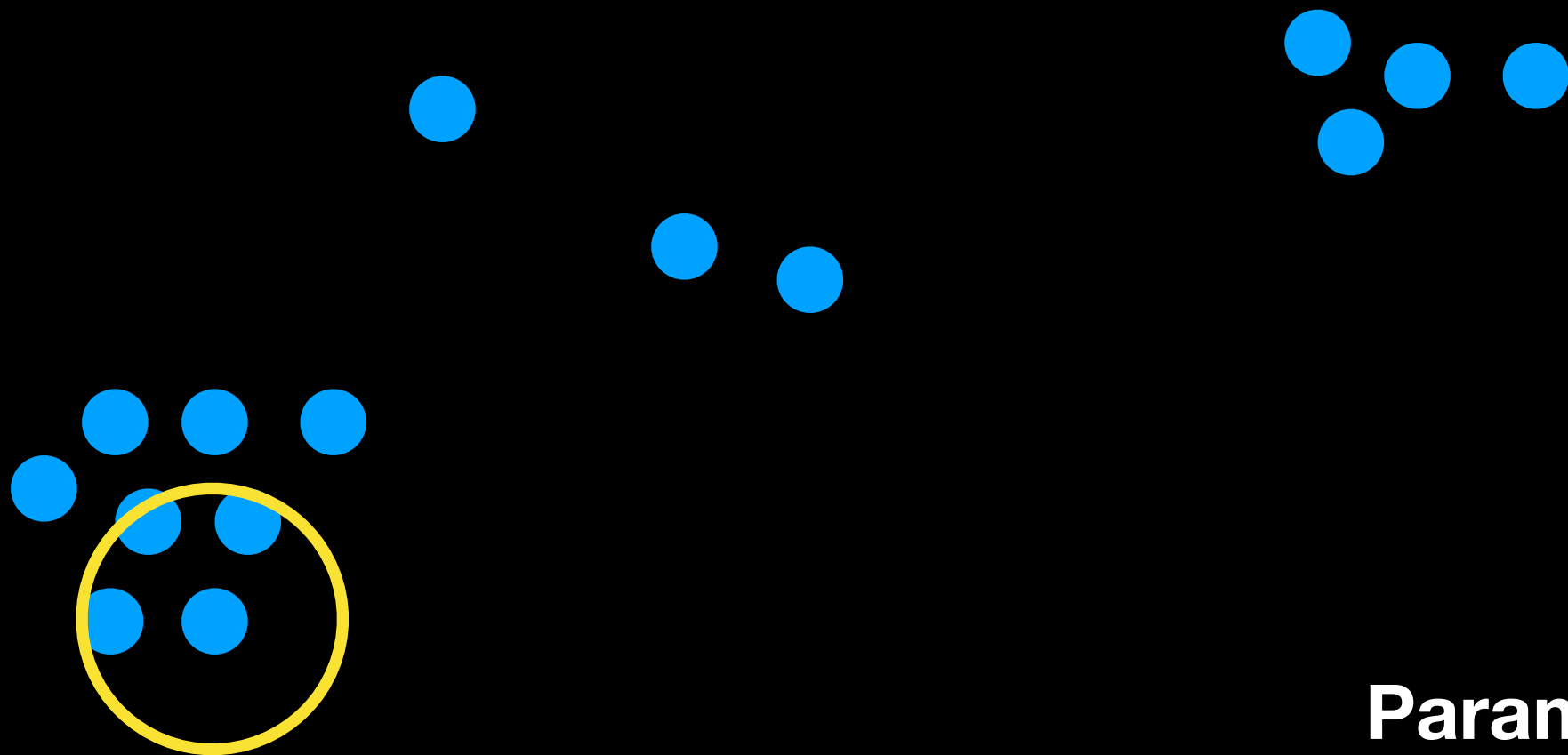
Parameters:
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How does it work:



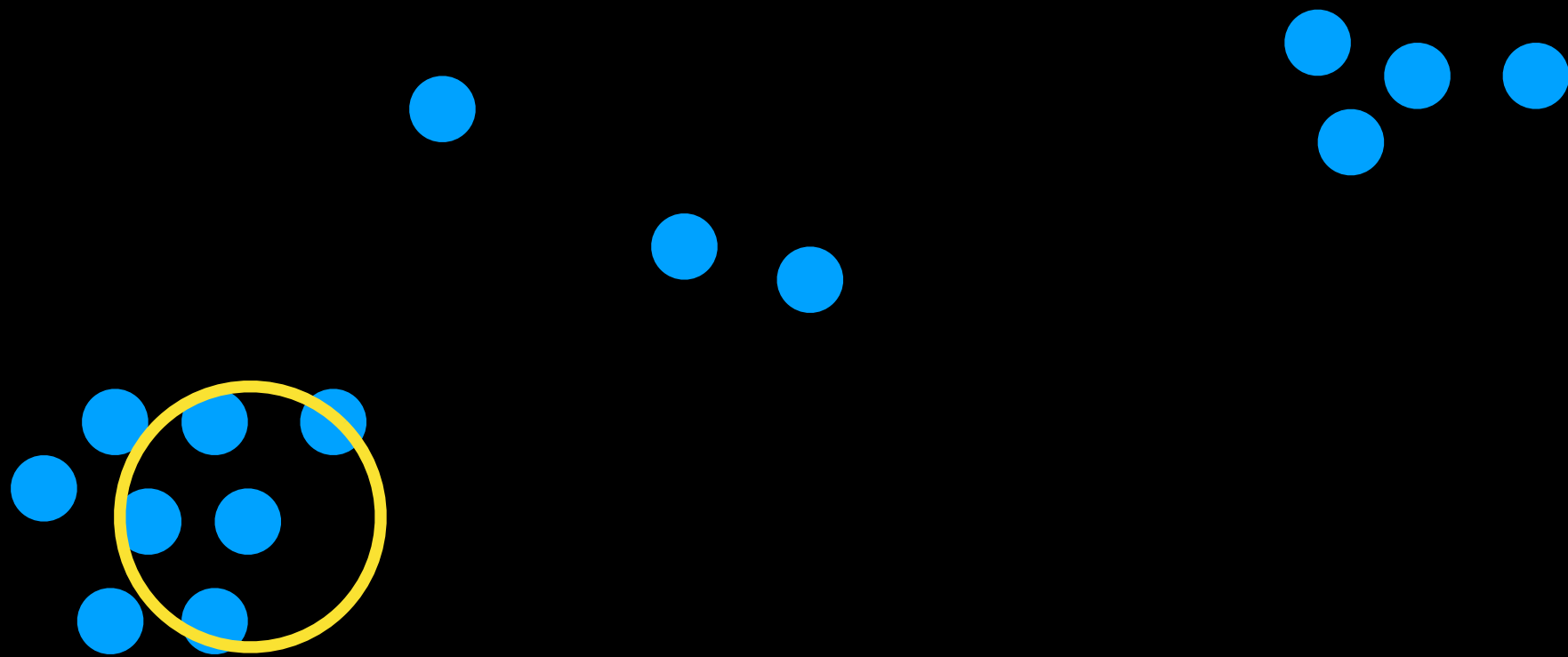
Parameters:
 ϵ , minpts=3

How does it work:



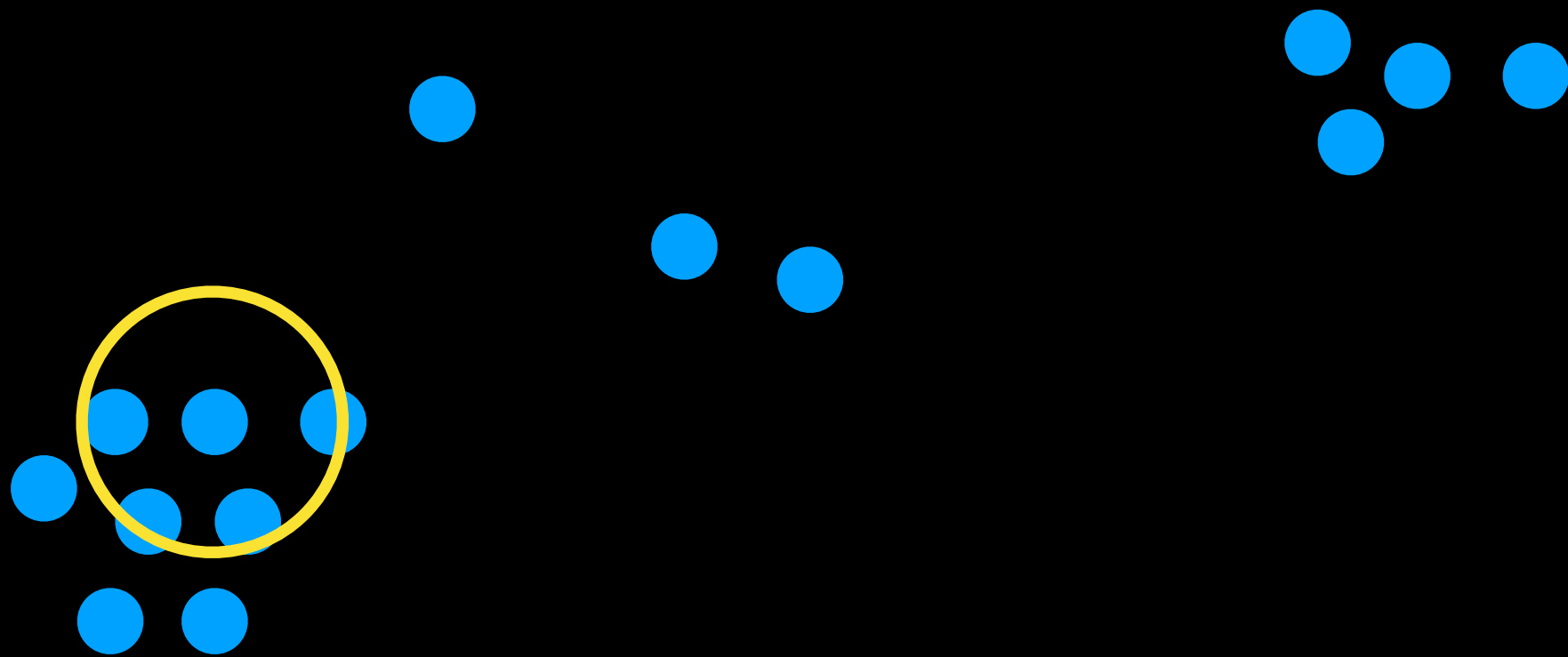
Parameters:
 ϵ , minpts=3

How does it work:



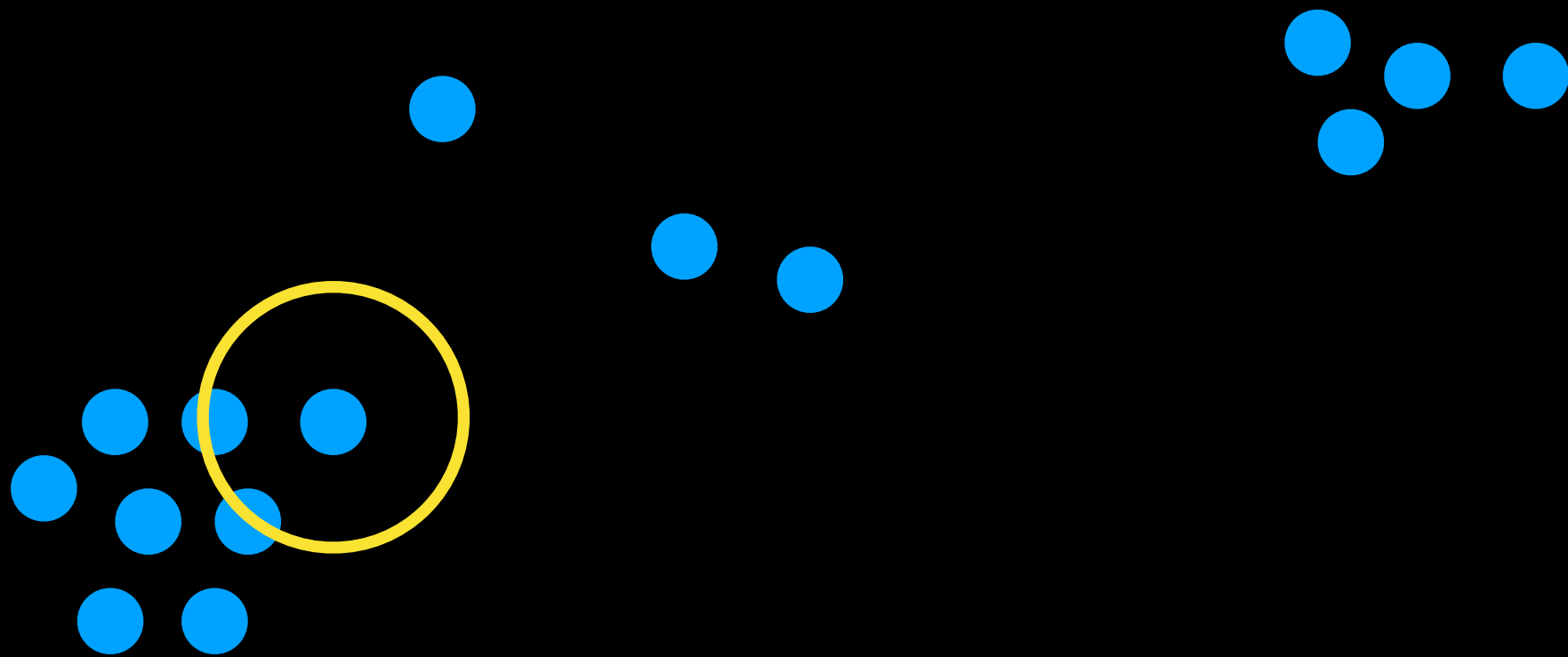
Parameters:
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How does it work:



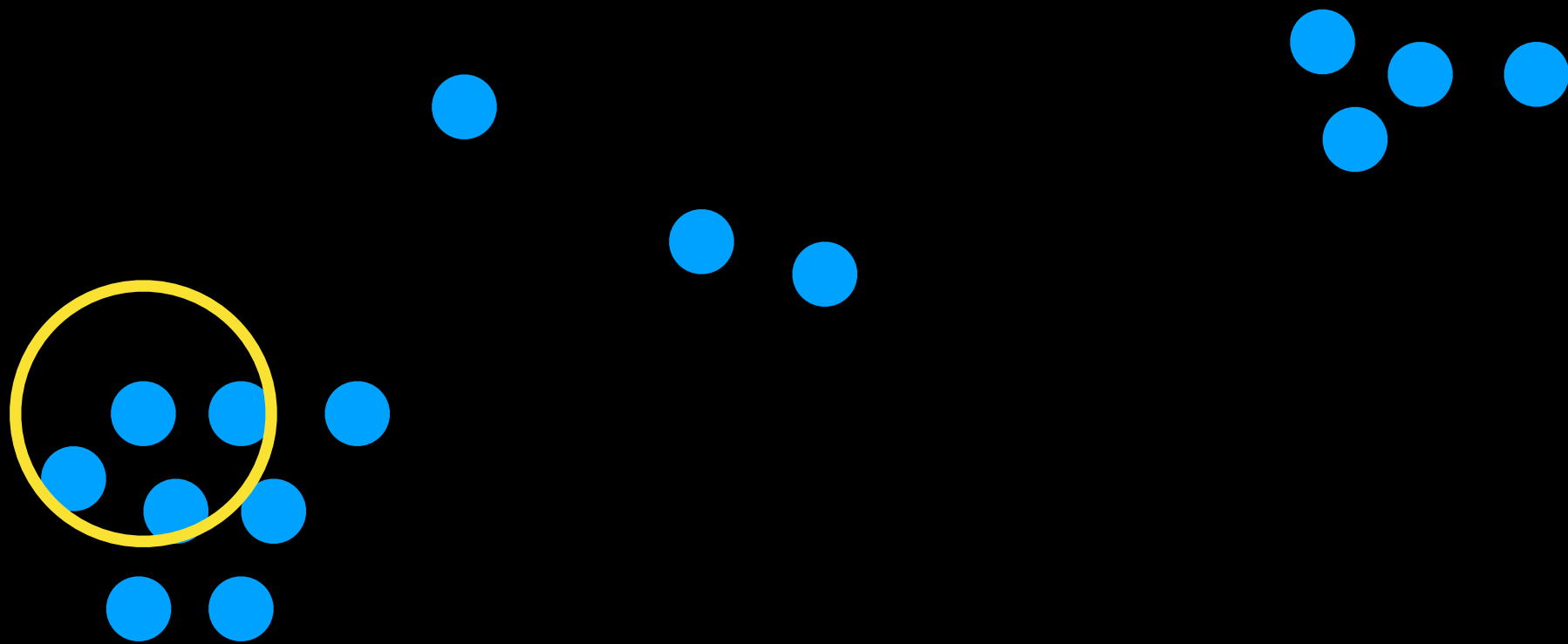
Parameters:
 ϵ , minpts=3

How does it work:



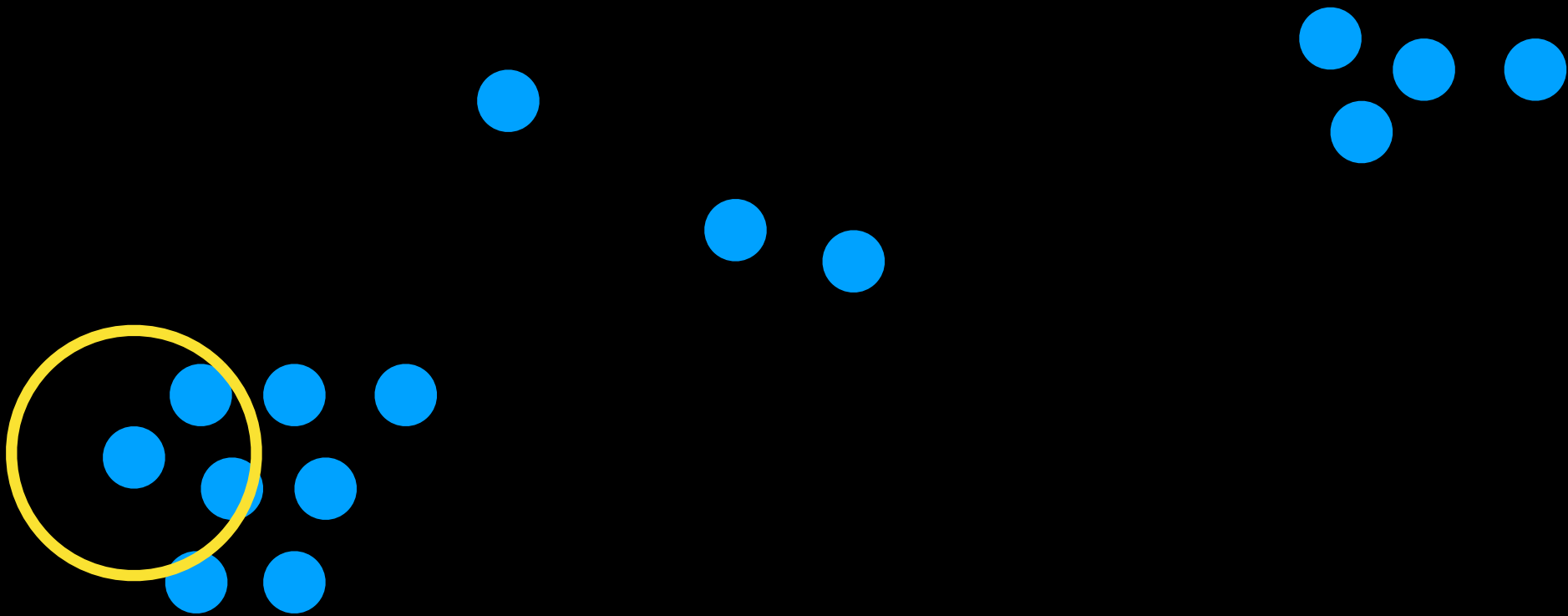
Parameters:
 ϵ , minpts=3

How does it work:



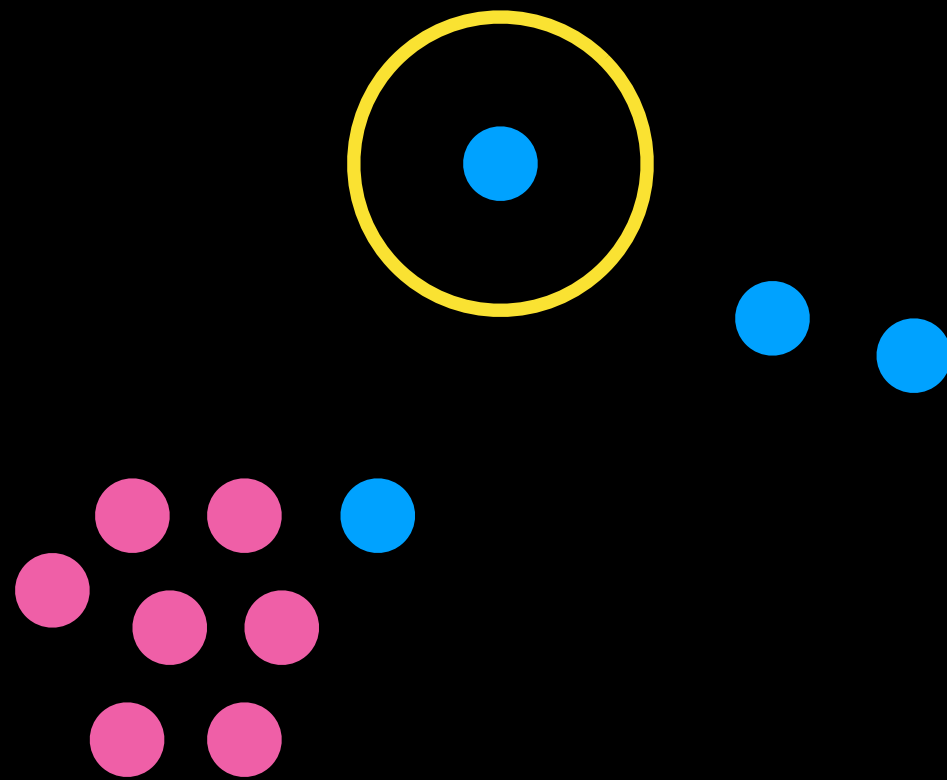
Parameters:
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How does it work:

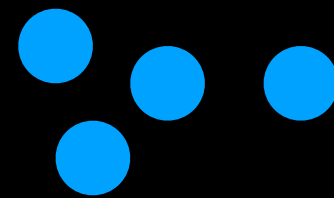


Parameters:
 ϵ , minpts=3

How does it work:

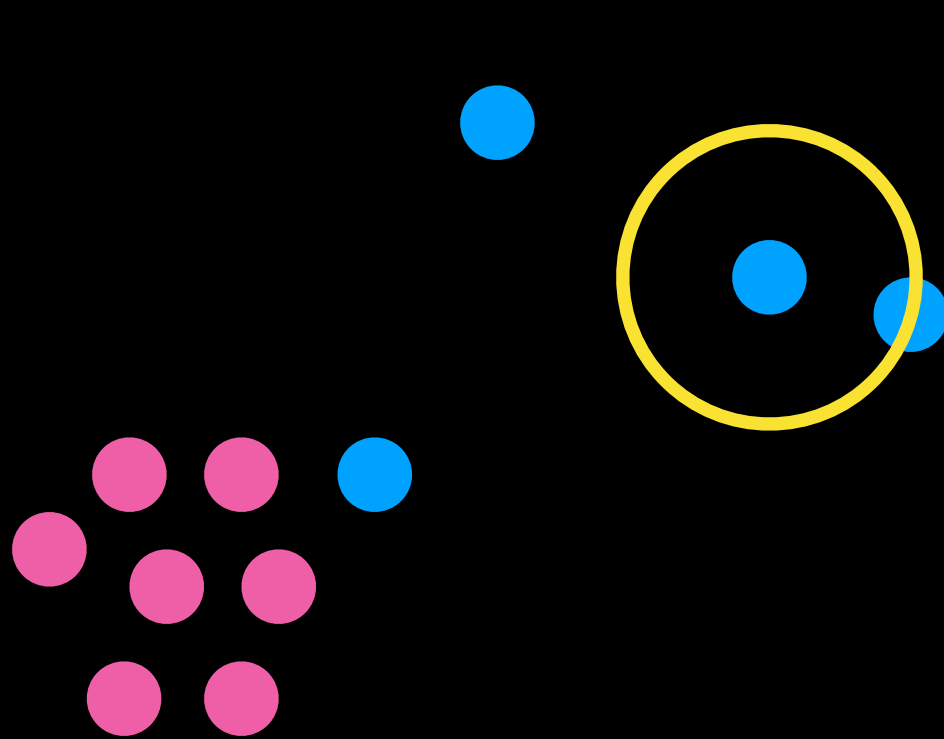


cluster 1
n=7



Parameters:
 ϵ , minpts=3

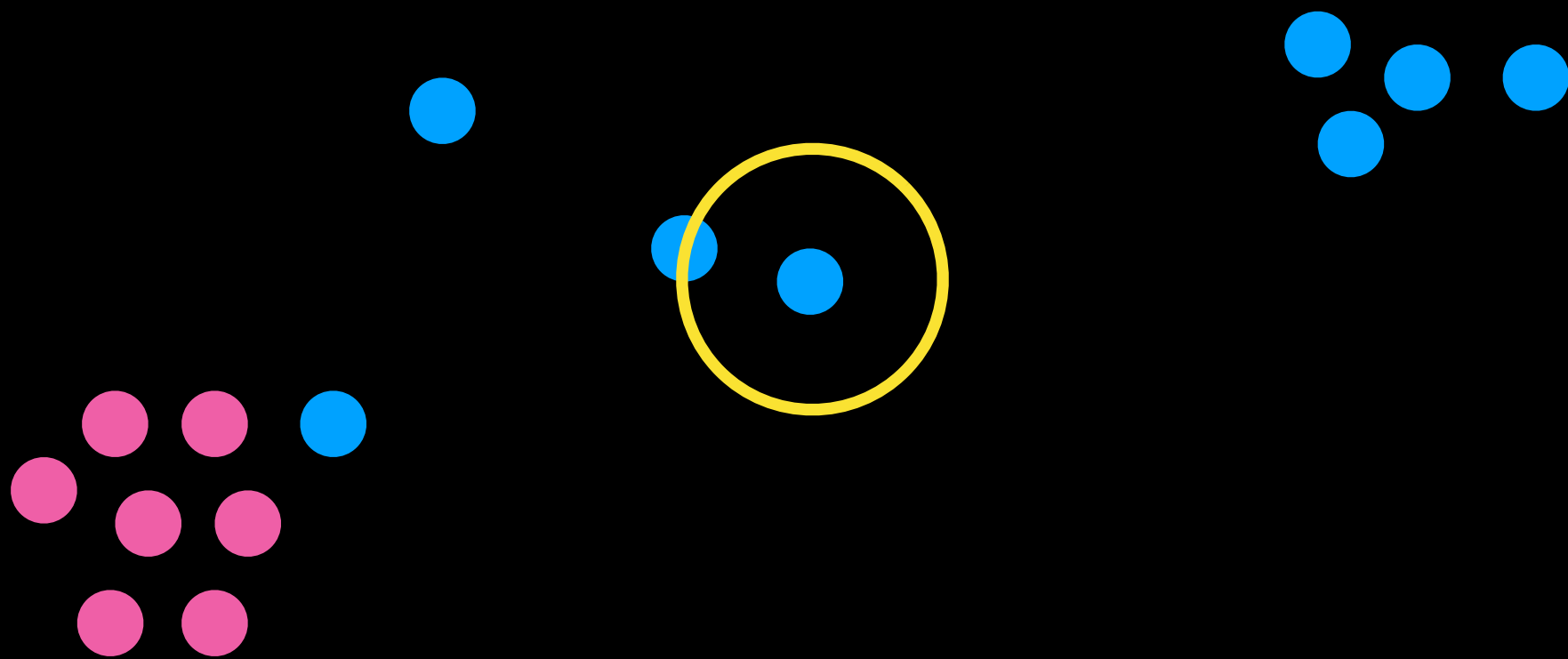
How does it work:



cluster 1
n=7

Parameters:
 ϵ , minpts=3

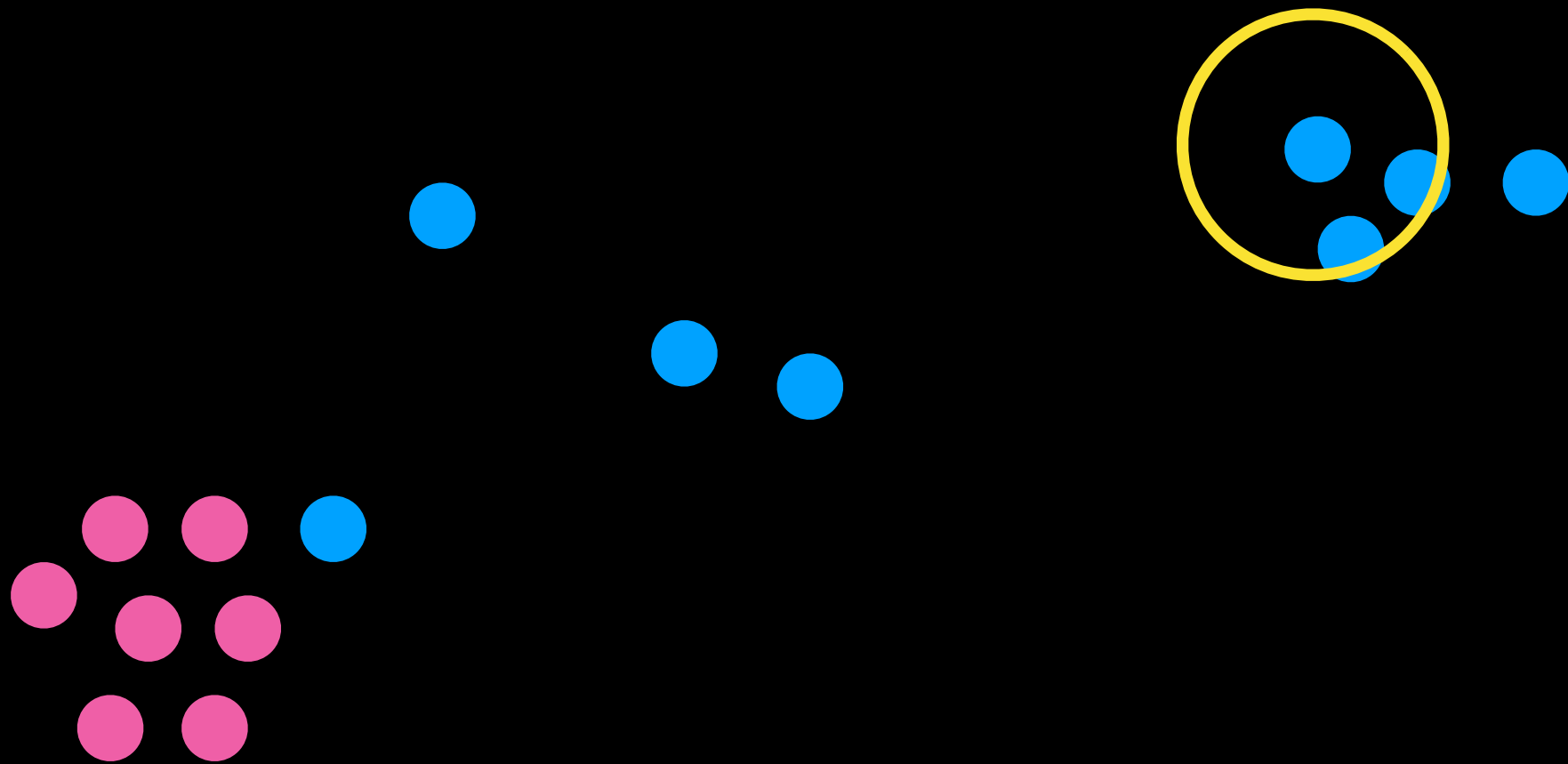
How does it work:



cluster 1
n=7

Parameters:
 ϵ , minpts=3

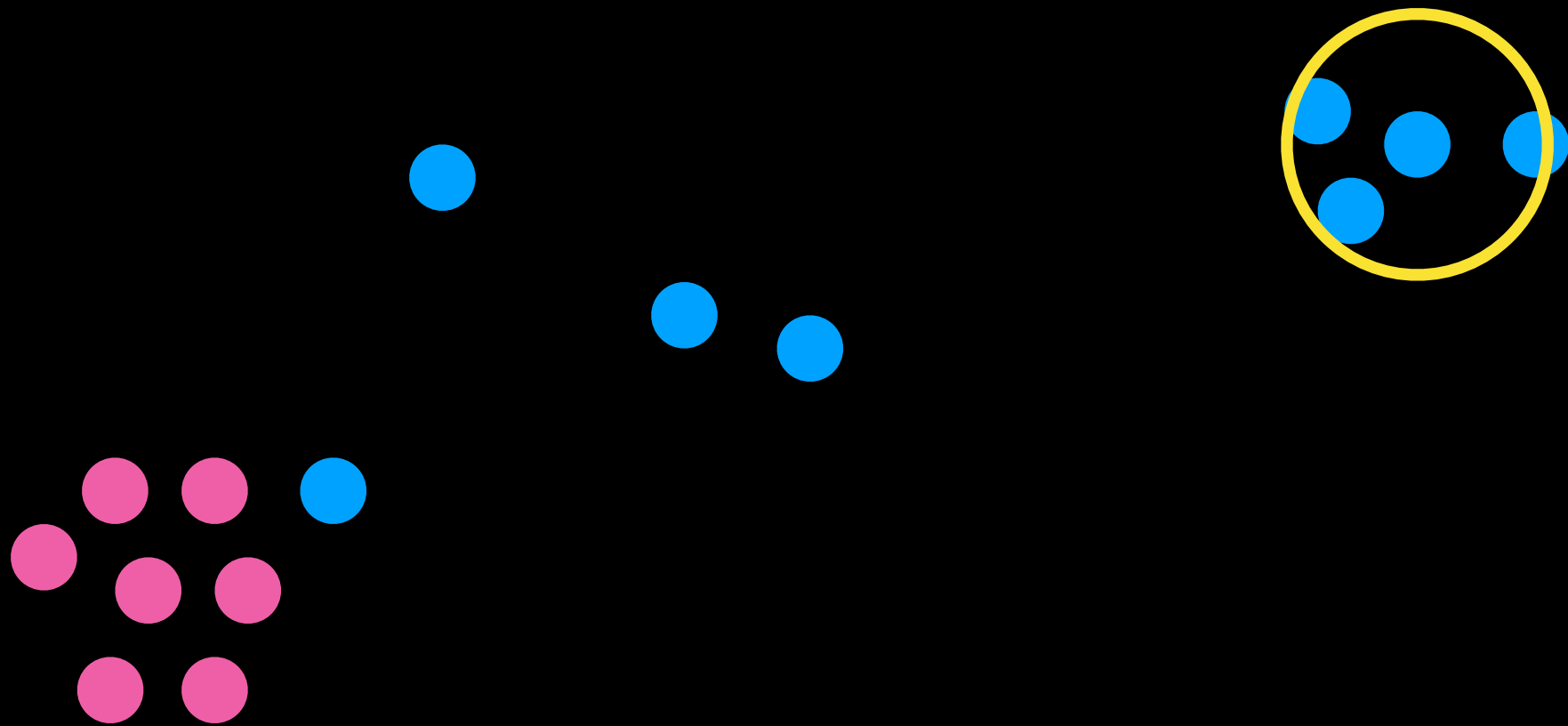
How does it work:



cluster 1
n=7

Parameters:
 ϵ , minpts=3

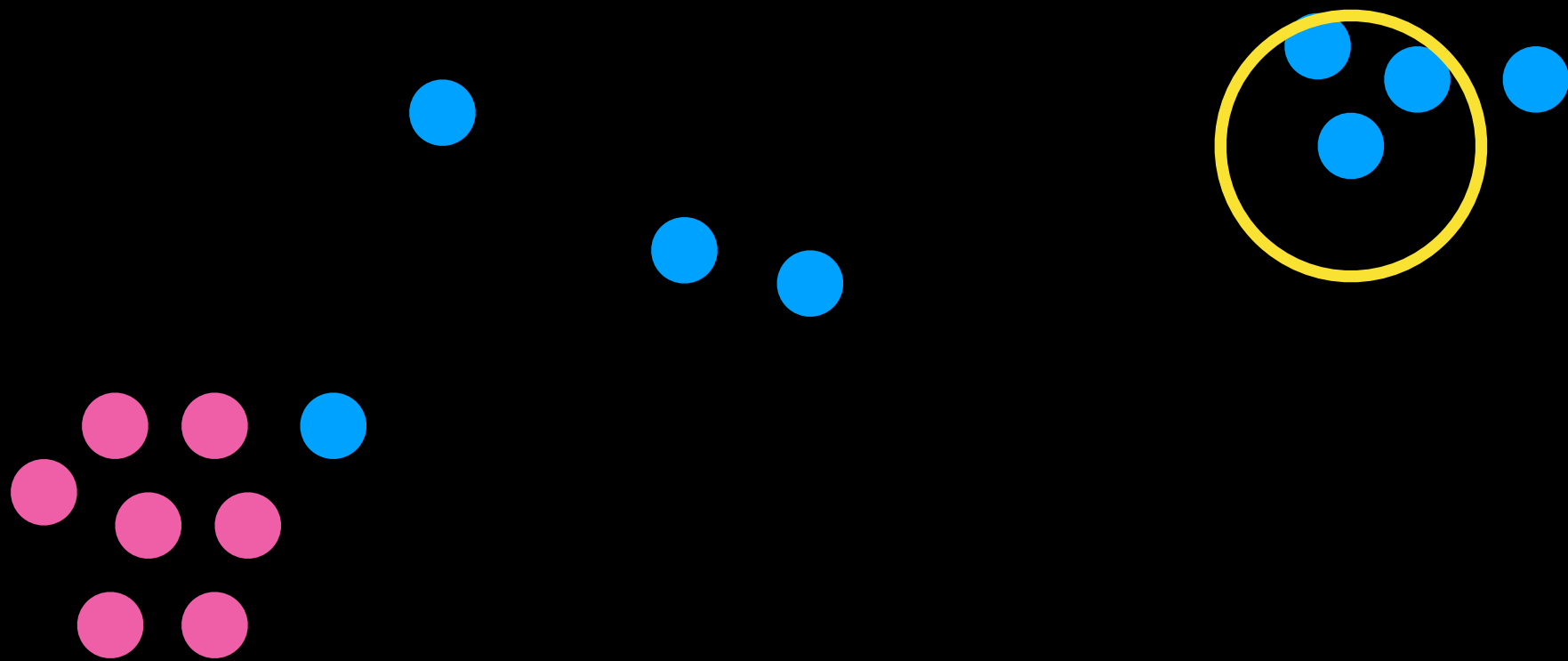
How does it work:



cluster 1
n=7

Parameters:
 ϵ , minpts=3

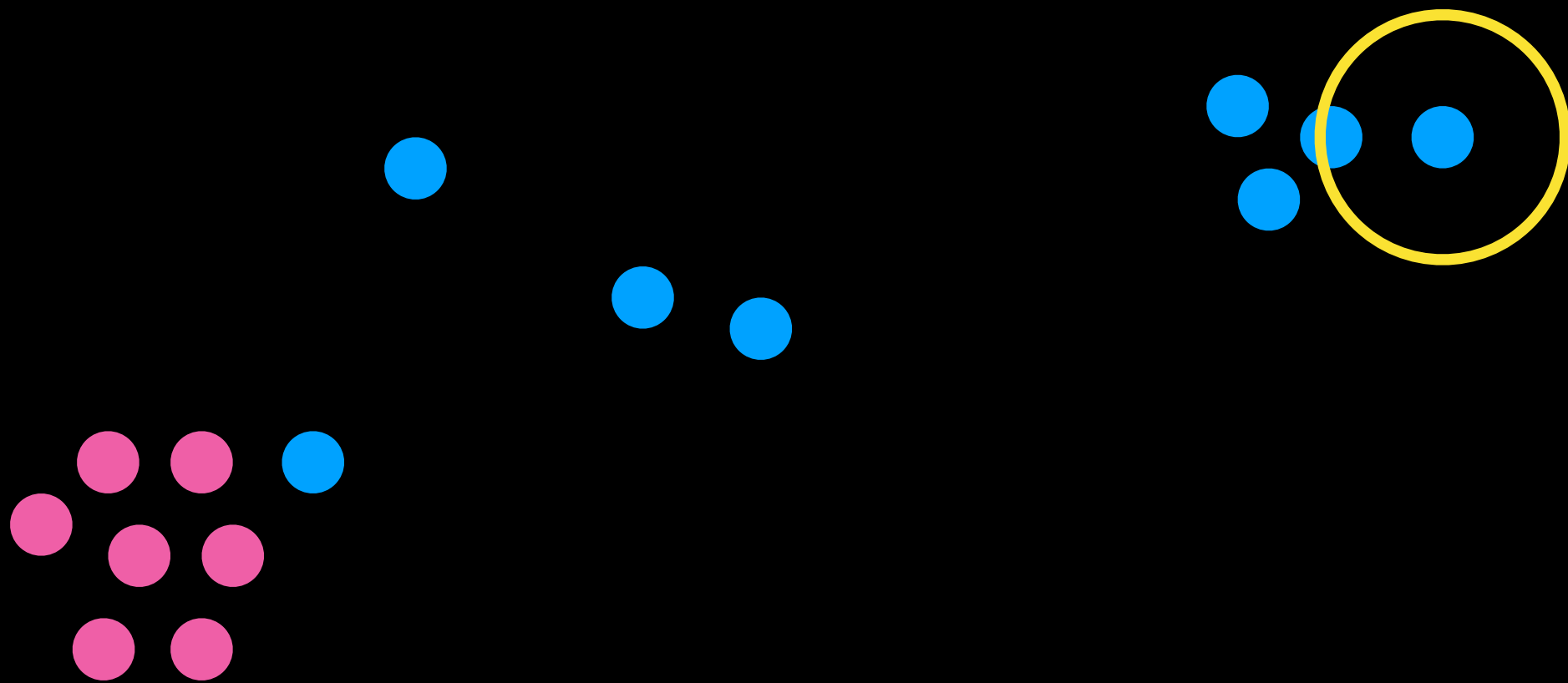
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