

ML.NET

Przykłady zastosowania

A few things you can do with ML.NET 1.0 ...



Sentiment analysis

Analyze the sentiment of customer reviews using a binary classification algorithm.

[Sentiment analysis sample >](#)



Product recommendation

Recommend products based on purchase history using a matrix factorization algorithm.

[Product recommendation sample >](#)



Price prediction

Predict taxi fares based on distance traveled etc. using a regression algorithm.

[Price prediction sample >](#)



Customer segmentation

Identify groups of customers with similar profiles using a clustering algorithm.

[Customer segmentation sample >](#)



GitHub labeler

Suggest the GitHub label for new issues using a multi-class classification algorithm.

[GitHub labeler sample >](#)



Fraud detection

Detect fraudulent credit card transactions using a binary classification algorithm.

[Fraud detection sample >](#)



Spam detection

Flag text messages as spam using a binary classification algorithm.

[Spam detection sample >](#)



Image classification

Classify images (e.g. broccoli vs pizza) using a TensorFlow deep learning algorithm.

[Image classification sample >](#)



Sales forecasting

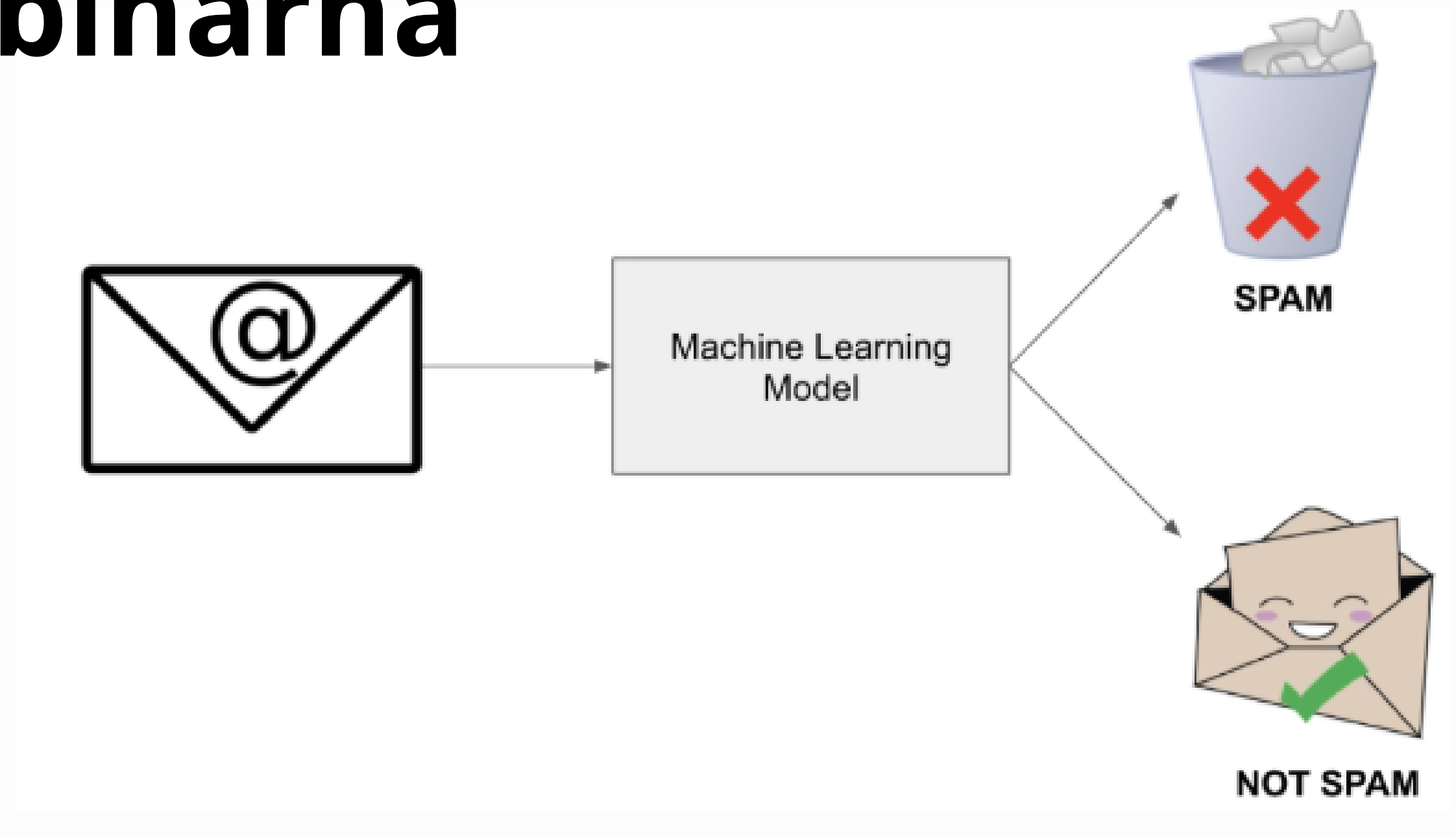
Forecast future sales for products using a regression algorithm.

[Sales forecasting sample >](#)

[Samouczki ML .NET](#)

Klasyfikacja binarna

- Zaklasyfikowanie obiektów do jednej z dwóch klas.
- Wartość parametru, który chcemy przewidzieć jest reprezentowana przez typ logiczny.



Źródło: Naukri

Analiza sentymentu

Zbiór danych: Wikipedia Detox



Label	year	ns	sample	split	comment (skrótcone)
0	2009	user	blocked	dev	"Don't block me im leaving delete my page..."
0	2008	user	random	train	"Thanks so much Kevin, your input is so much appreciated..."
0	2007	article	blocked	train	"Why are we referencing 'et al' in the info box..."
1	2012	user	blocked	dev	"lolz a spam filter hahaha there's a billion ways..."

[Samouczek](#)

Wyniki

Niech c oznacza wybraną klasę (etykietę) ze zbioru wszystkich klas \mathcal{C} . Wartości TP_c , FP_c oraz FN_c zliczają przypadki względem tej klasy (traktując c jako klasę „pozytywną”).

$$TP_c = |\{i : \hat{y}_i = c \wedge y_i = c\}|,$$

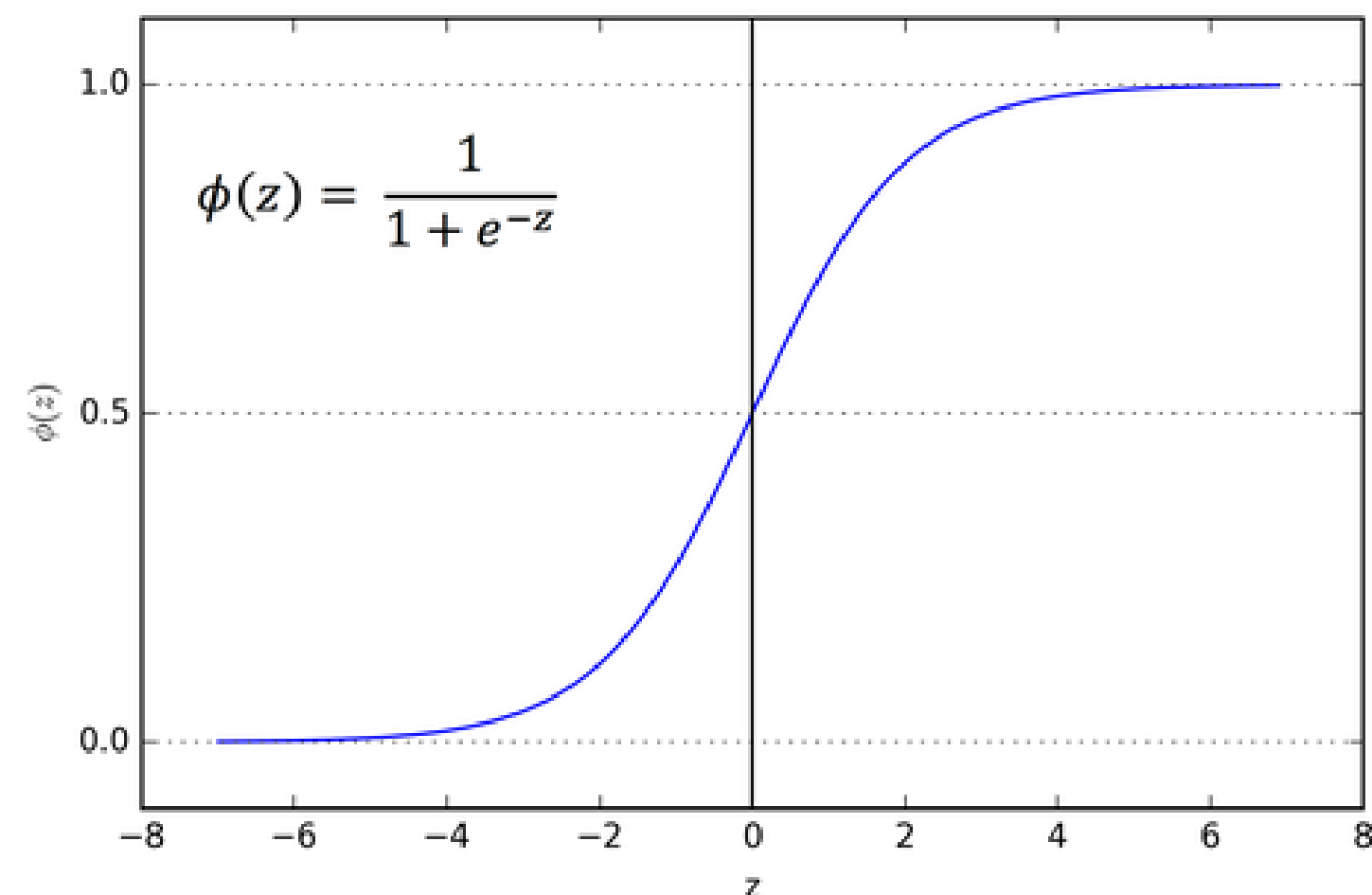
$$FP_c = |\{i : \hat{y}_i = c \wedge y_i \neq c\}|,$$

$$FN_c = |\{i : \hat{y}_i \neq c \wedge y_i = c\}|.$$

y_i etykieta prawdziwa, \hat{y}_i etykieta przewidziana

$$\text{Precision}_c = \frac{TP_c}{TP_c + FP_c}, \quad \text{Recall}_c = \frac{TP_c}{TP_c + FN_c},$$

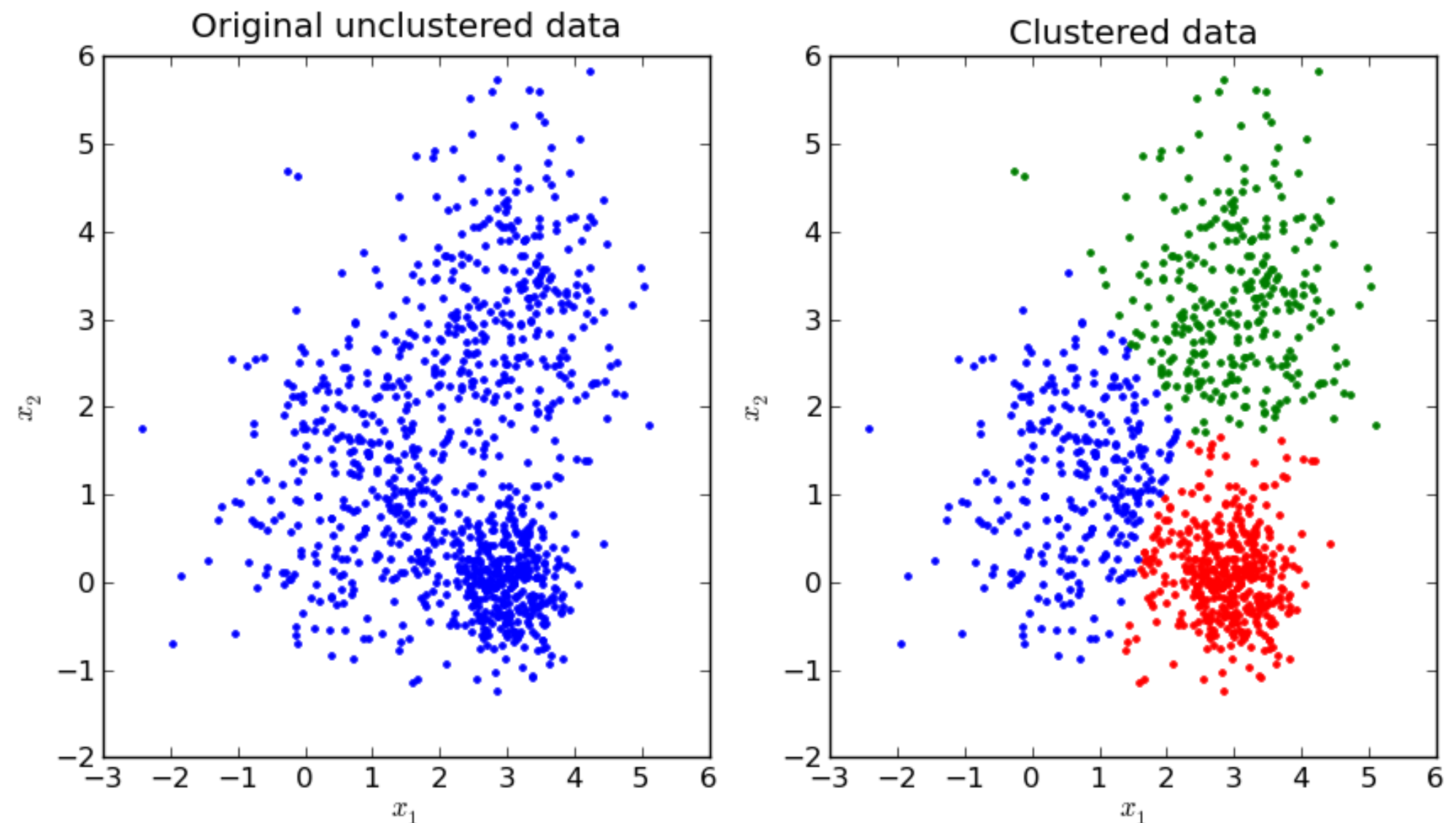
$$F1_c = \frac{2 \cdot \text{Precision}_c \cdot \text{Recall}_c}{\text{Precision}_c + \text{Recall}_c}.$$



Źródło: LinkedIn

Analiza skupień (klasteryzacja)

- Grupowanie zbioru obiektów w taki sposób, aby obiekty w tej samej grupie były bardziej do siebie podobne niż do obiektów w innych grupach.
- Nie znamy odpowiedzi dla danych z przeszłości (w przeciwieństwie do klasyfikacji wieloklasowej).



Źródło: Encord

Klasteryzacja irysów

Zbiór danych: Iris Dataset

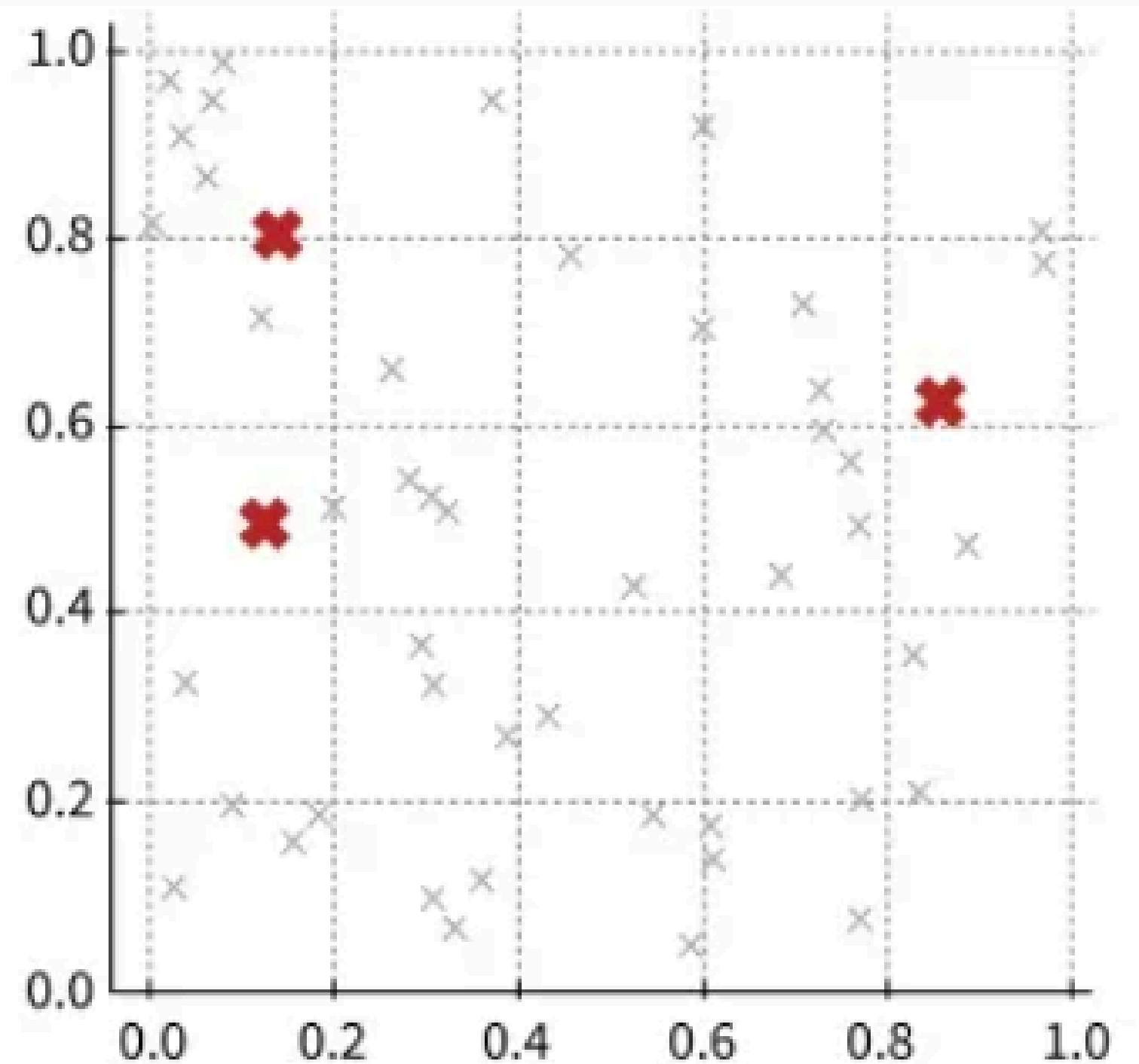
#Label	Sepal length	Sepal width	Petal length	Petal width
0	5.1	3.5	1.4	0.2
0	4.9	3.0	1.4	0.2
0	4.7	3.2	1.3	0.2
0	4.6	3.1	1.5	0.2
0	5.0	3.6	1.4	0.2
0	5.4	3.9	1.7	0.4

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Choose Initial Centroids

Centroids are randomly chosen from the data points. These represent the initial cluster centers.

✖ Centroids × Data Points



Update Centroids

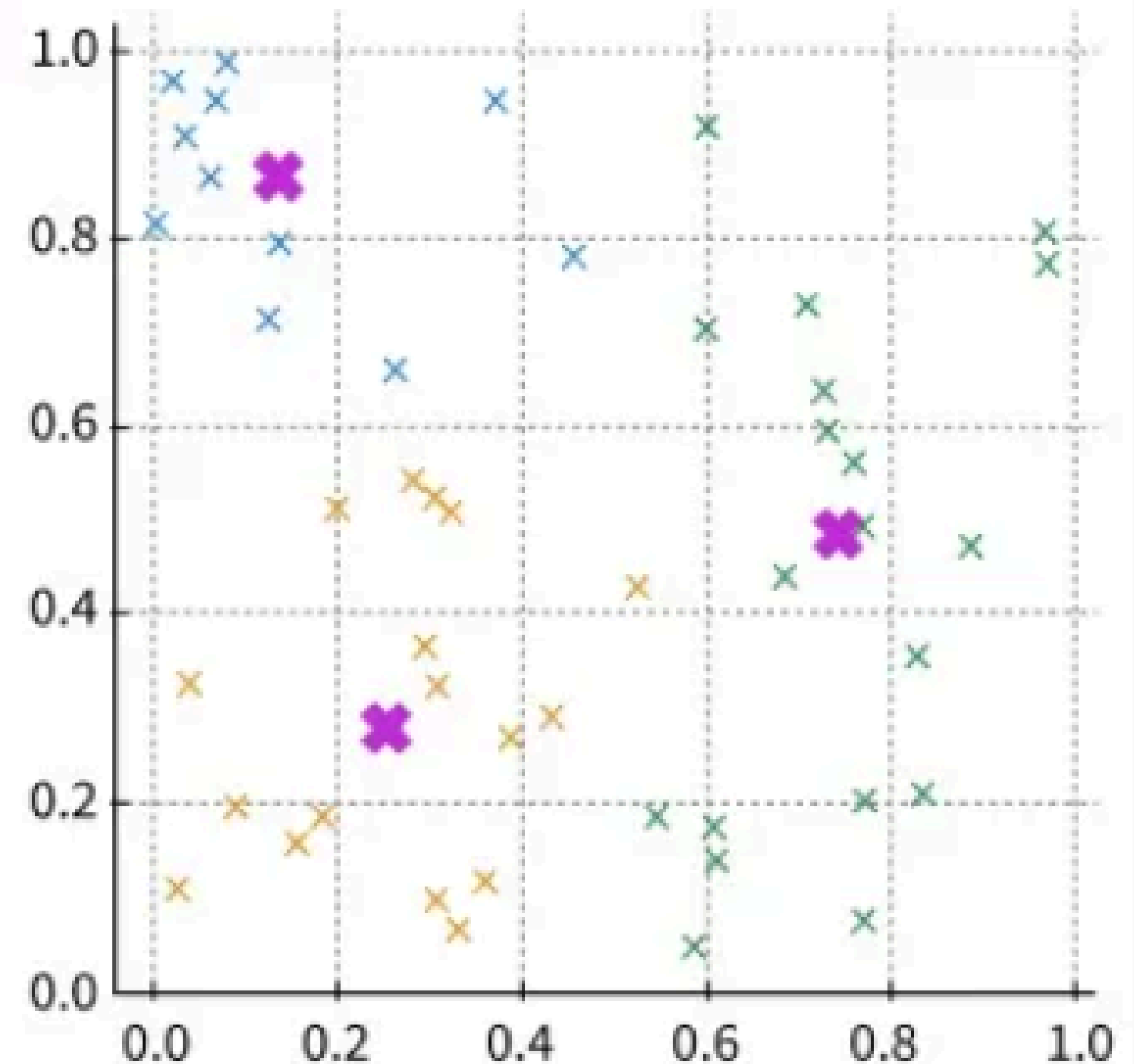
Centroids are recalculated as the mean of the points in each cluster

✱ New Centroids

✕ Cluster 1

✕ Cluster 2

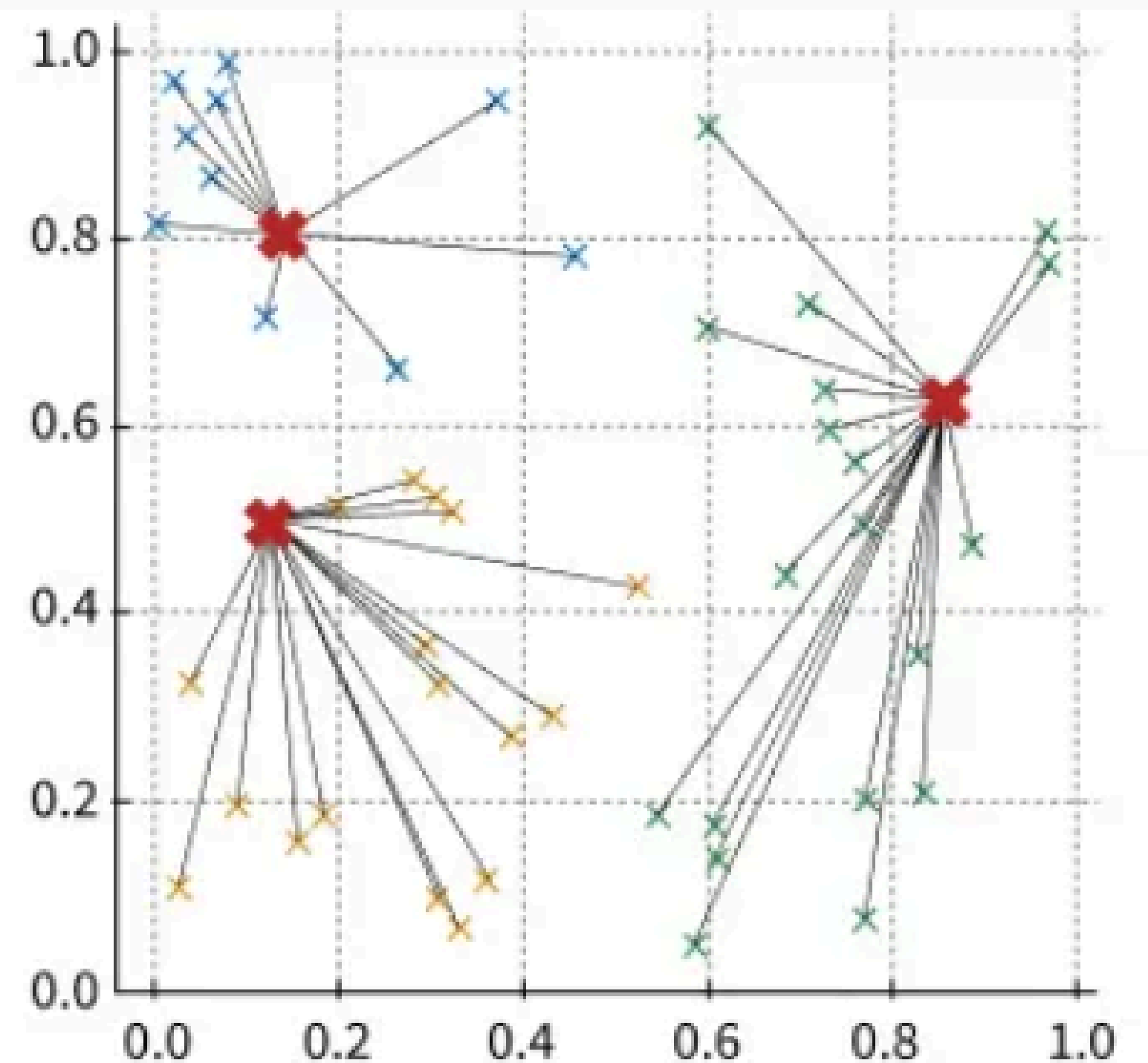
✕ Cluster 3



Assign Points to Nearest Centroid

Each point is assigned to the nearest centroid, forming clusters

✖ Centroids ✖ Cluster 1
✖ Cluster 2 ✖ Cluster 3



Repeat Until Convergence

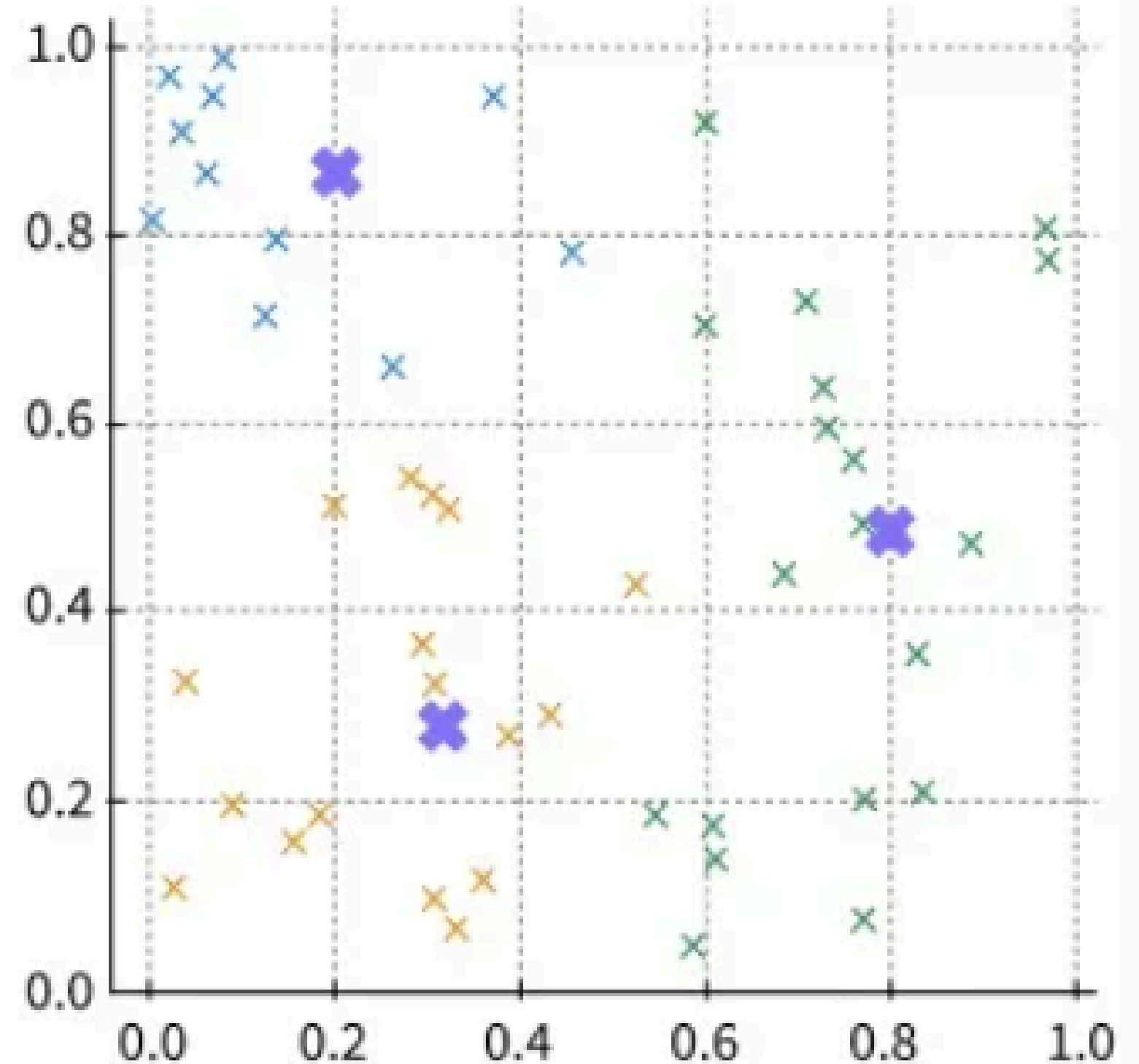
This process repeats until the centroids stabilize and do not move further.

✱ Final Centroids

✕ Cluster 1

✕ Cluster 2

✕ Cluster 3



Dziękuję za uwagę!

The logo for ML.NET, featuring the text "ML.NET" in white, bold, sans-serif font, centered within a dark purple circle. The circle is positioned on the right side of the slide, overlapping a light purple vertical bar that runs along the right edge.

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