

TP4

Aprendizaje no Supervisado

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Mannelli, Lucciano Elian
Ortu, Agustina Sol
Rossi, Victoria

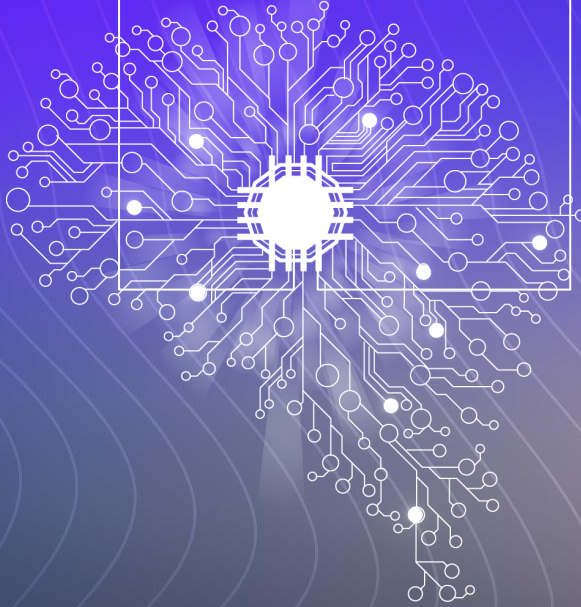


Contenido

Ejercicio 1

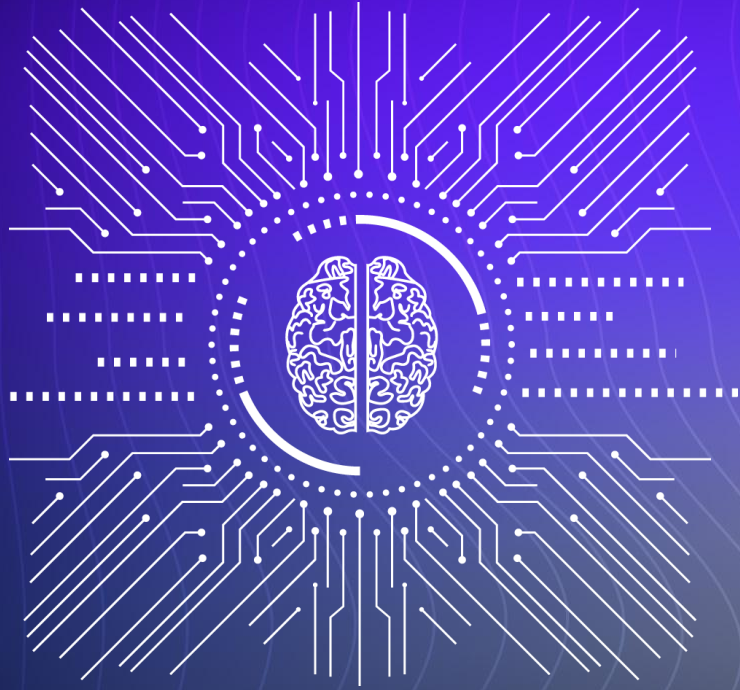
Red de Kohonen

Modelo de Oja



Ejercicio 2

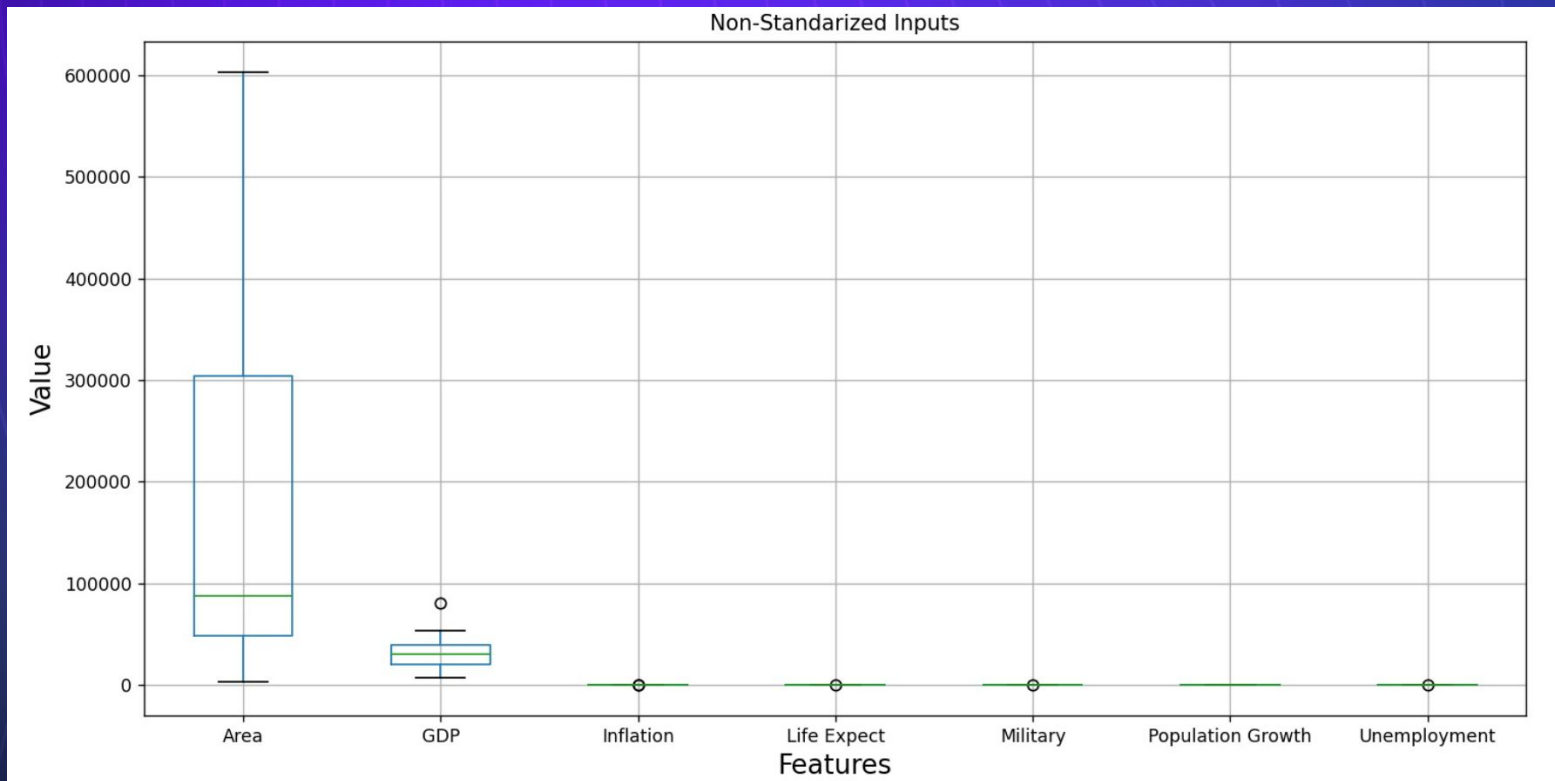
Modelo de Hopfield



Ejercicio 1

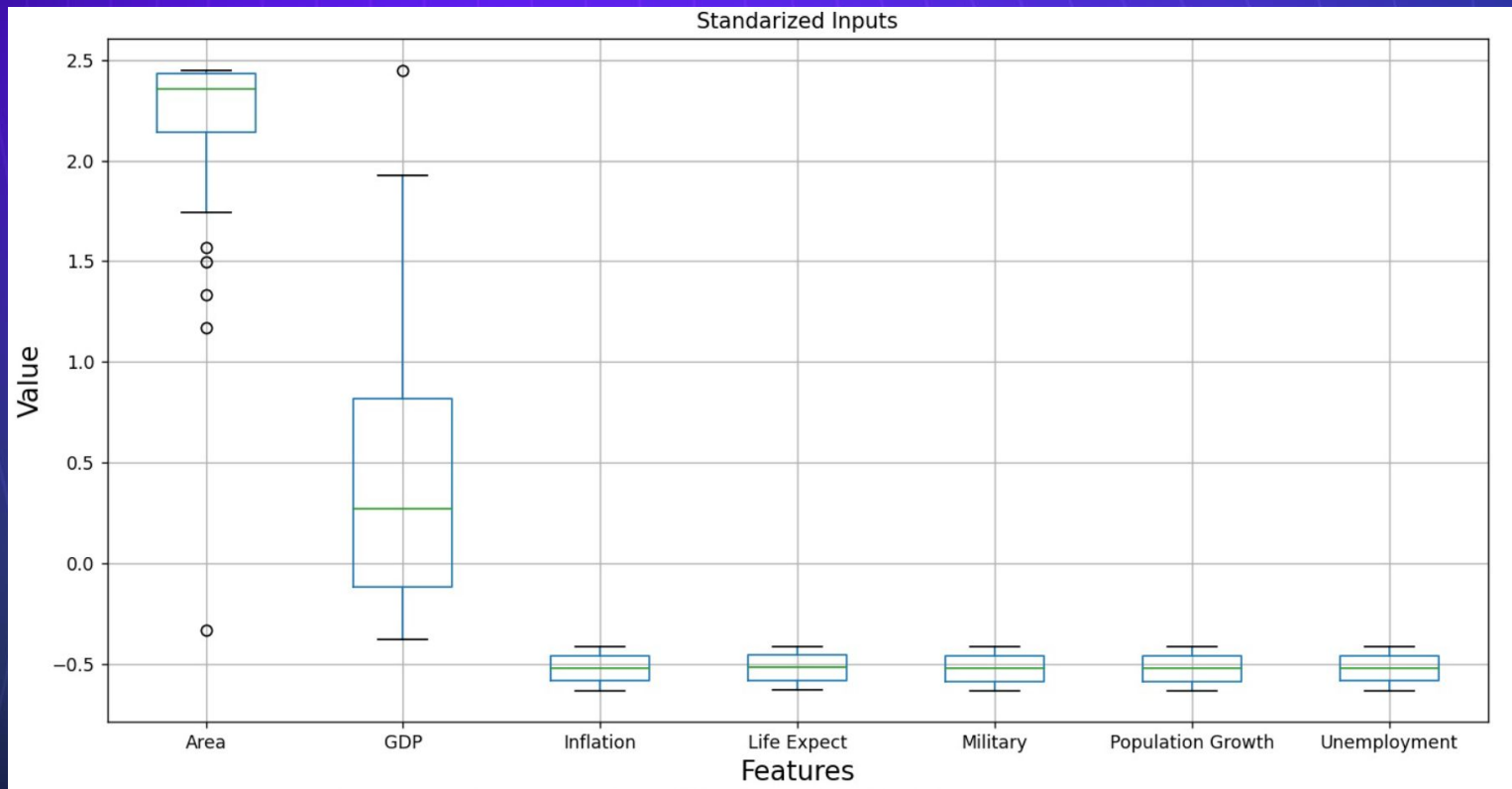
Variables estandarizadas .vs. No estandarizadas

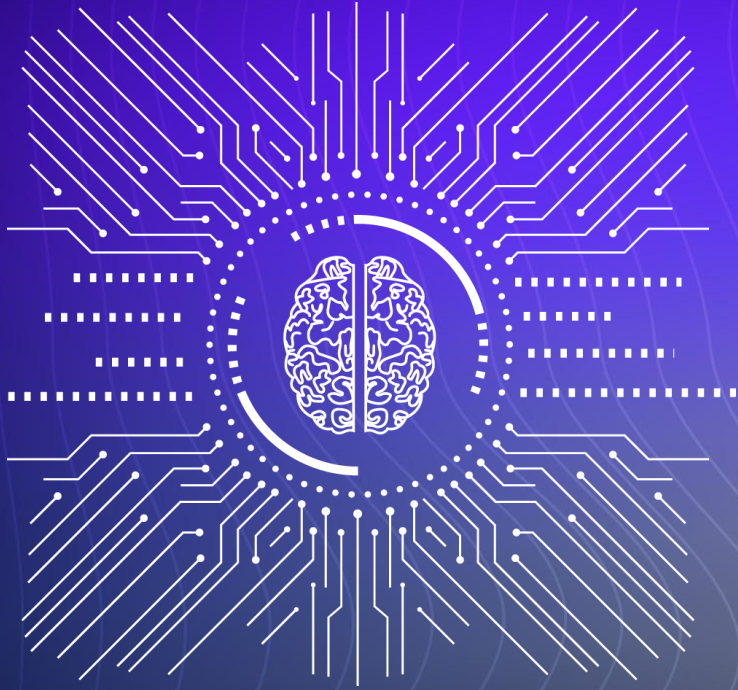
Inputs No Estandarizados:



Variables estandarizadas .vs. No estandarizadas

Inputs Estandarizados:

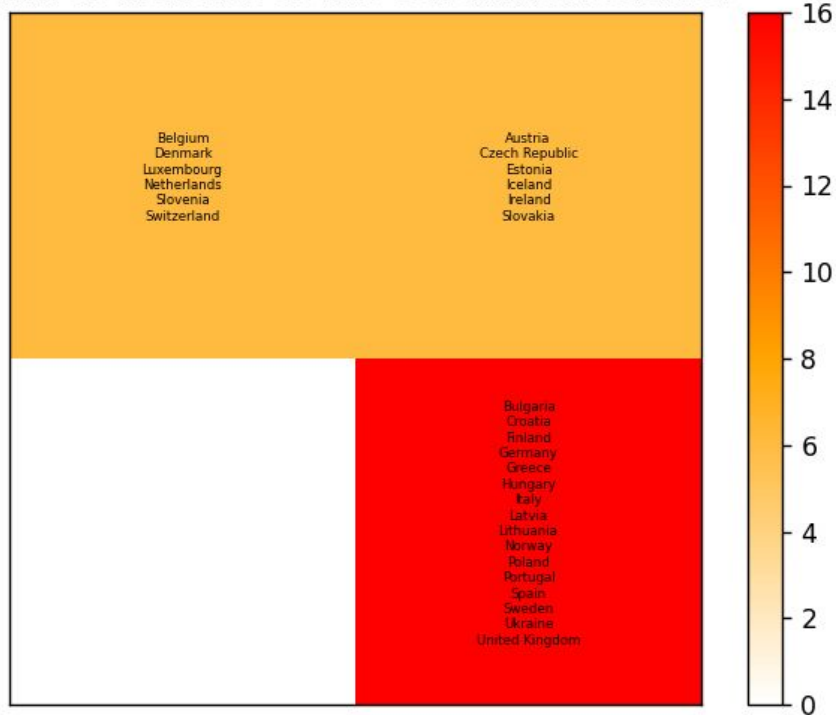




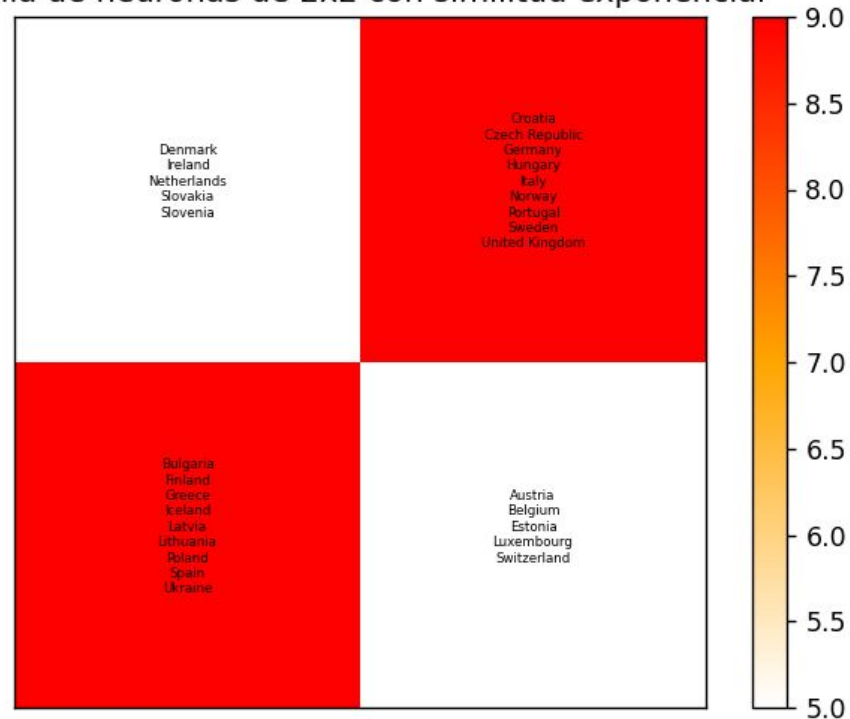
**Euclidian .vs.
Exponencial**

2x2

Grilla de neuronas de 2x2 con similitud euclidea

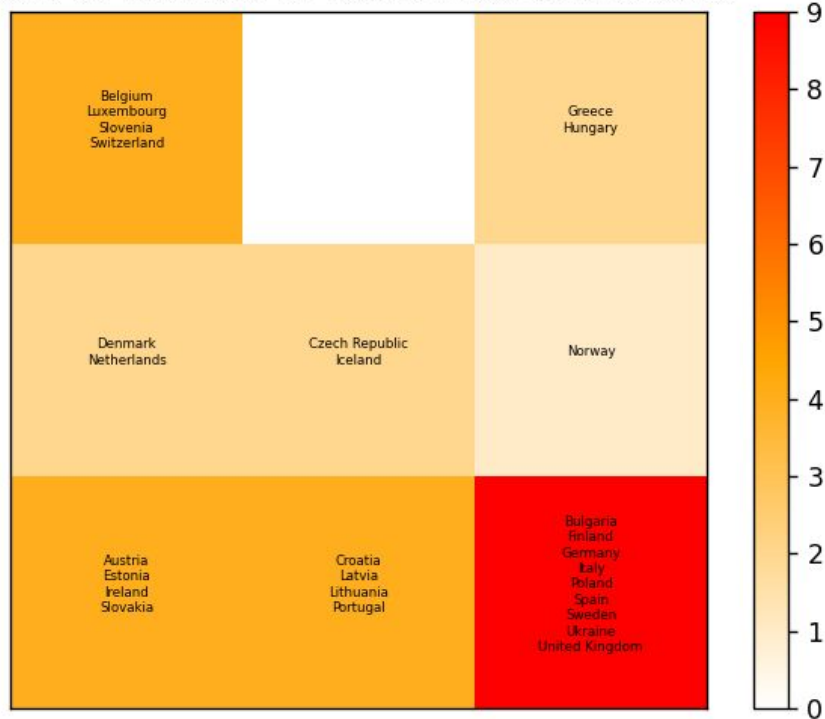


Grilla de neuronas de 2x2 con similitud exponencial

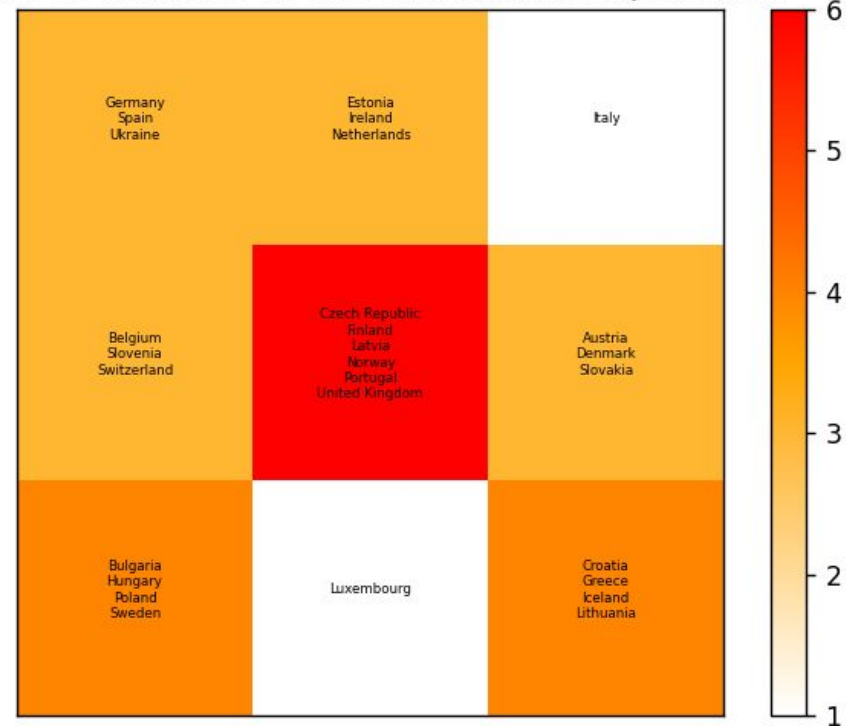


3x3

Grilla de neuronas de 3x3 con similitud euclidea

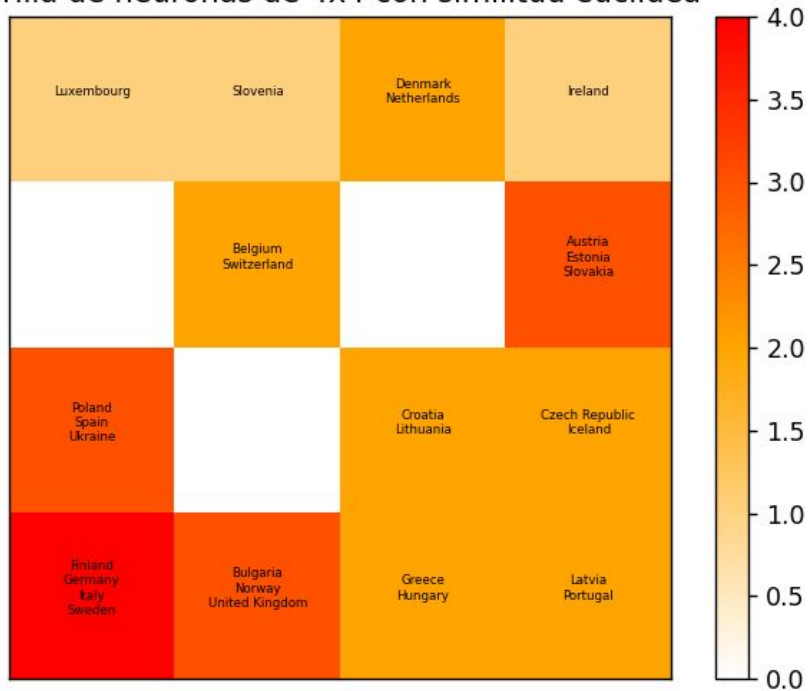


Grilla de neuronas de 3x3 con similitud exponencial

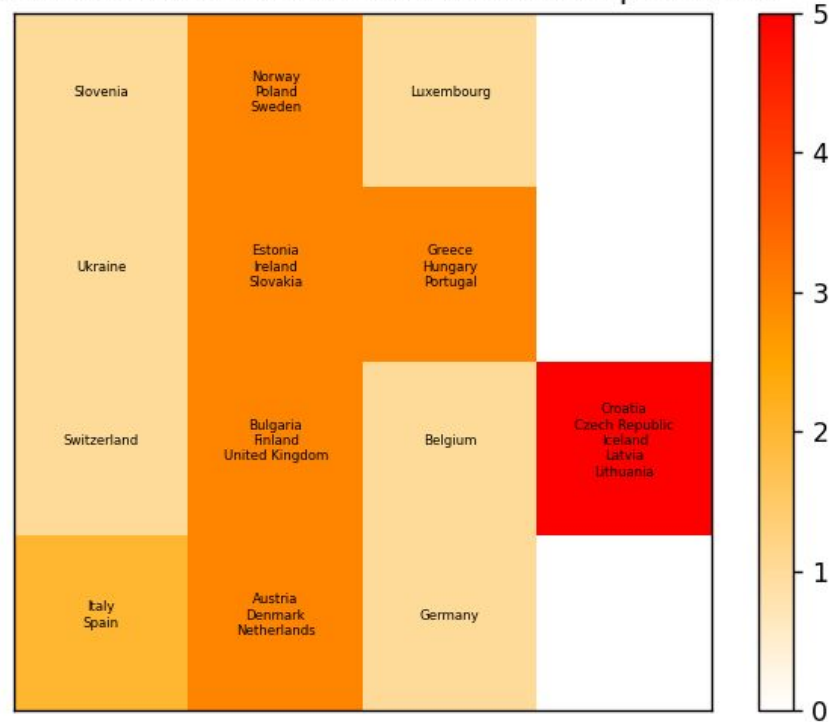


4x4

Grilla de neuronas de 4x4 con similitud euclidea

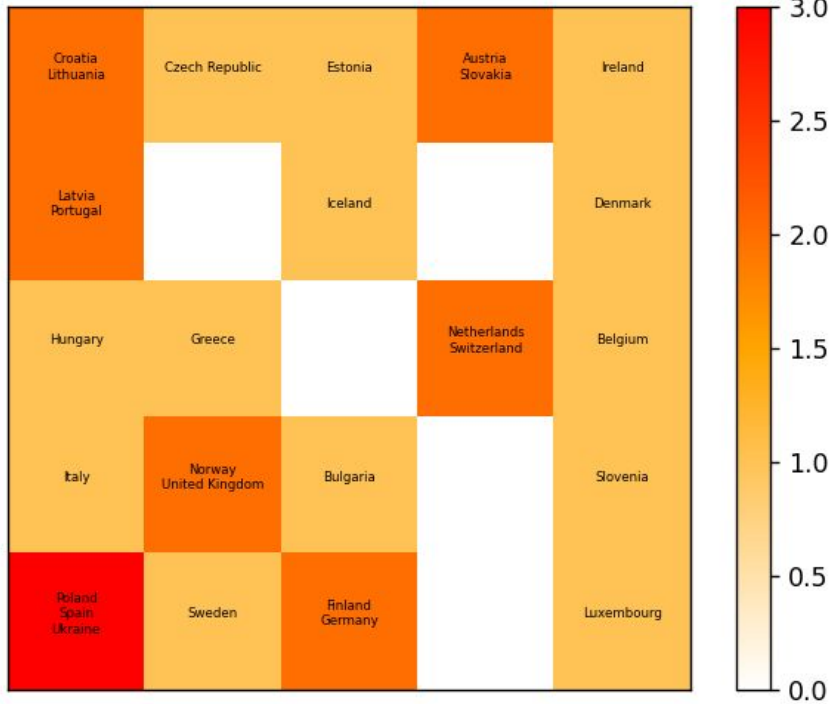


Grilla de neuronas de 4x4 con similitud exponencial

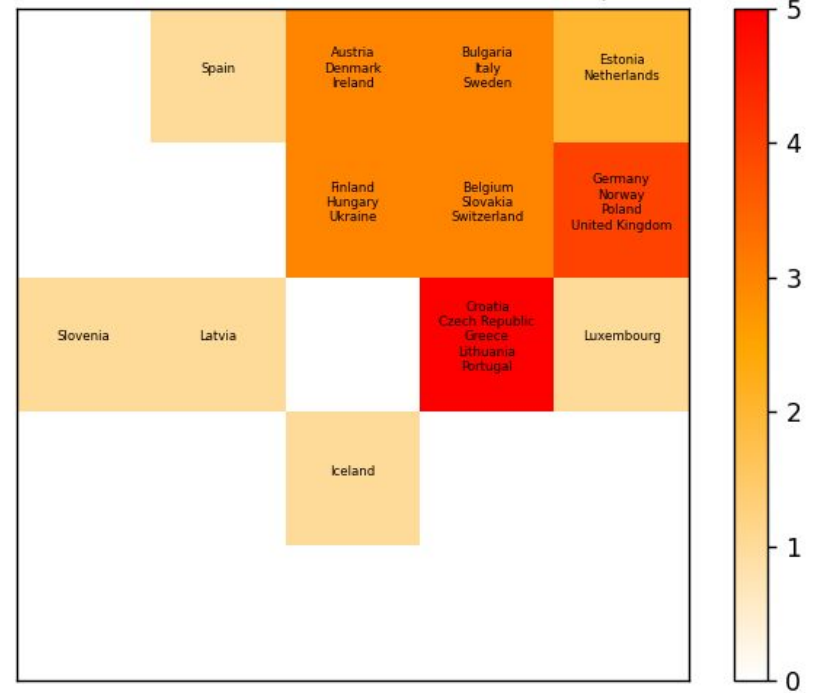


5x5

Grilla de neuronas de 5x5 con similitud euclidea



Grilla de neuronas de 5x5 con similitud exponencial



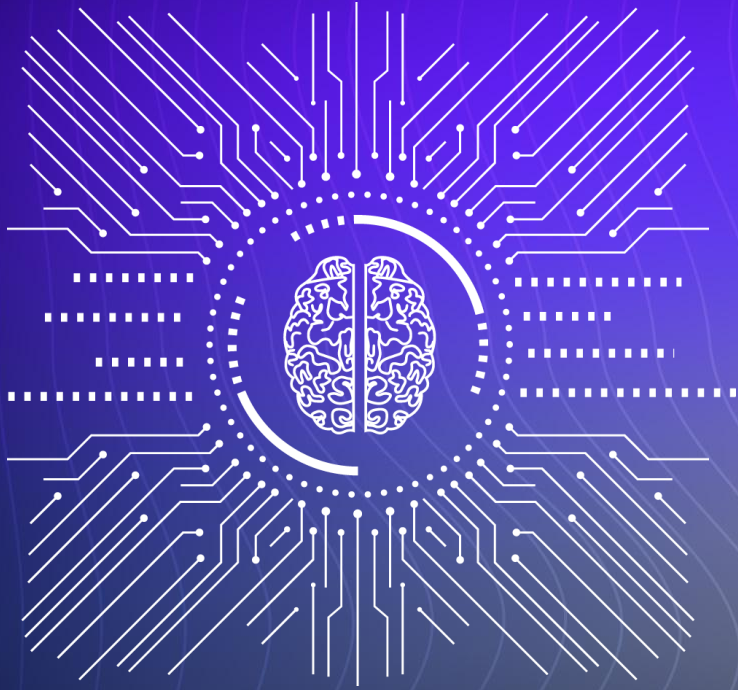
Selecciones

**Similitud
Euclidea**

4x4

**Input
Related
Weights**



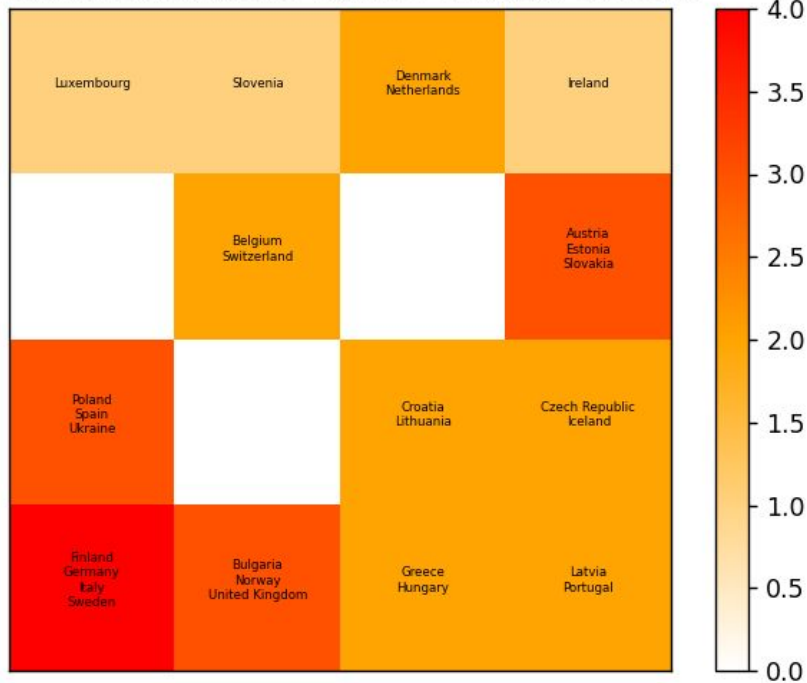


Matriz U

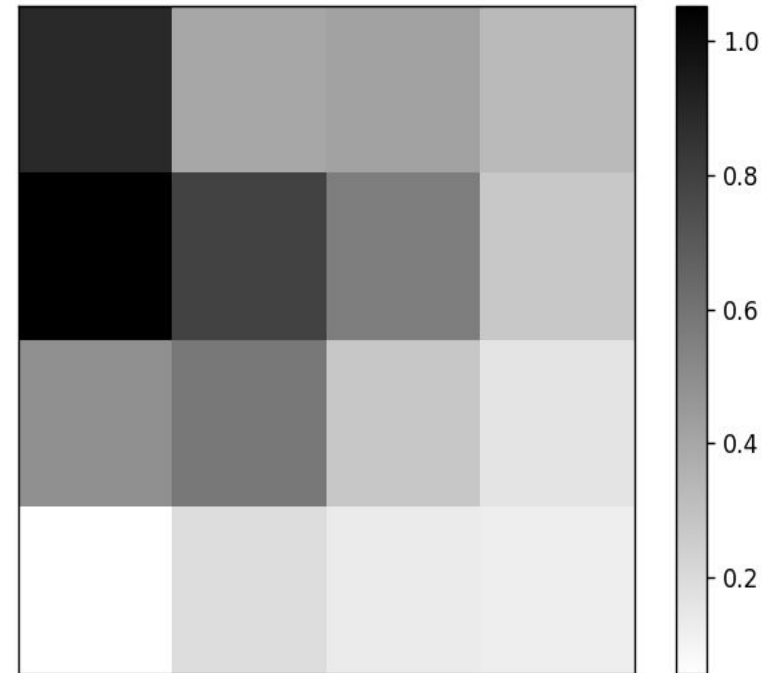
Matriz U

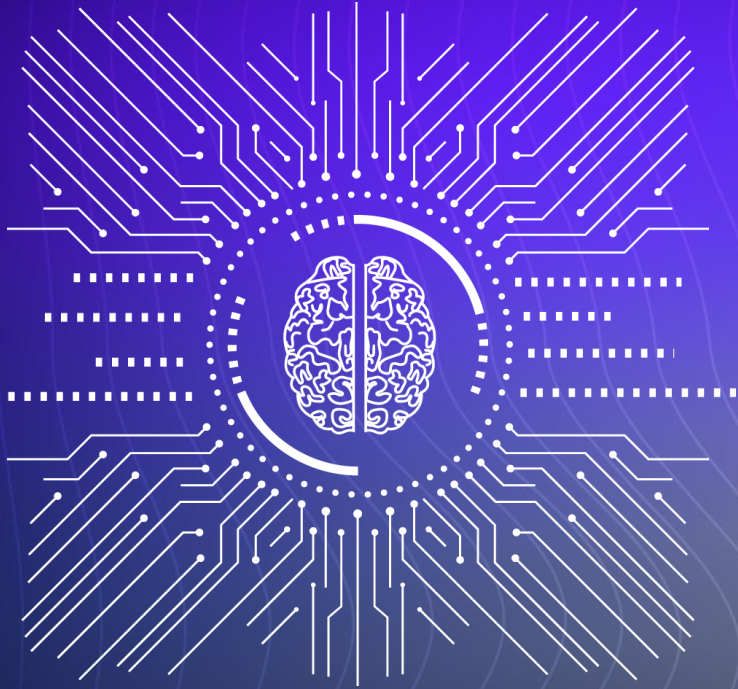
Promedio de la distancia euclídea entre el vector de pesos de la neurona y el de sus vecinas

Grilla de neuronas de 4x4 con similitud euclídea



Media de distancia euclídea entre pesos de neuronas vecinas

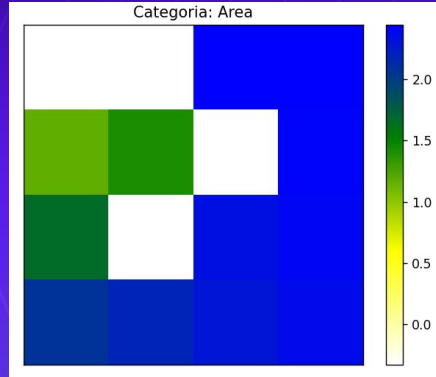
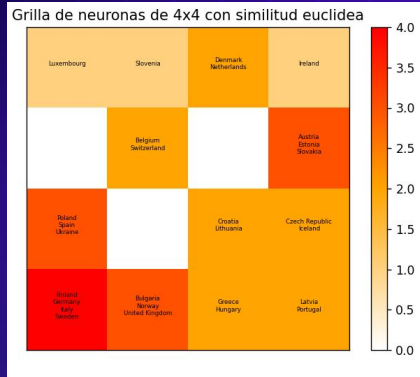




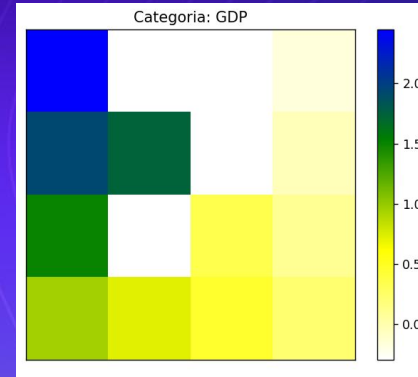
Categorías

Selecciones: 4x4 y Similitud euclidia

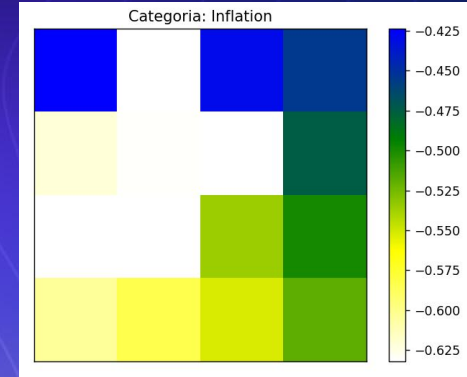
AREA



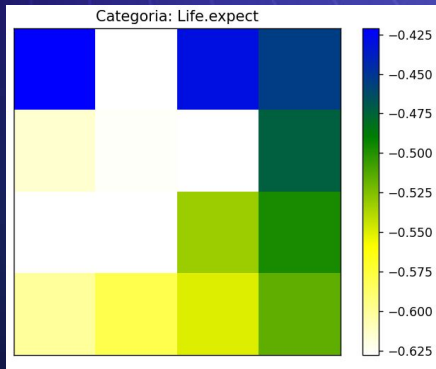
GDP



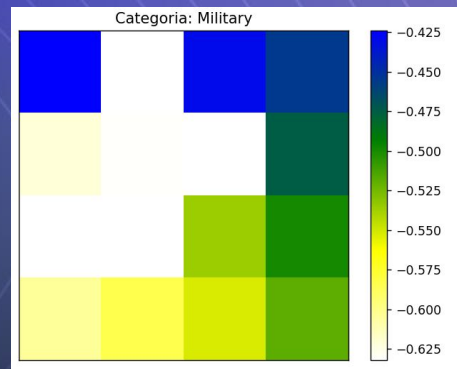
INFLATION



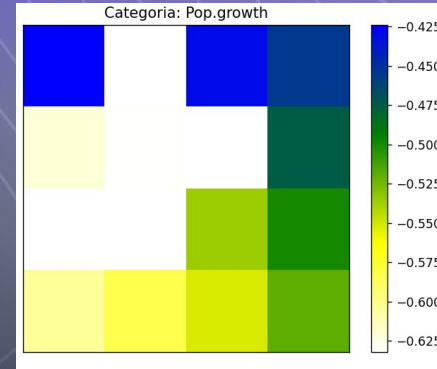
LIFE EXPECT



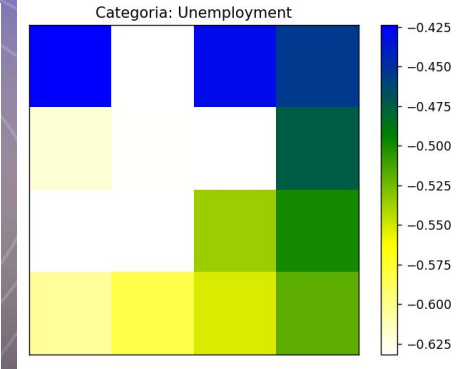
MILITARY

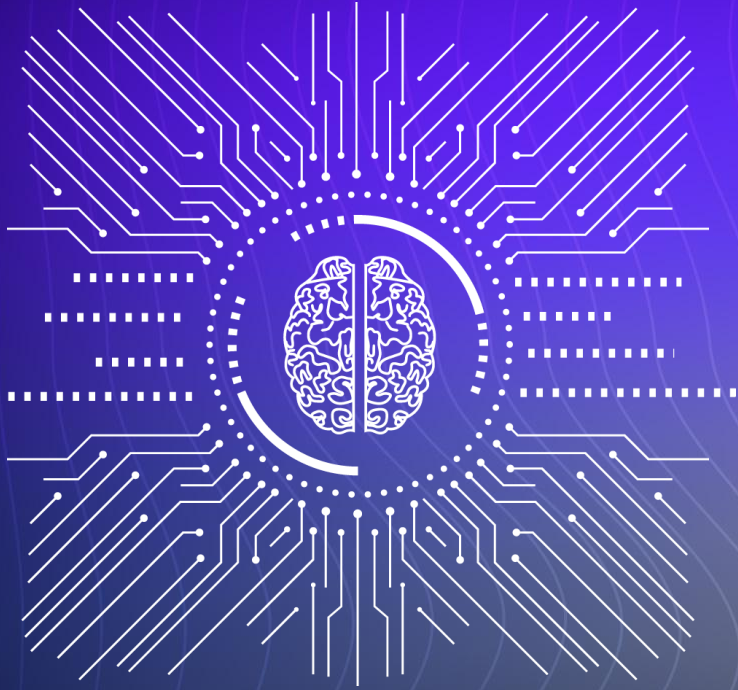


POPULATION GROWTH



UNEMPLOYMENT





Modelo de Oja

Parámetros

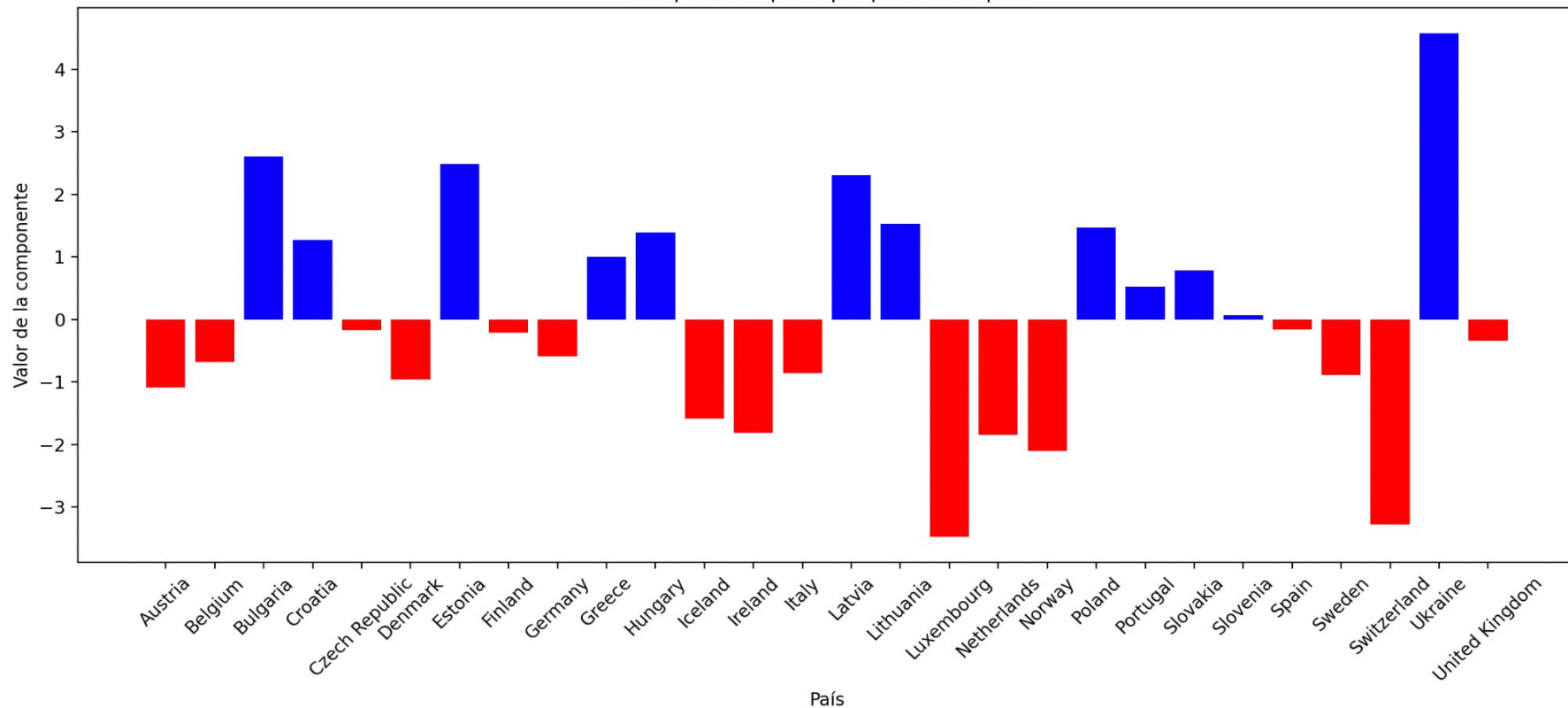
Eta Adaptativo

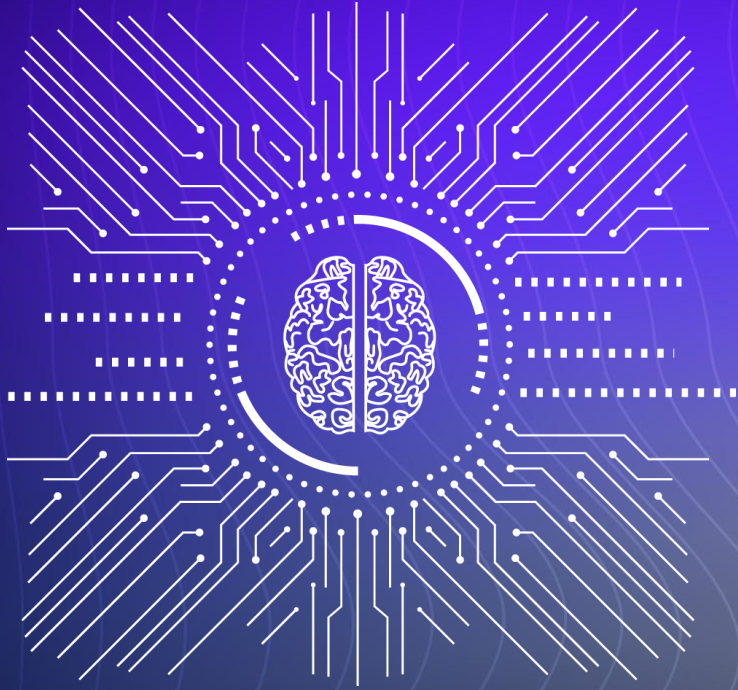
**Inicialización de pesos:
valores random con
distribución uniforme
entre 0 y 1**



Modelo de Oja

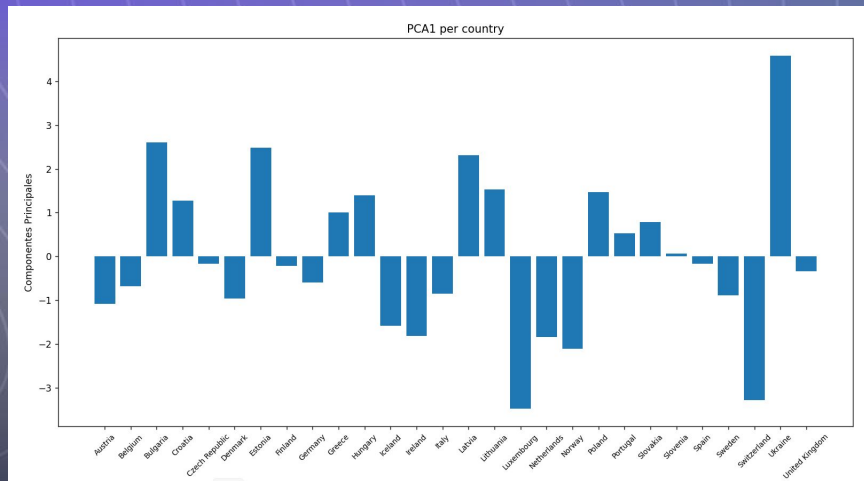
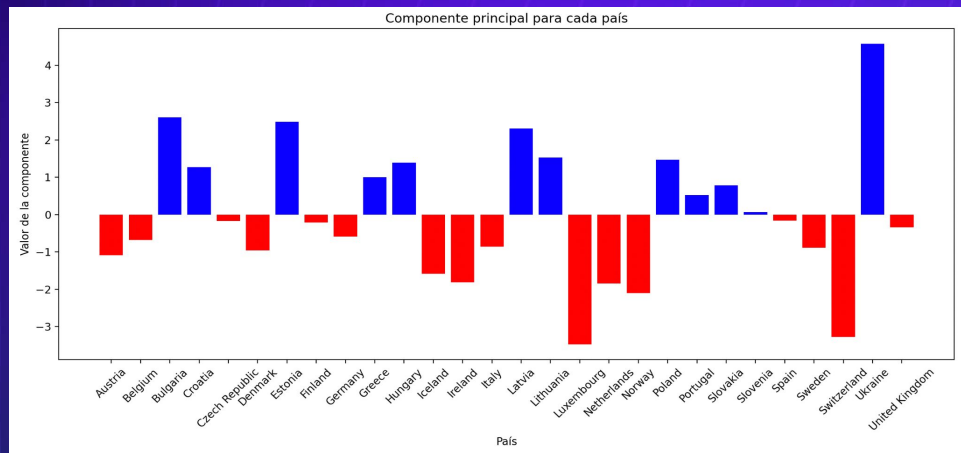
Componente principal para cada país





Modelo de Oja vs. PCA

Barplot



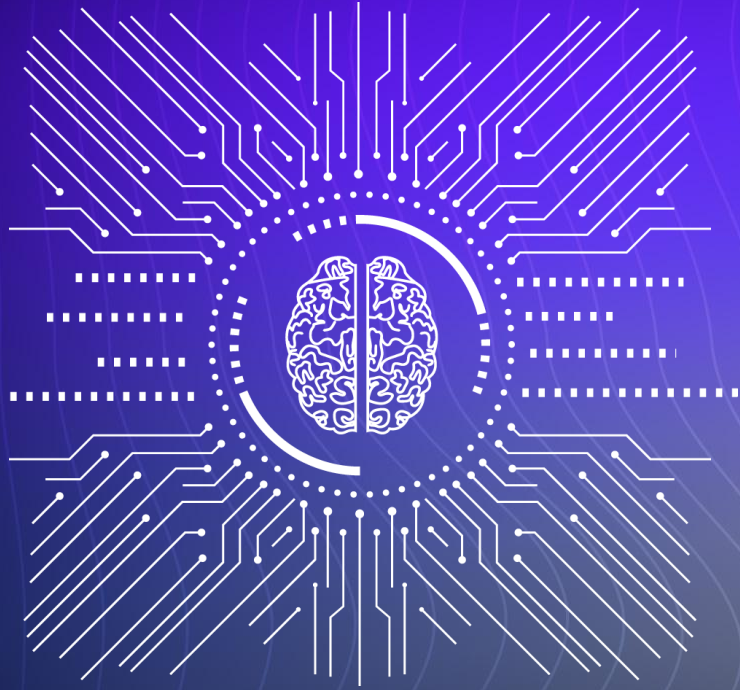
Vector de Diferencia

	Austria	Belgium	Bulgaria	Croatia	Czech Republic	Denmark	Estonia	Finland	Germany	Greece	Hungary	Iceland	Ireland	Italy
MSE	3.33e-15	5.551e-15	8.881e-16	1.554e-15	2.831e-15	3.441e-15	1.332e-15	2.886e-15	3.552e-15	1.998e-15	1.11e-15	3.108e-15	3.774e-15	3.108e-15

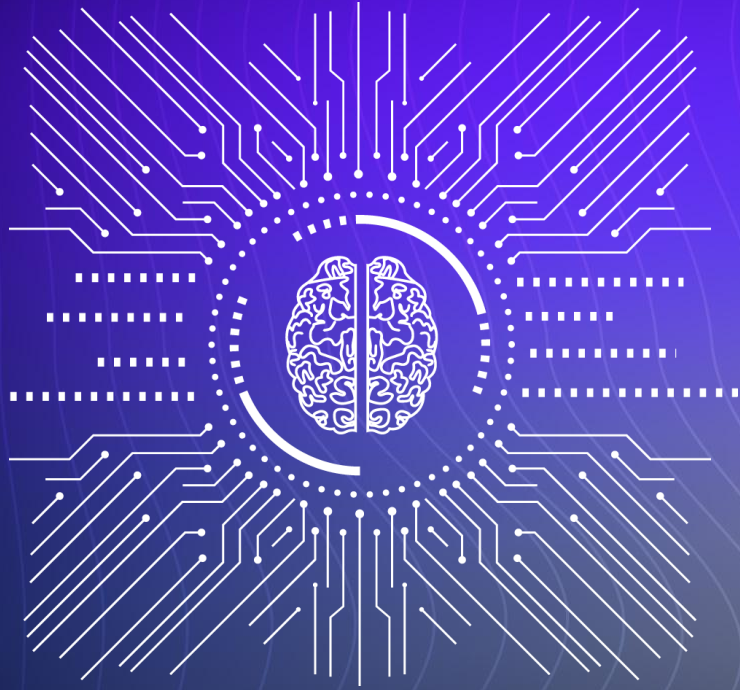
	Latvia	Lithuania	Luxembourg	Netherlands	Norway	Poland	Portugal	Slovakia	Slovenia	Spain	Sweden	Switzerland	Ukraine	United Kingdom
MSE	8.881e-16	8.881e-16	4.44e-15	3.774e-15	4.884e-15	1.554e-15	1.665e-15	1.776e-15	2.733e-15	2.747e-15	3.33e-15	5.329e-15	8.881e-16	2.609e-15

*Error cuadrático
medio (MSE)*

2.7136e-15



Ejercicio 2



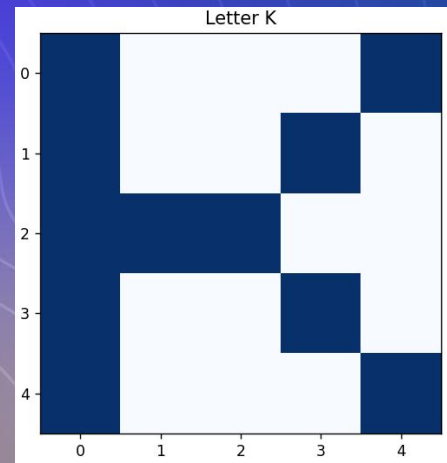
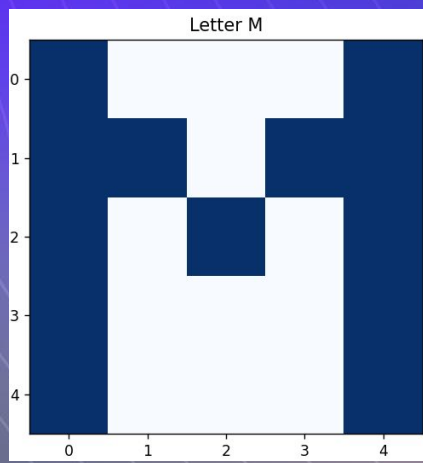
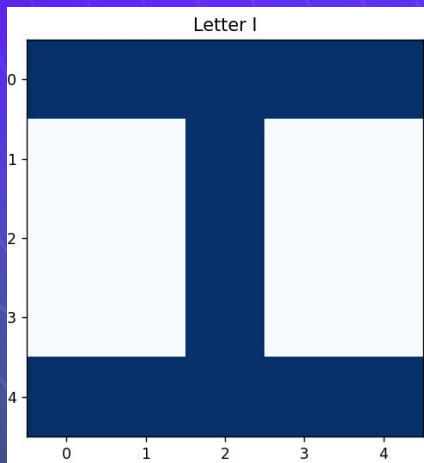
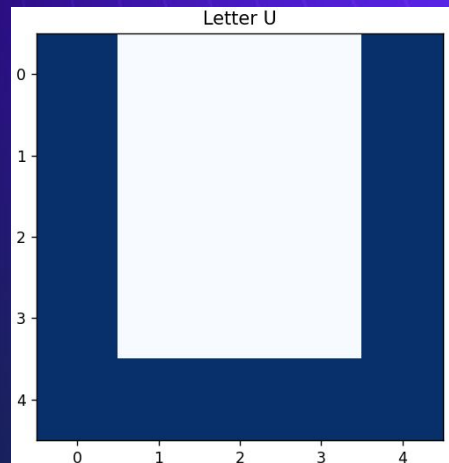
Elección de Set de Entrenamiento

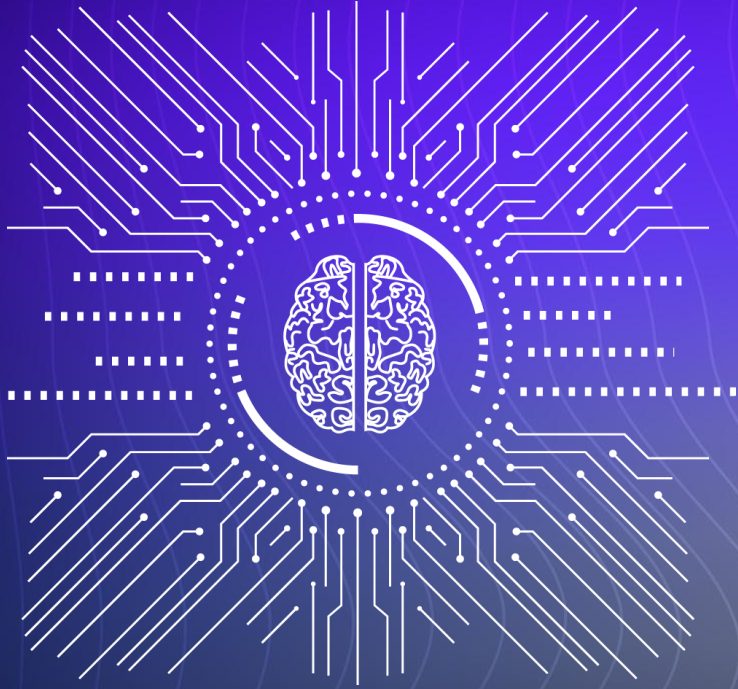
['M', 'N', 'O', 'L']
1.167

['U', 'I', 'M', 'K']
1.415

['B', 'C', 'D', 'E']
0.955

Training





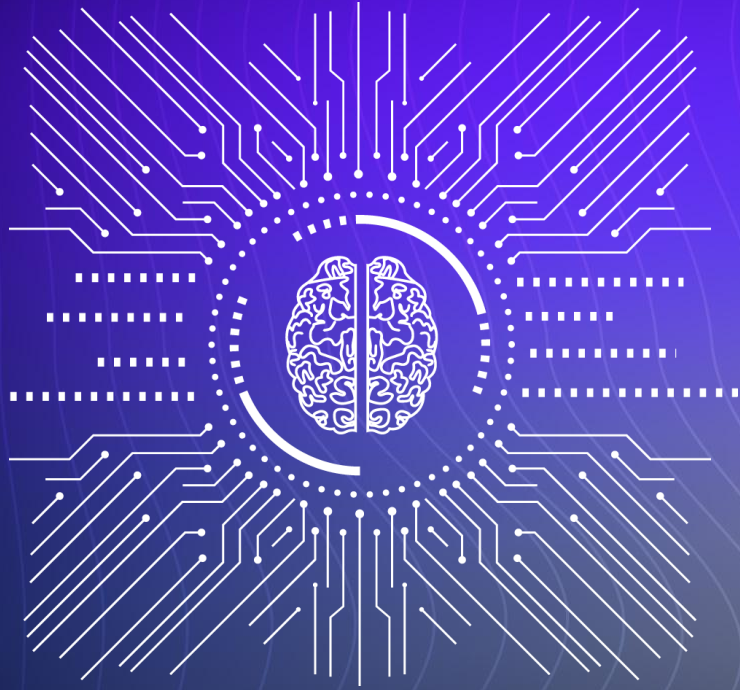
Definiciones

Positivos

**Falso
Positivos**

Negativos

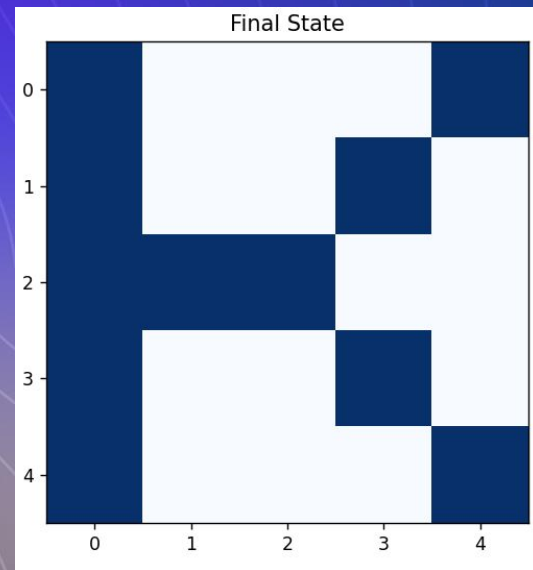
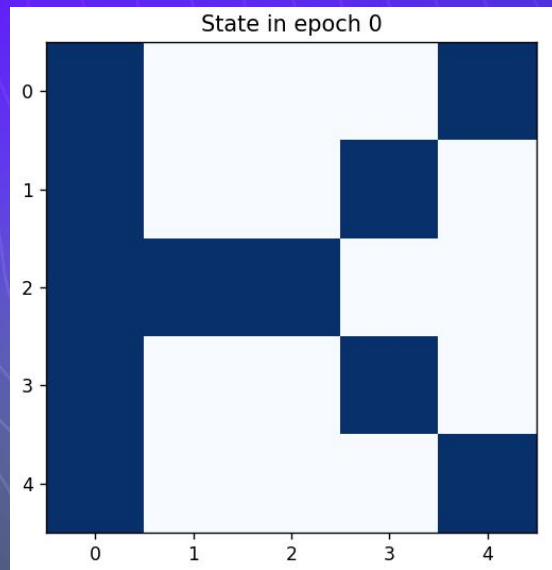
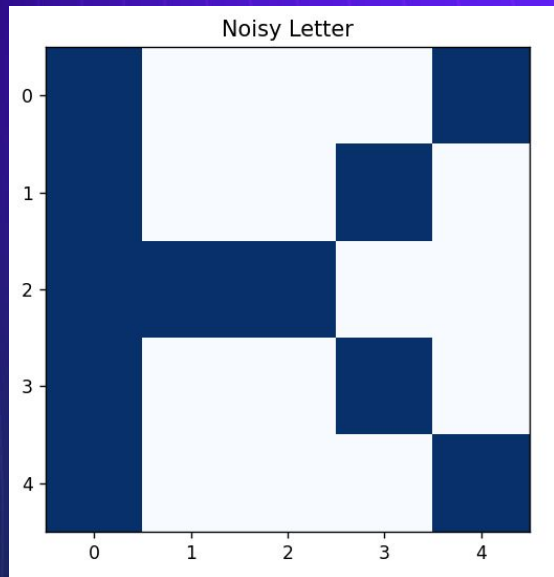
Estados Espúreos



Positivo

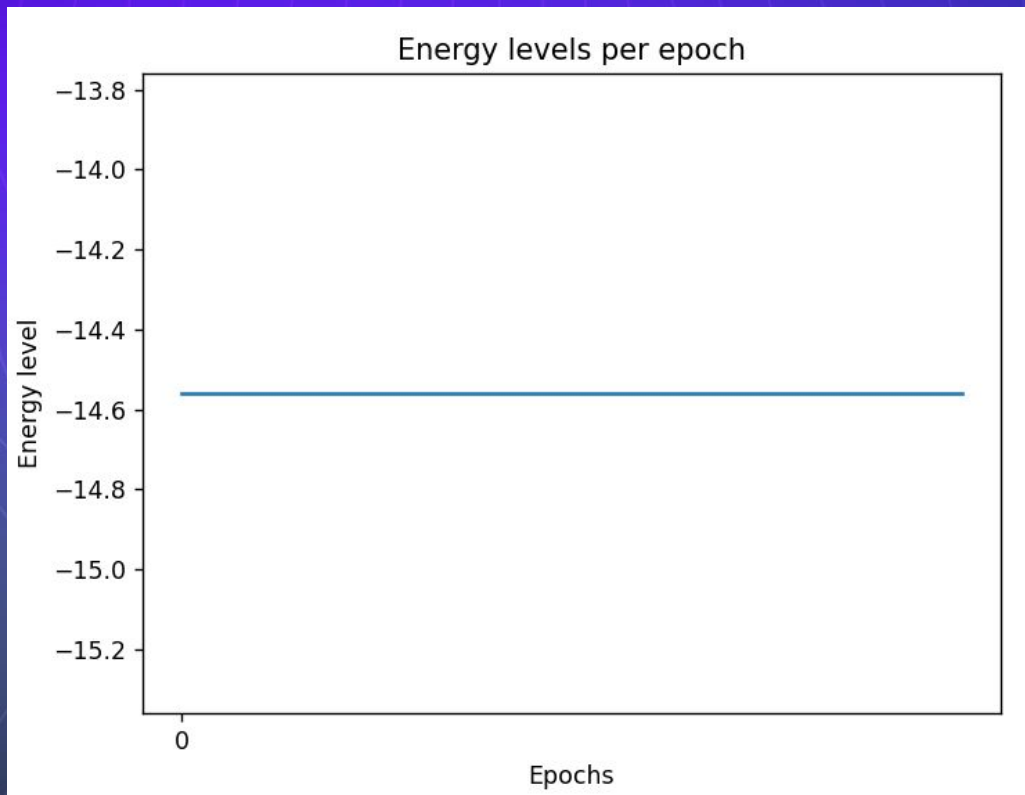
Positivo

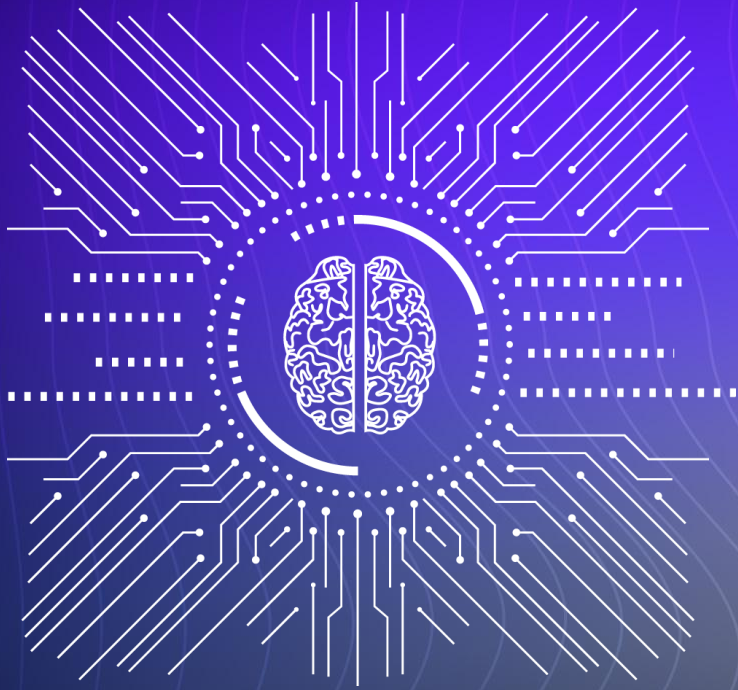
Probability = 0.05



Positivo

Probability = 0.05

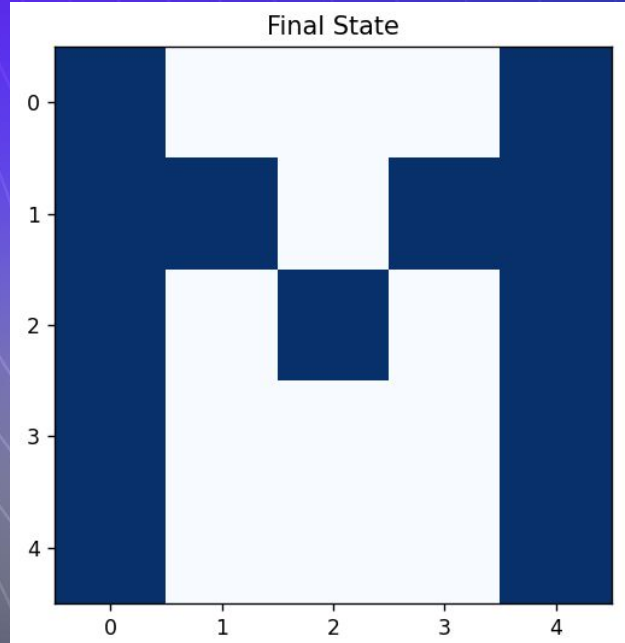
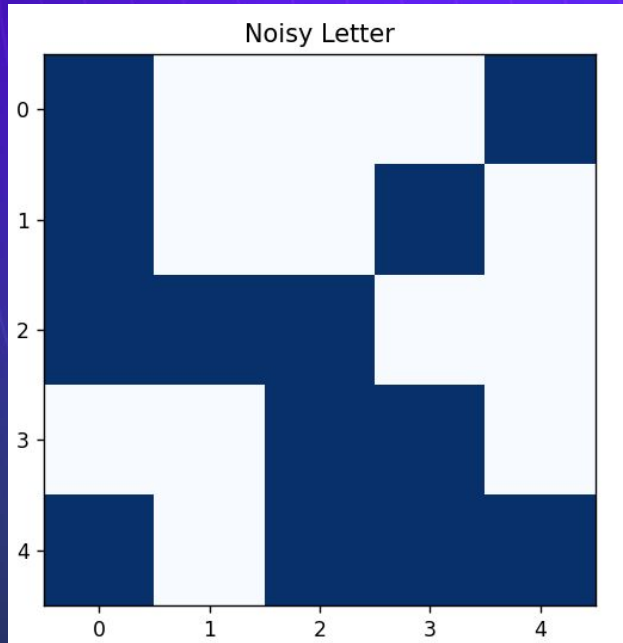




**Falso
Positivo**

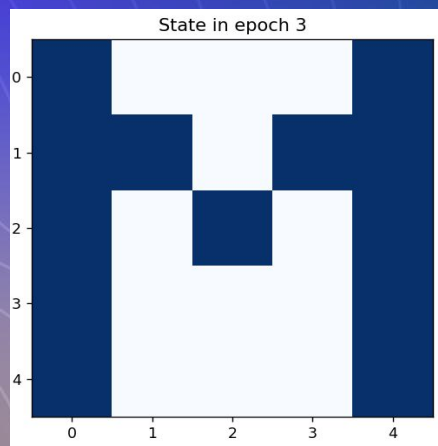
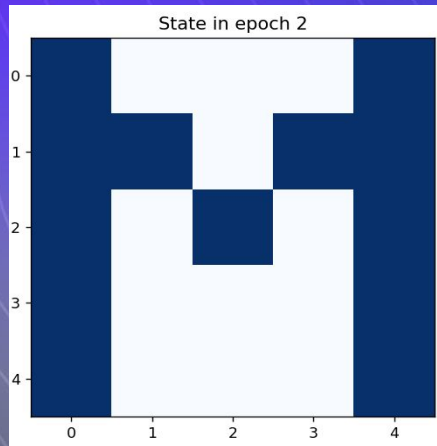
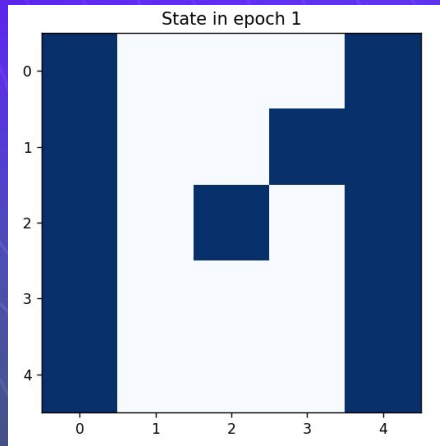
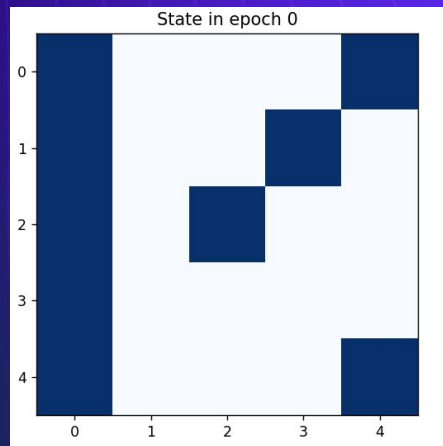
False Positive

Probability = 0.1



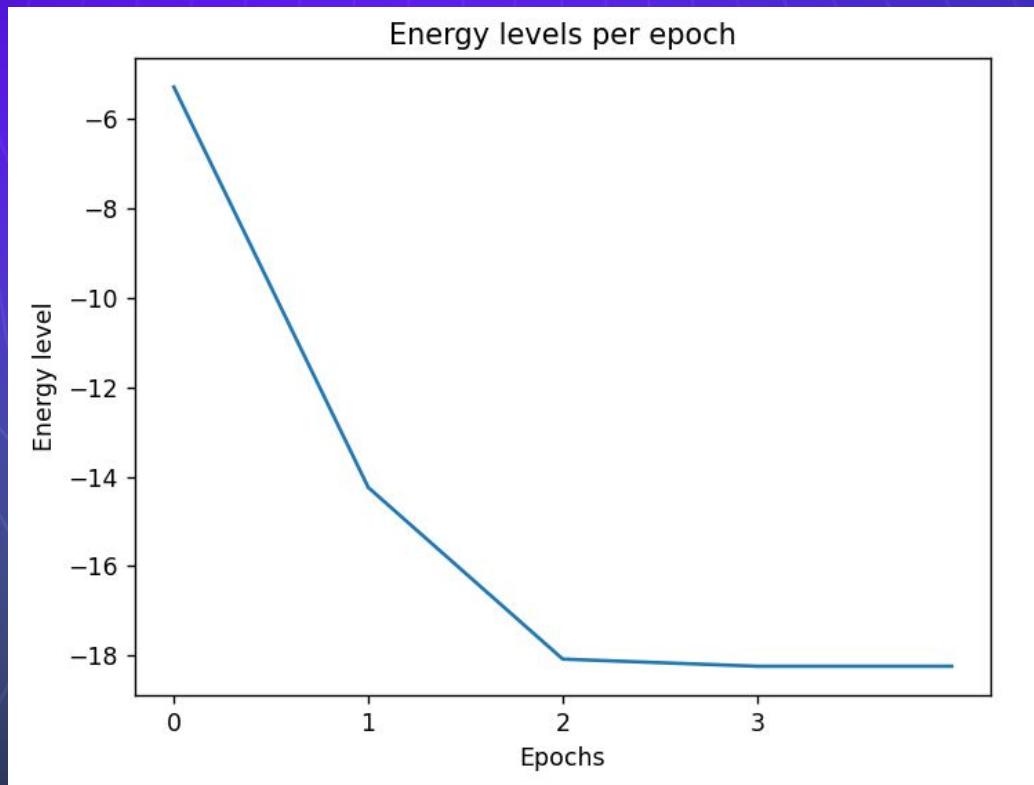
Falso positivo: épocas

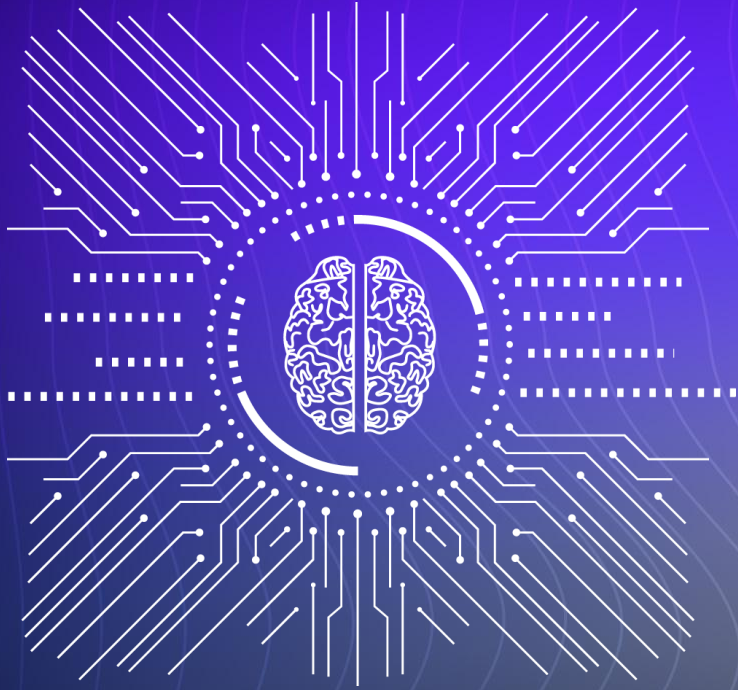
Probability = 0.1



Falso Positivo

Probability = 0.1



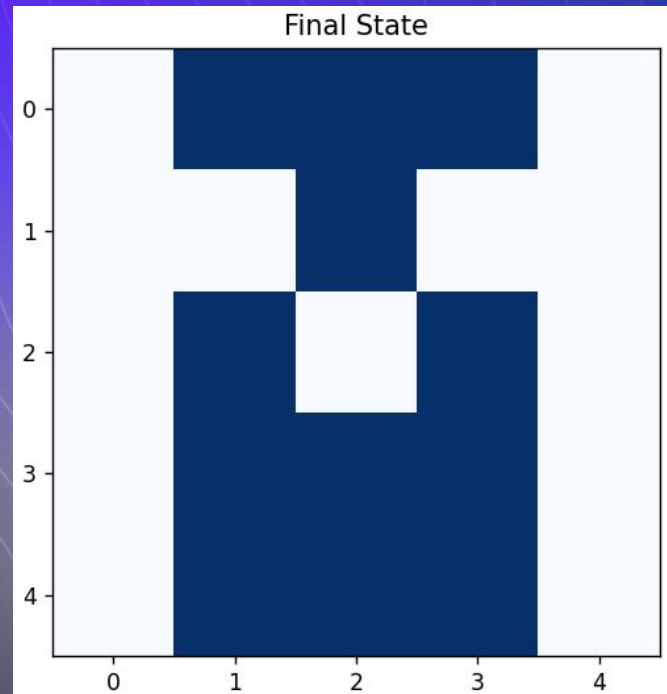
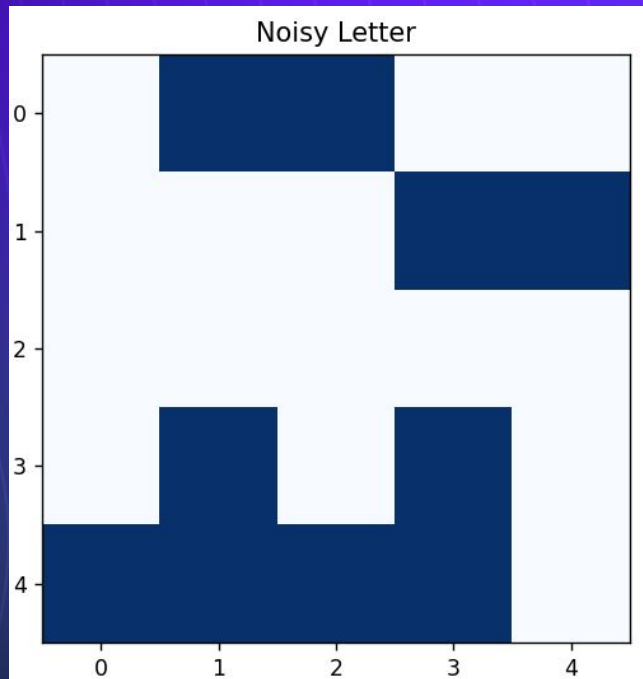


Negativo

O Estado Espureo

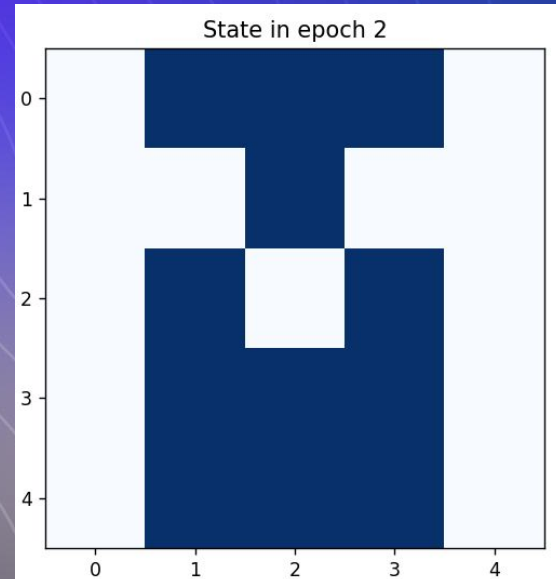
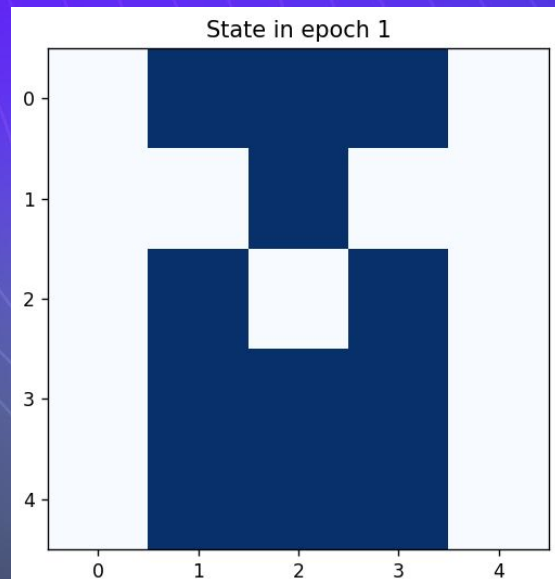
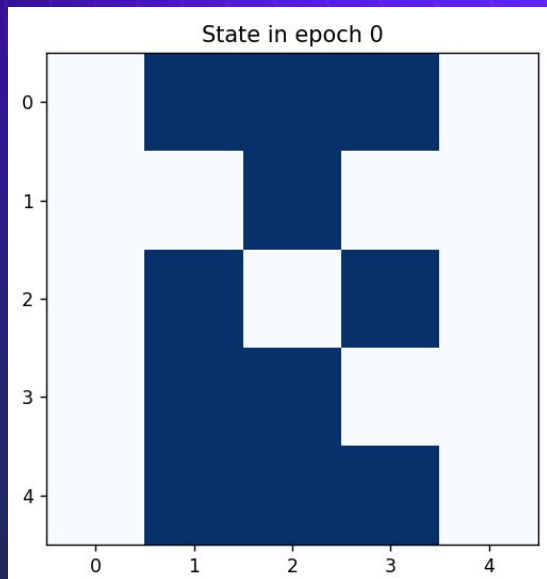
Negativo

Probability = 0.5



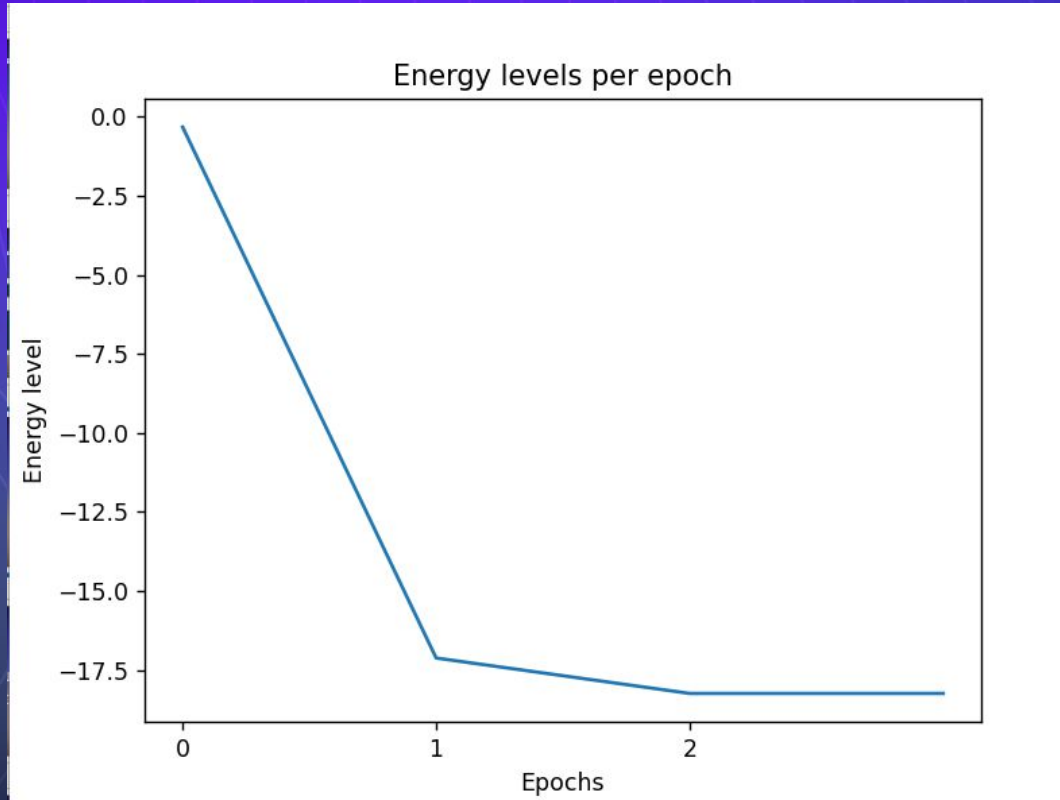
Negativo: épocas

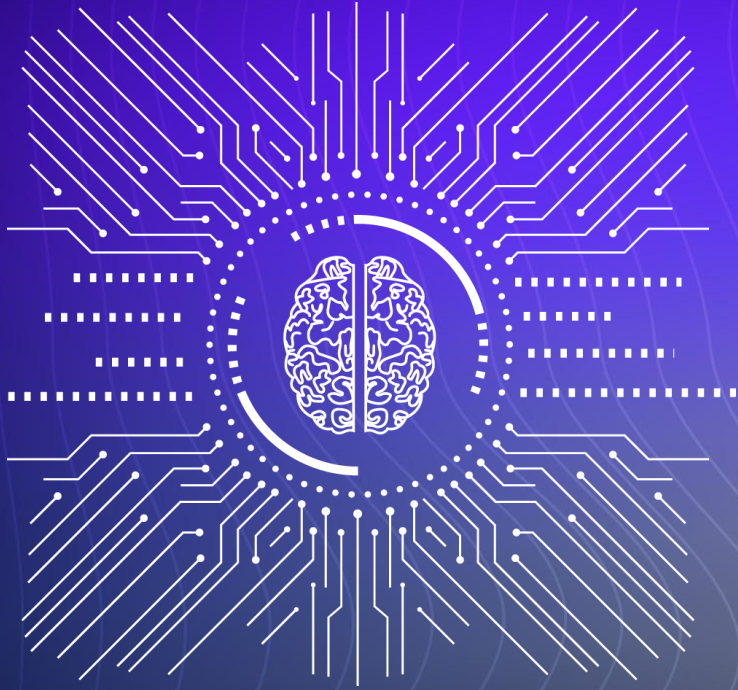
Probability = 0.5



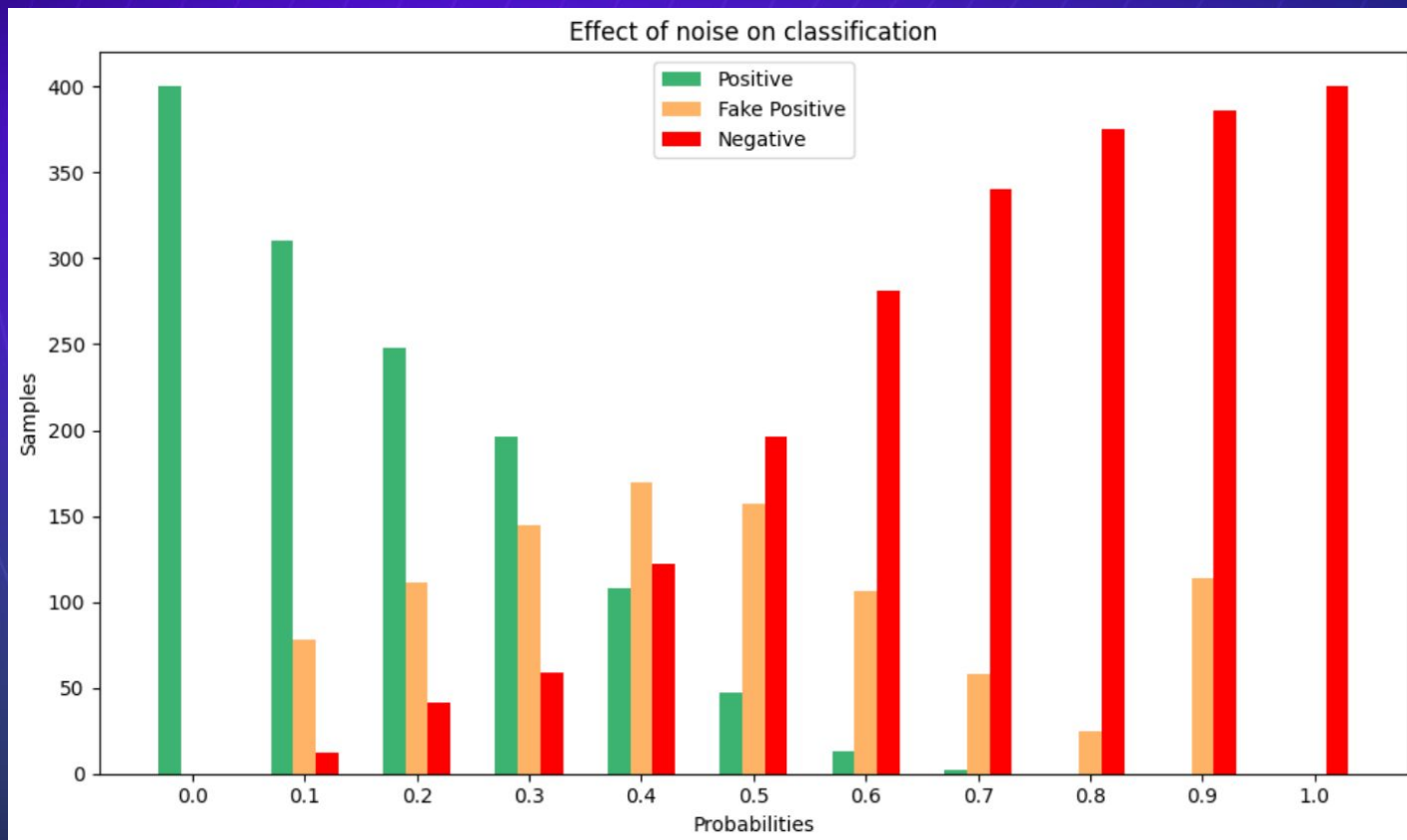
Negativo

Probability = 0.5





Efecto del ruido en el algoritmo



A wireframe globe on the left side of the image, composed of white lines and dots forming a spherical shape with a visible crater or indentation on its surface. It is surrounded by small white triangles and dots.

¡Gracias!

A wireframe globe on the right side of the image, identical to the one on the left, composed of white lines and dots forming a spherical shape with a visible crater or indentation on its surface. It is surrounded by small white triangles and dots.