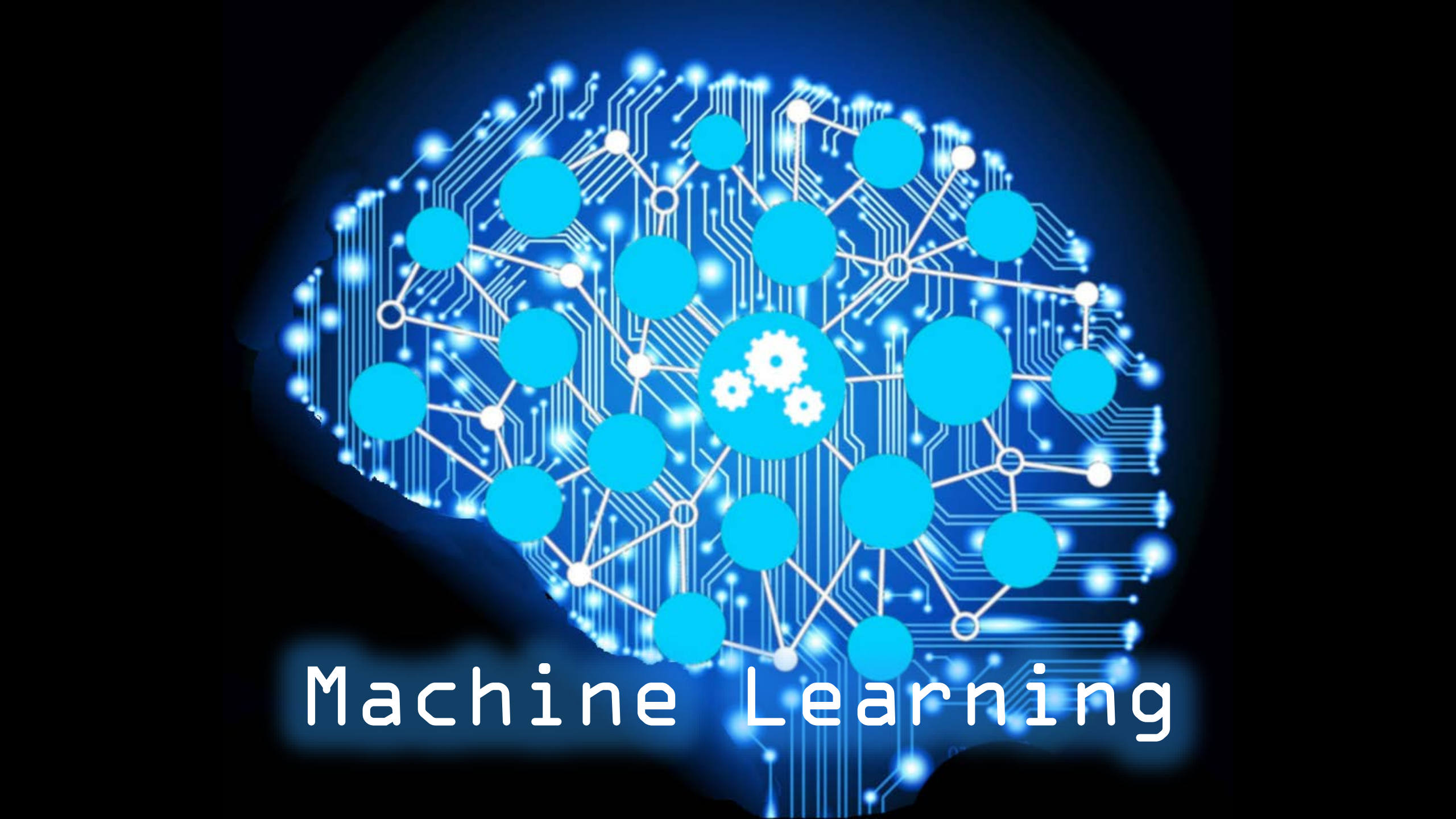
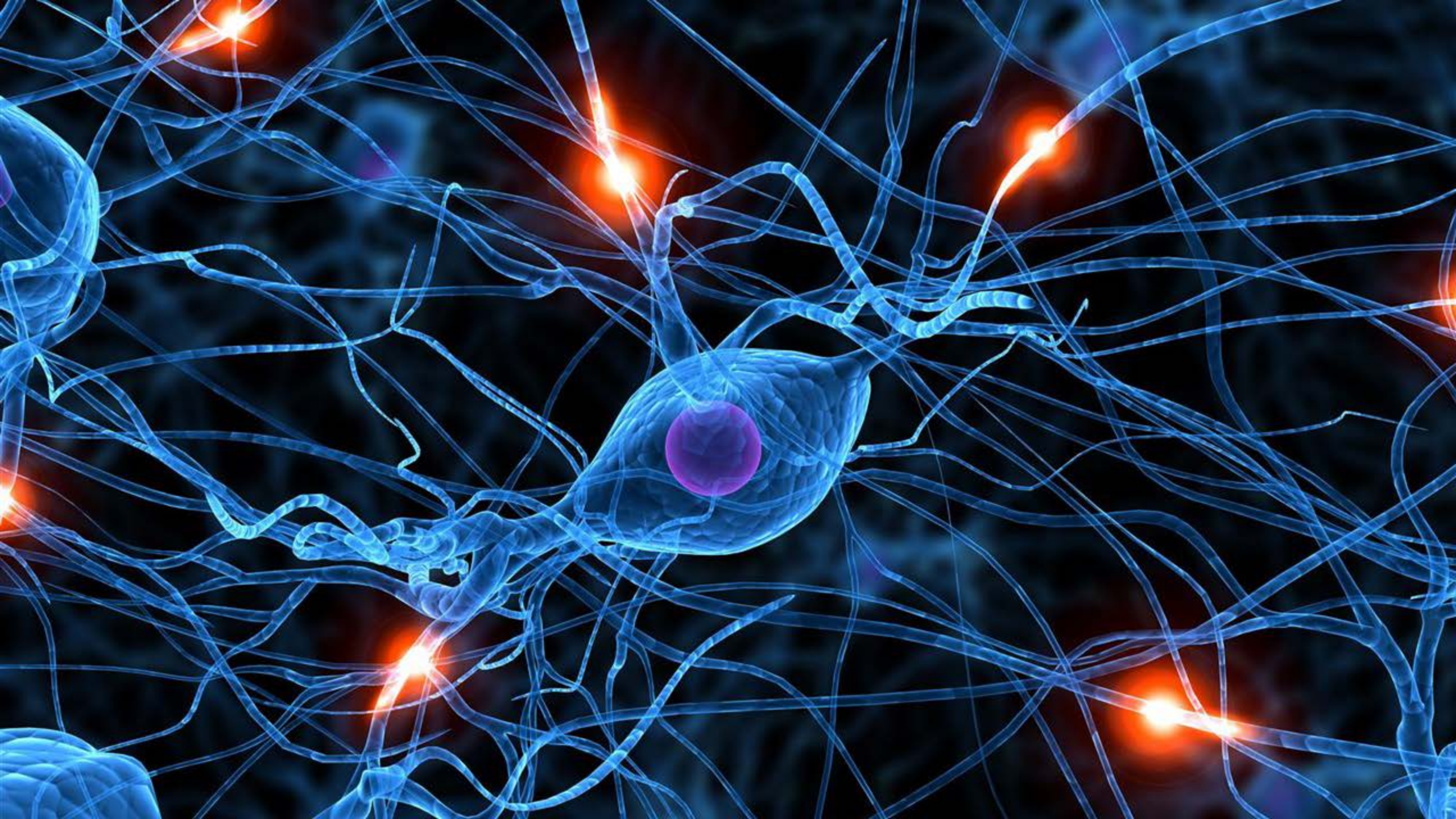
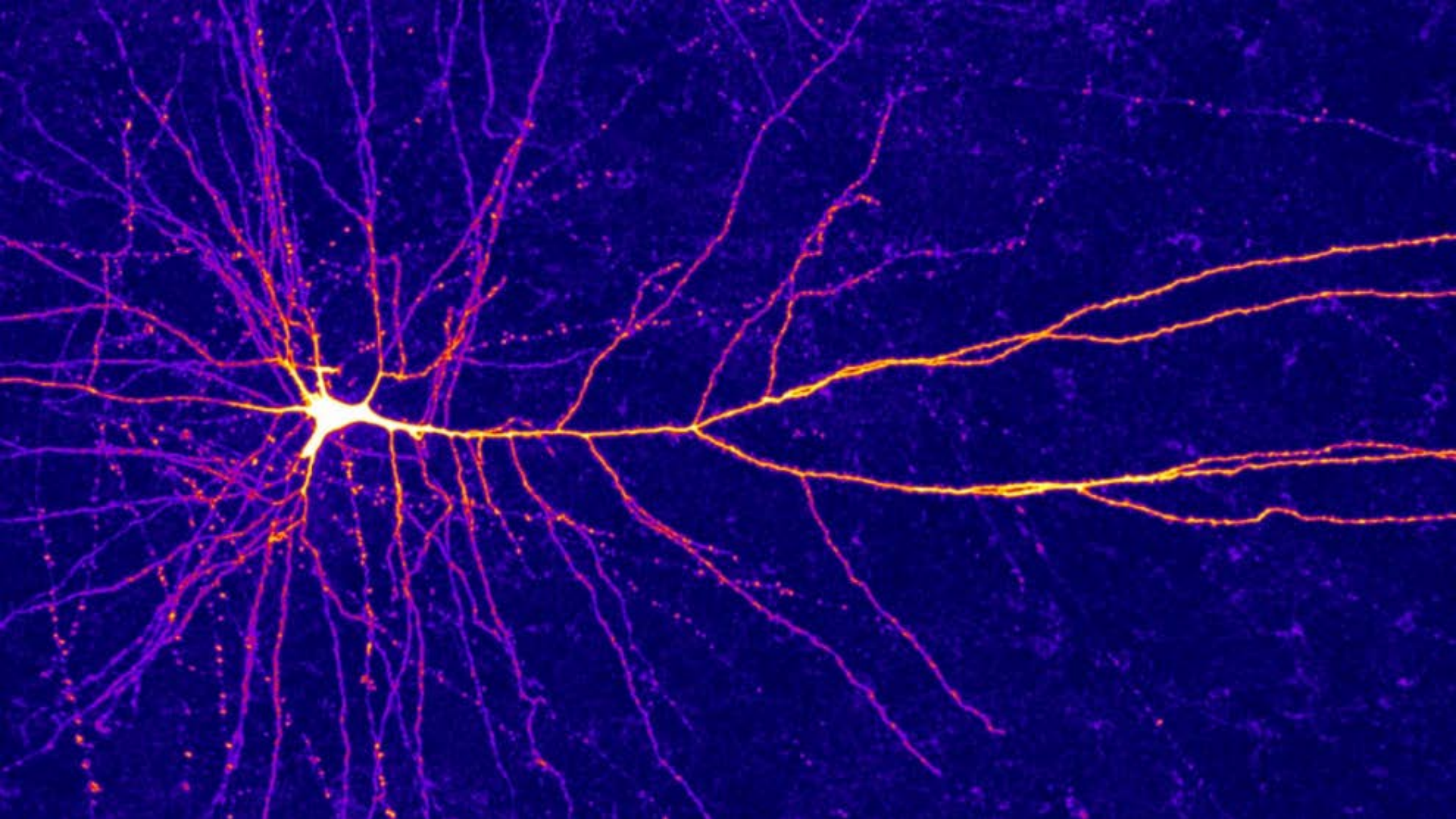
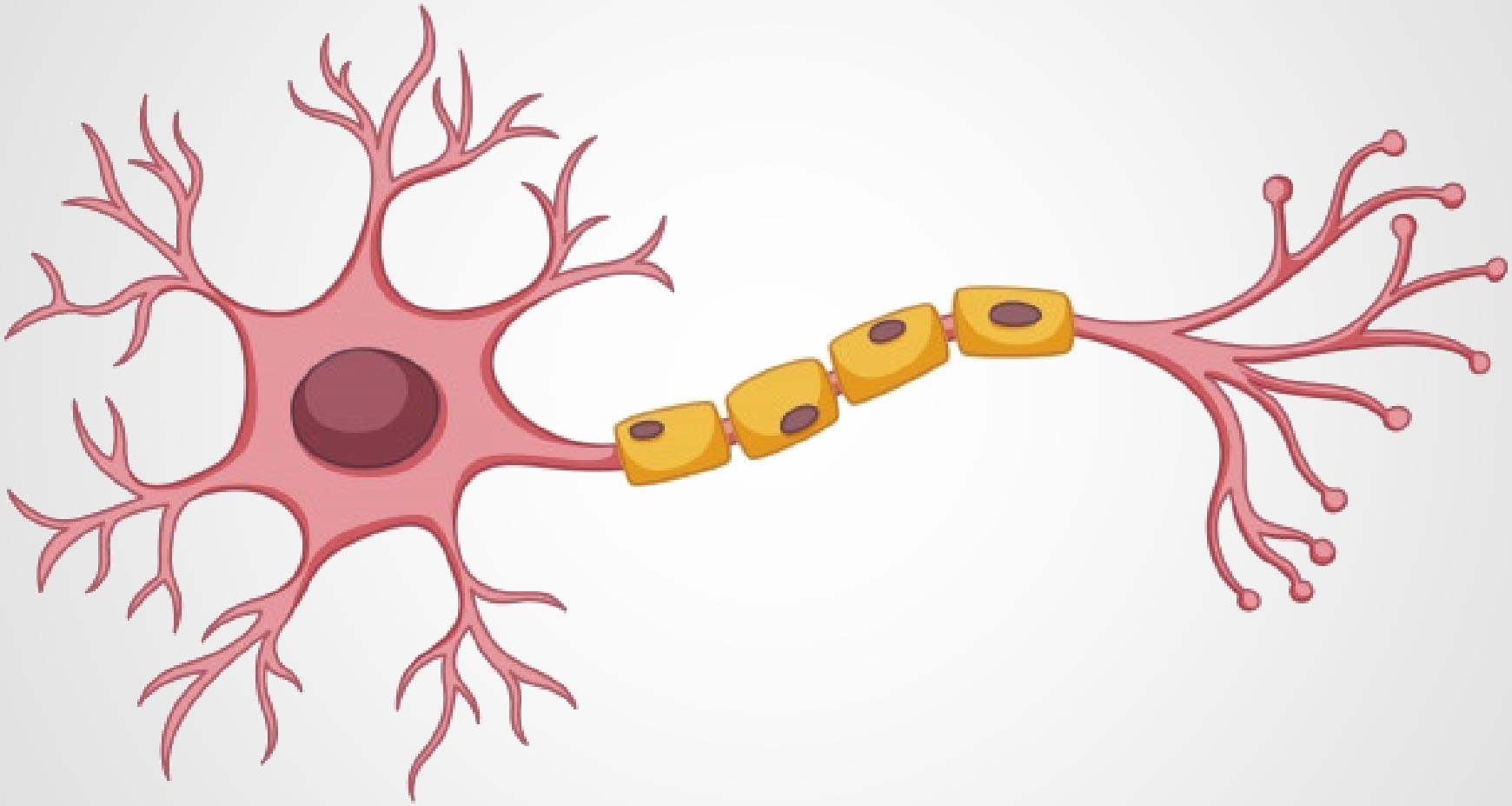
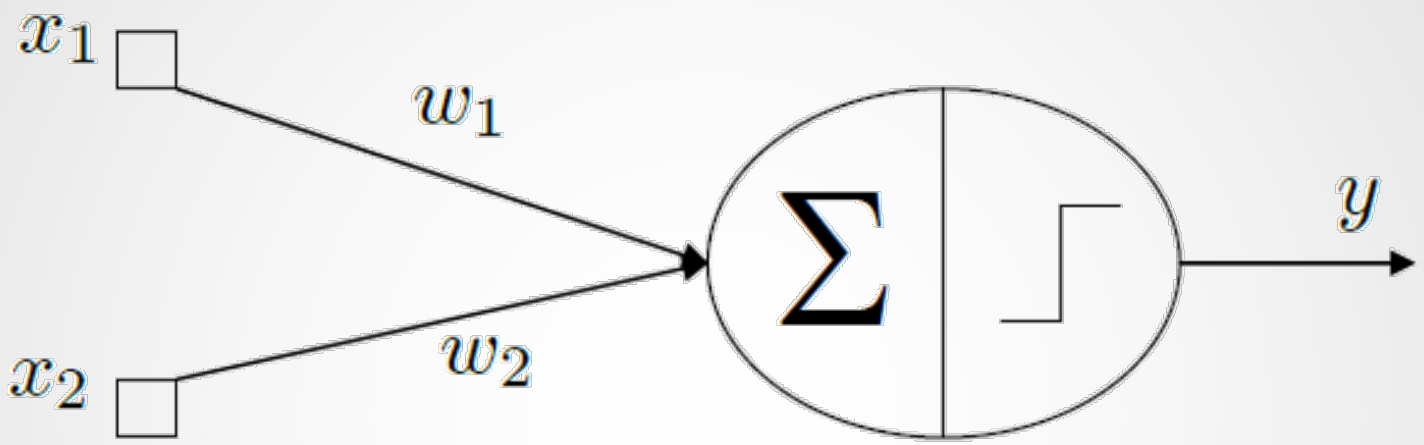

Machine Learning

III. El Perceptrón







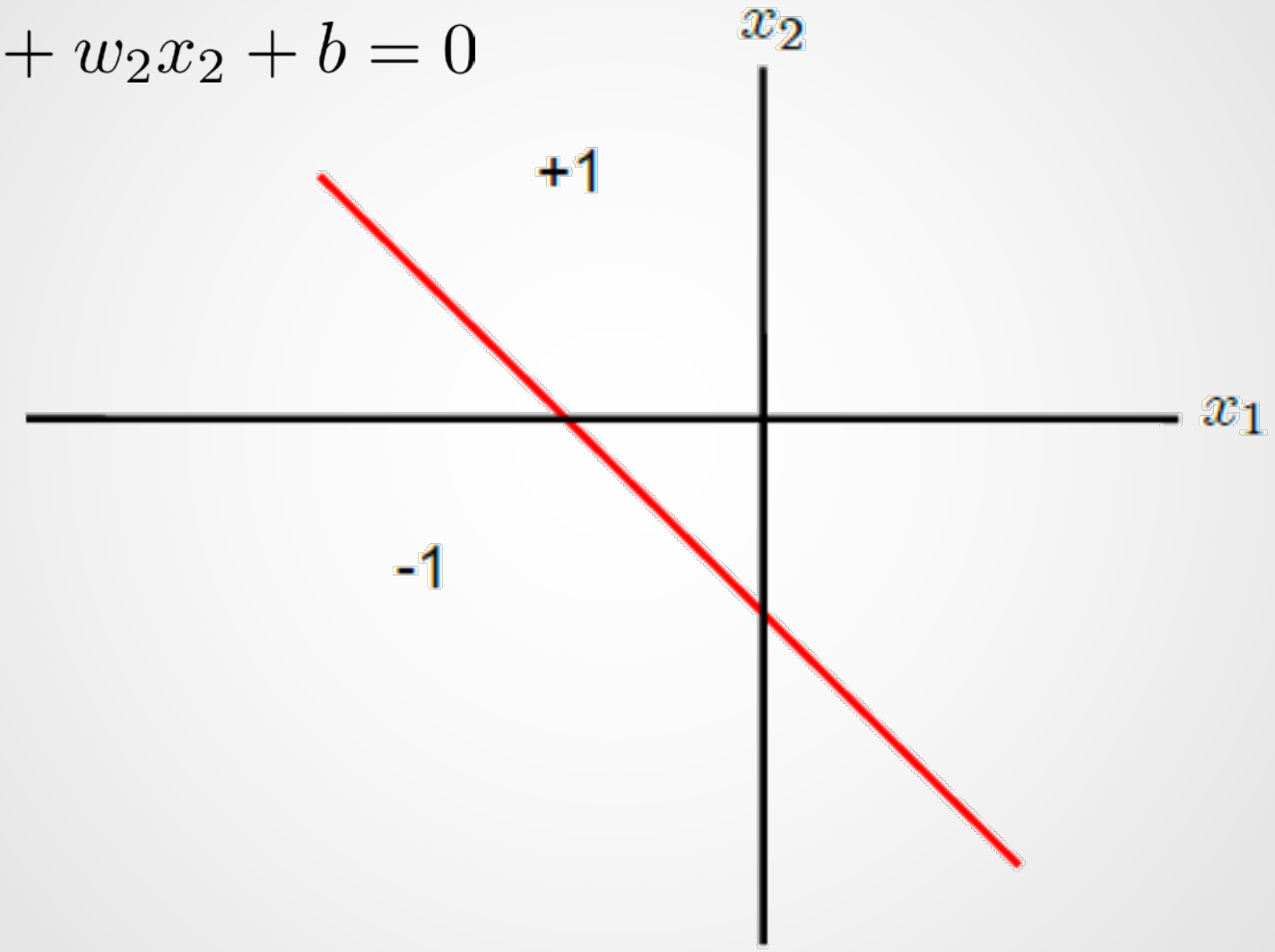


$$y = \phi\left(\sum_{i=1}^{D} w_i x_i + b\right)$$

$$\phi(x) = +1, \quad z \geq 0$$

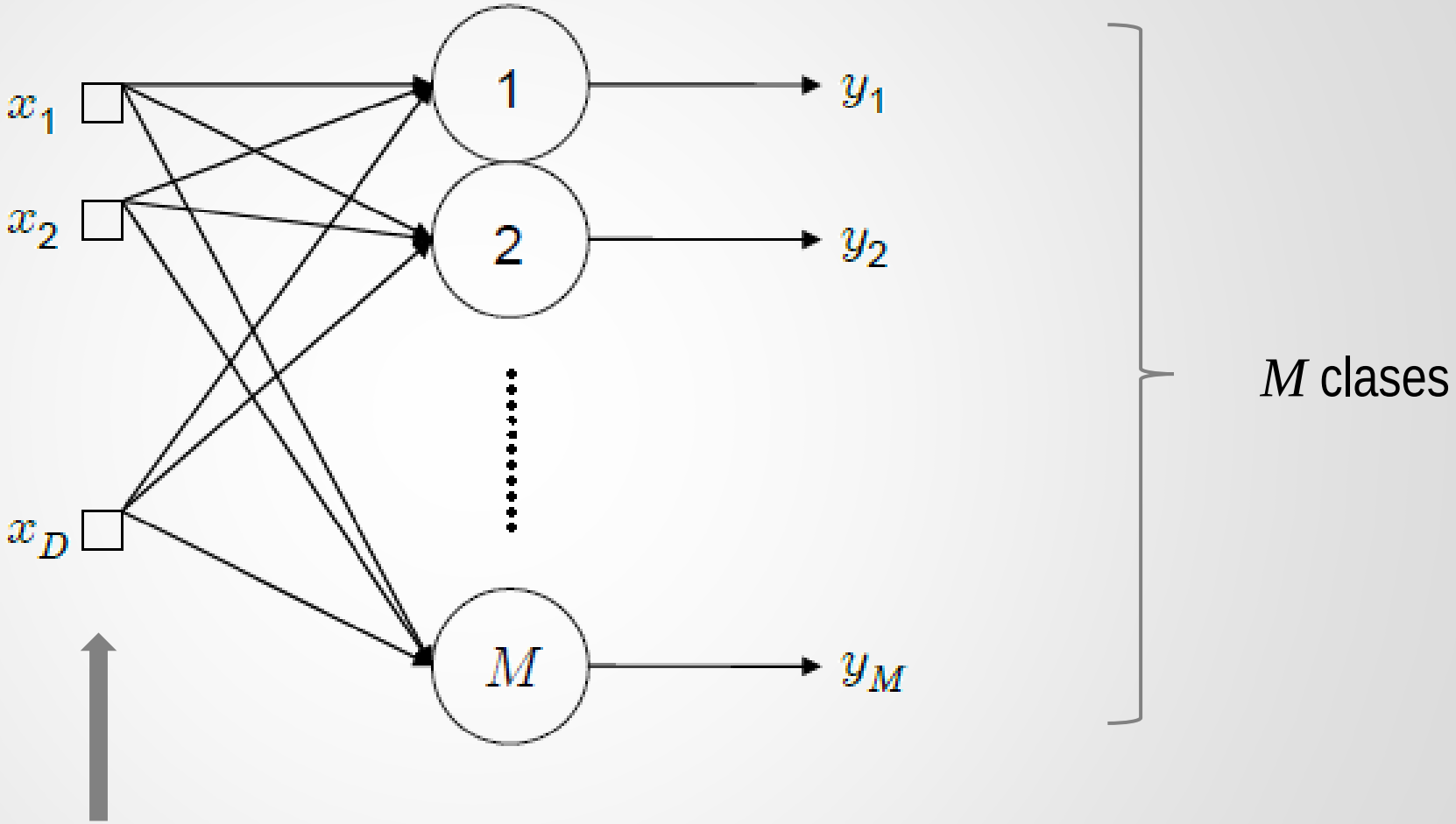
$$\phi(x) = -1, \quad z < 0$$

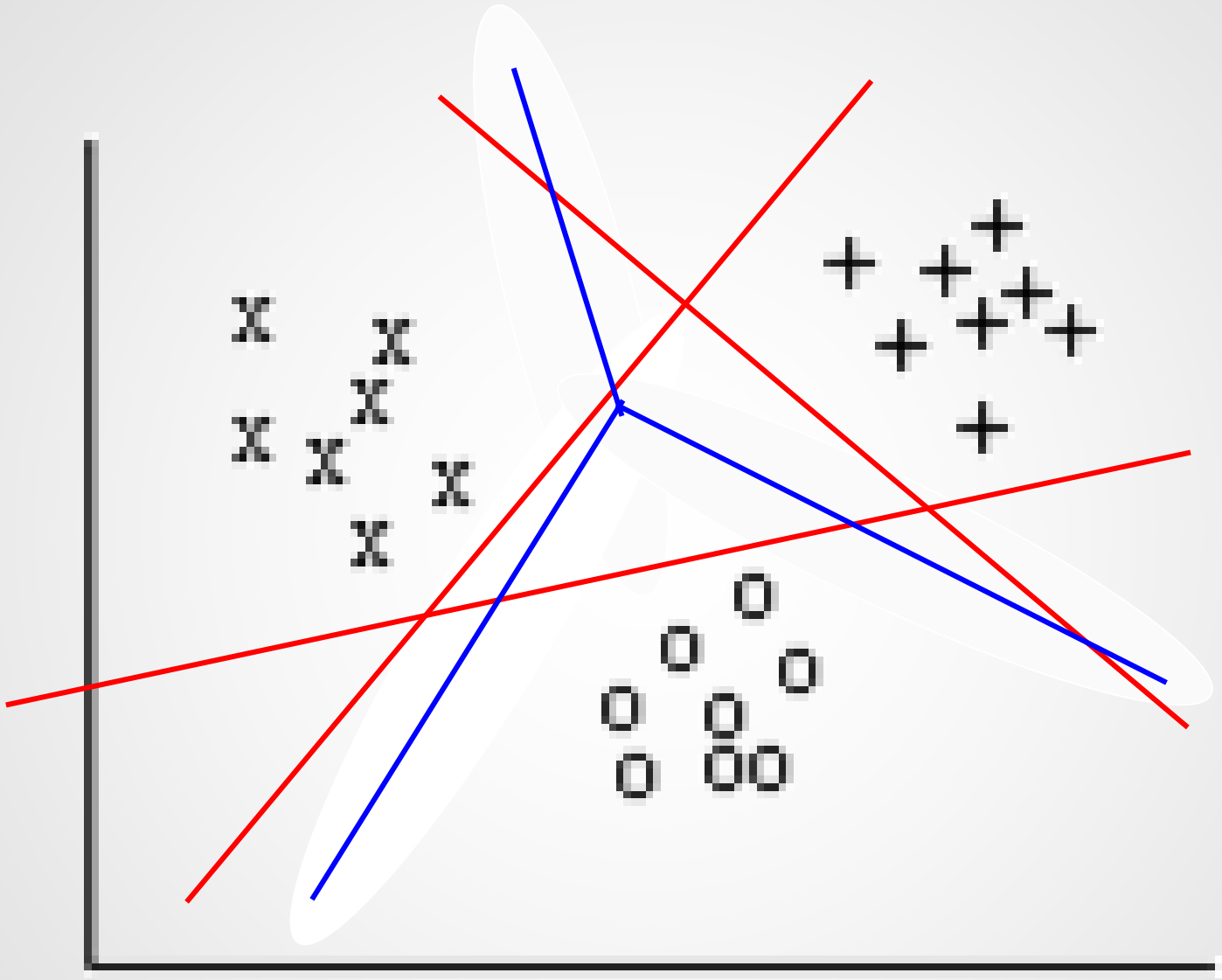
$$w_1 x_1 + w_2 x_2 + b = 0$$



Perceptrón

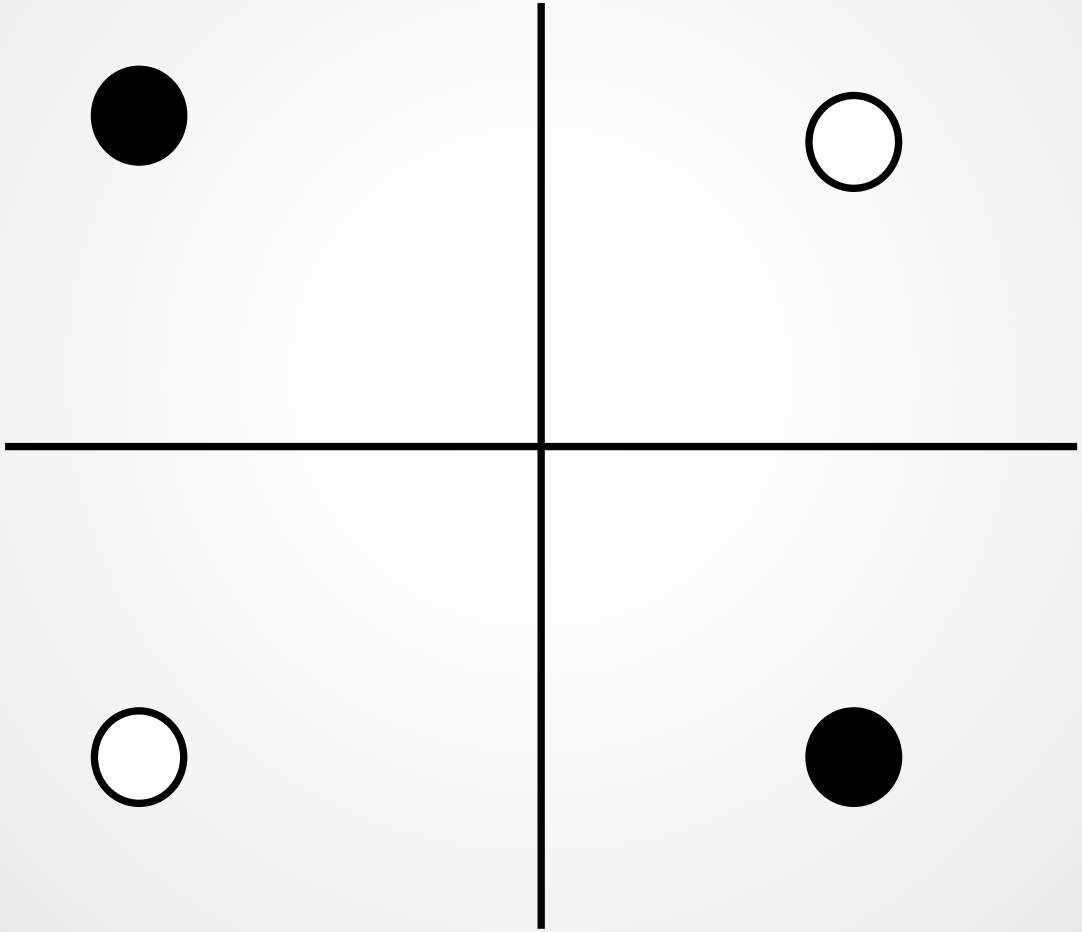
Rosenblatt 1950's





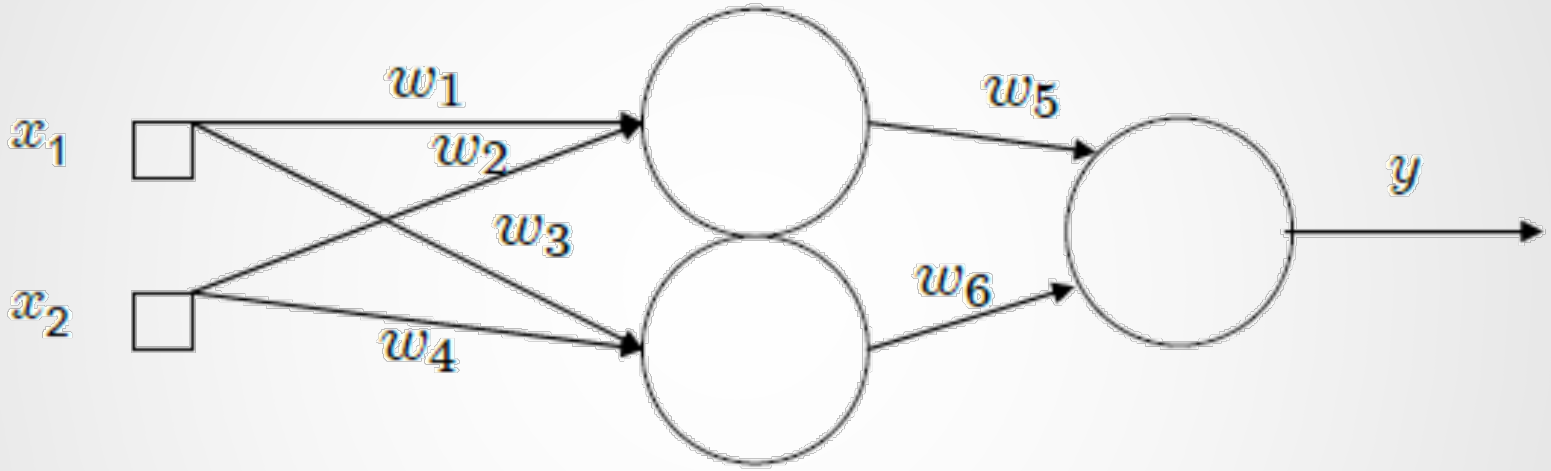
El problema XOR

Problema clásico no separable linealmente



Perceptrón multicapa (MLP)

Varias capas de unidades procesadoras

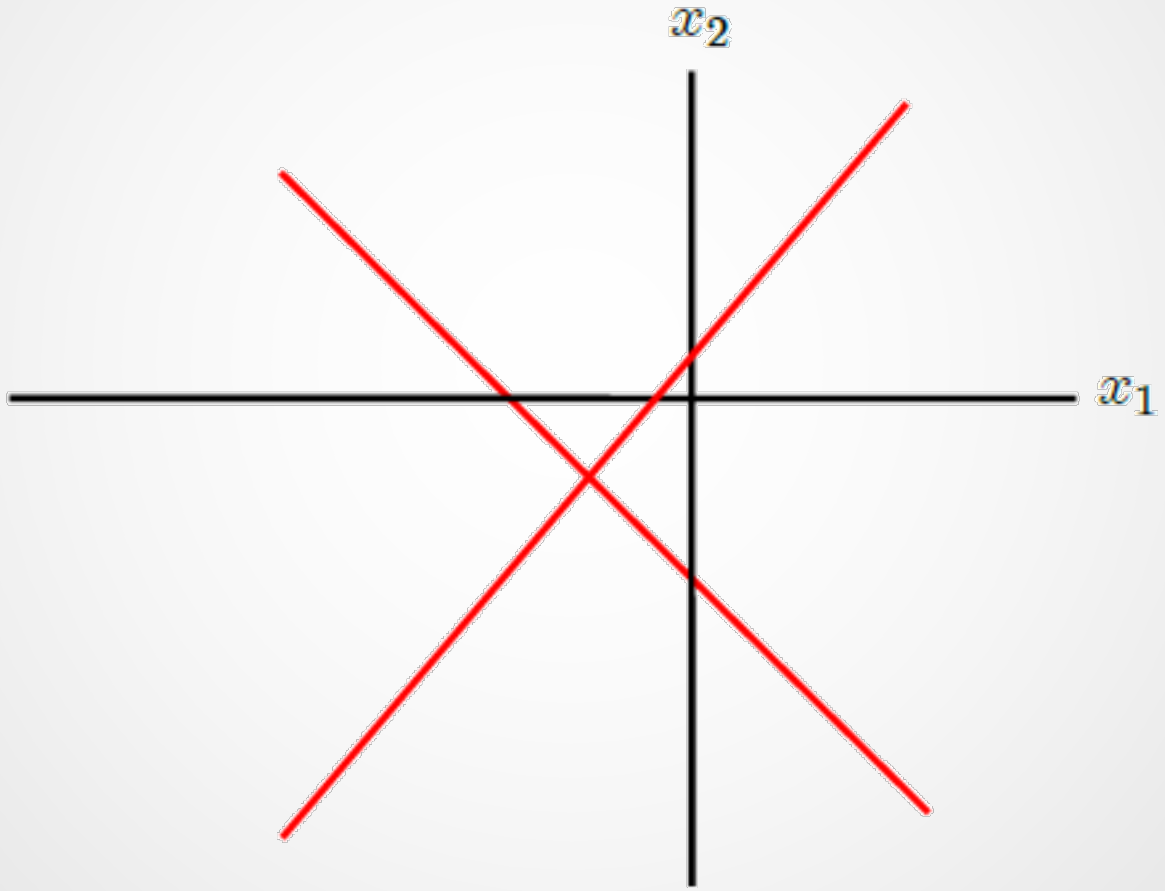


$$y = \phi(w_5[\phi(w_1 x_1 + w_2 x_2 + b_1)] + w_6[\phi(w_3 x_1 + w_4 x_2)])$$

Si la función de salida se pone lineal…

Perceptrón multicapa (MLP)

Varias capas de unidades procesadoras



Perceptrón multicapa (MLP)

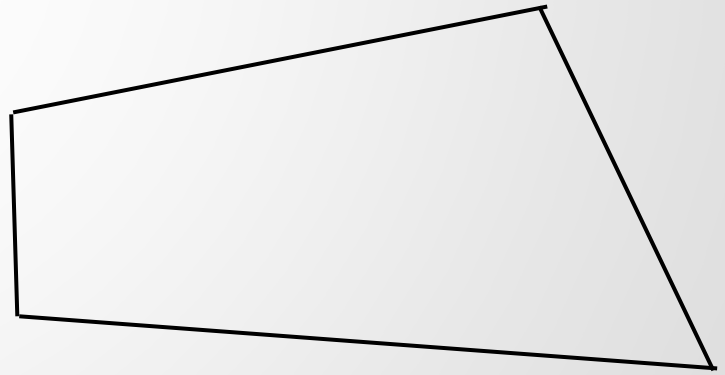
Varias capas de unidades procesadoras

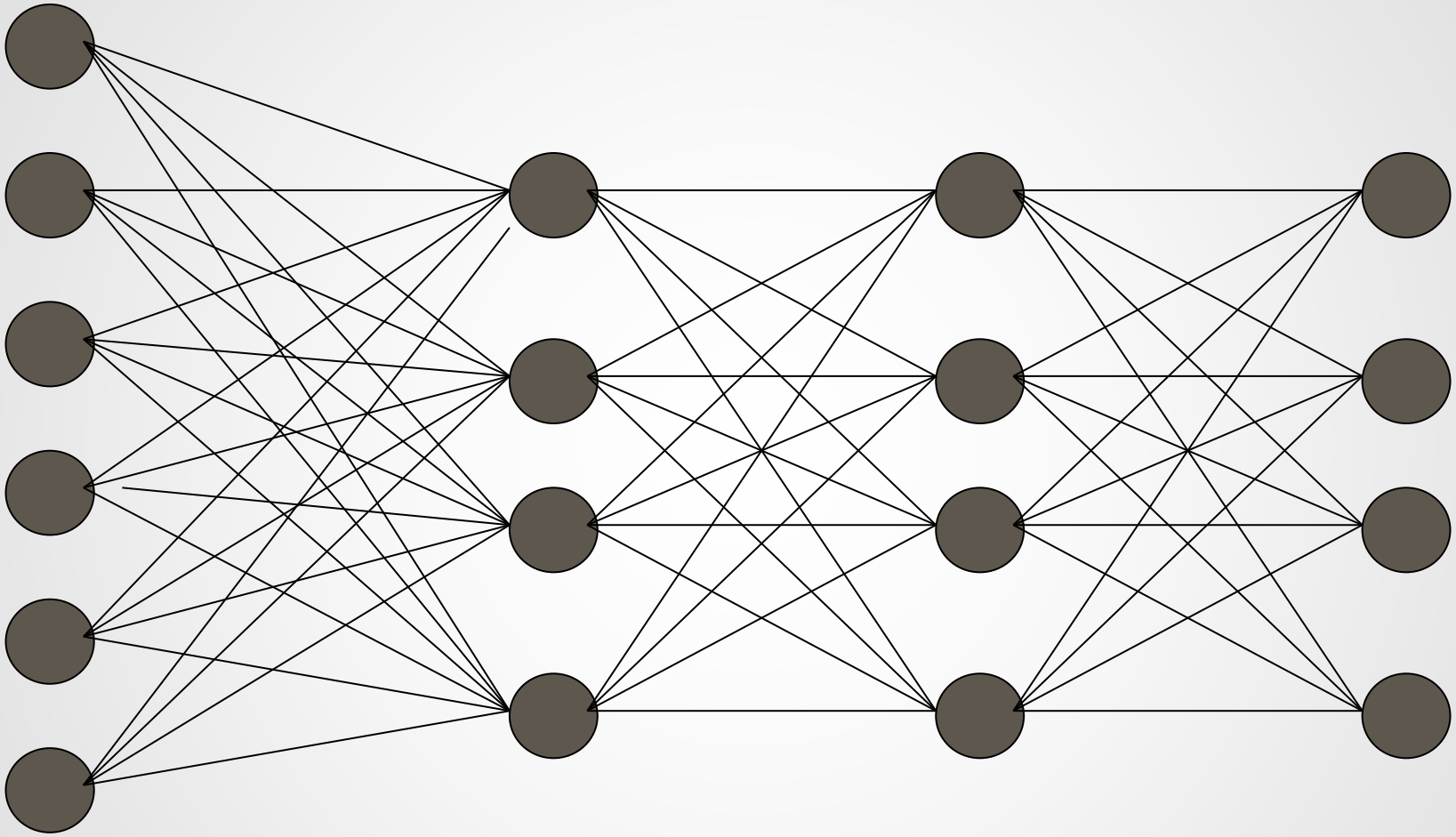
Se puede demostrar que:

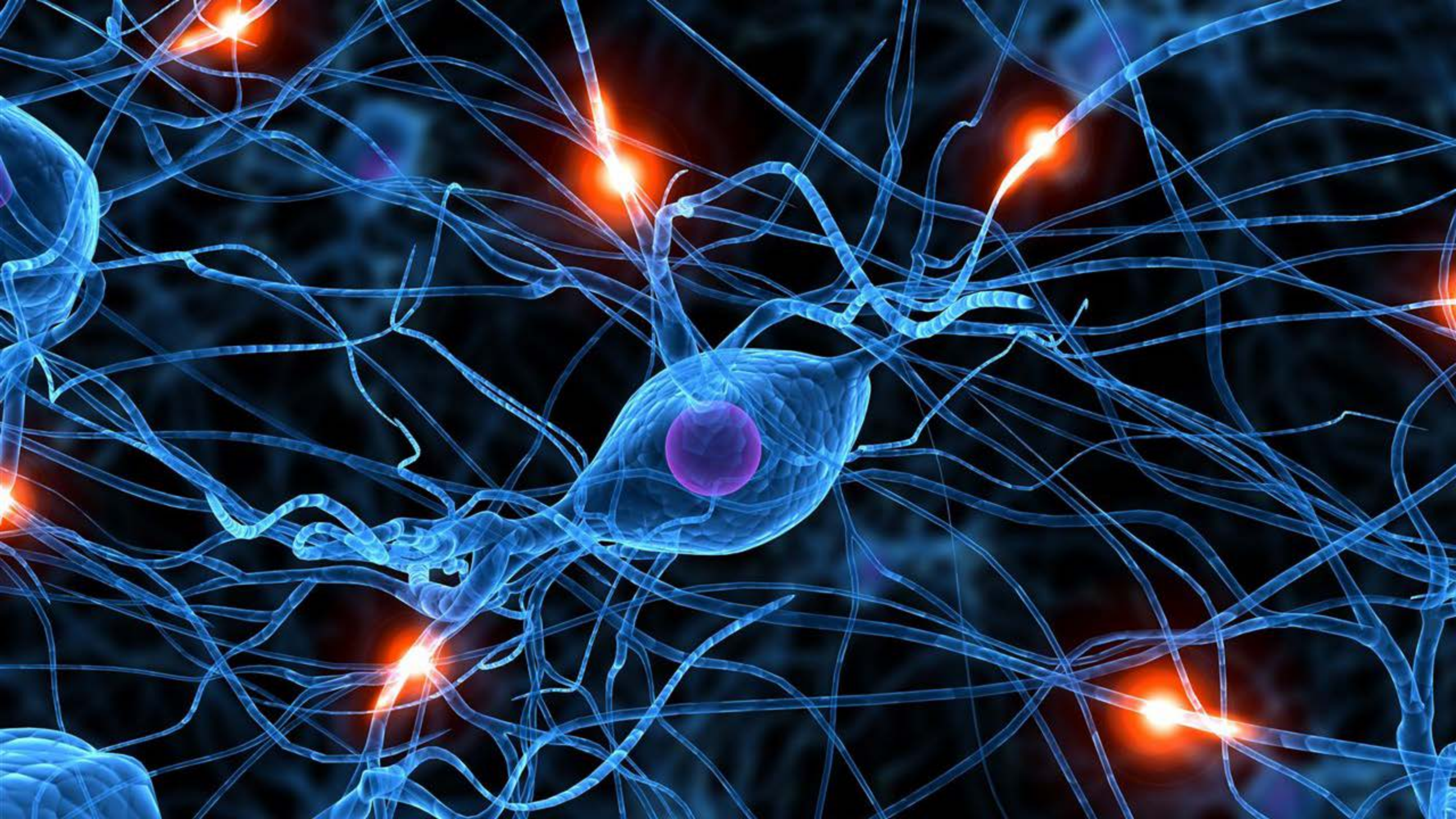
Con 1 capa se divide el espacio en 2 regiones separadas por un hiperplano

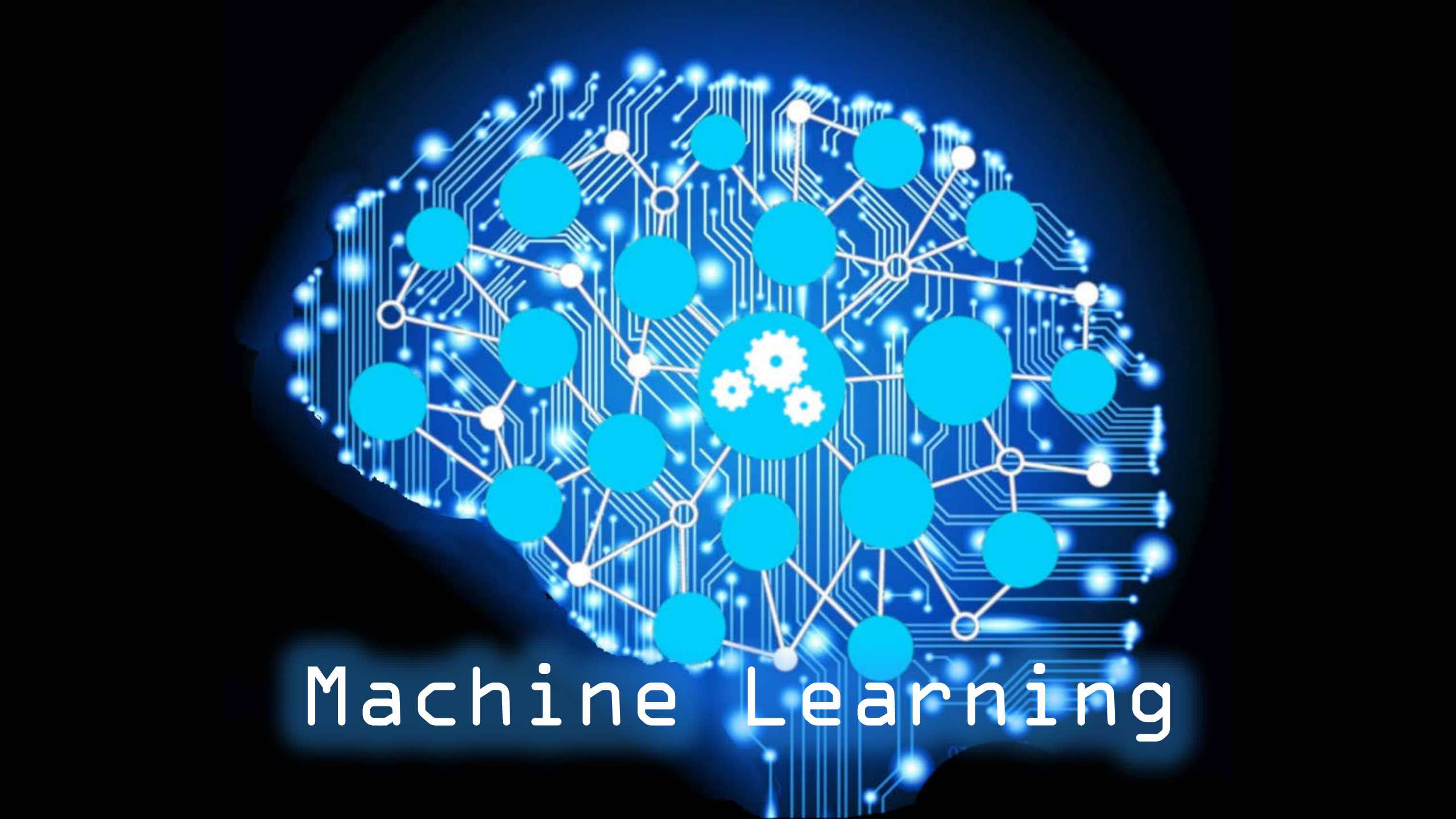
Con 2 capas se puede dividir el espacio en $2D$ regiones (D es la dimensión de la entrada)

Con 3 capas se pueden formar burbujas aisladas en el espacio








Machine Learning