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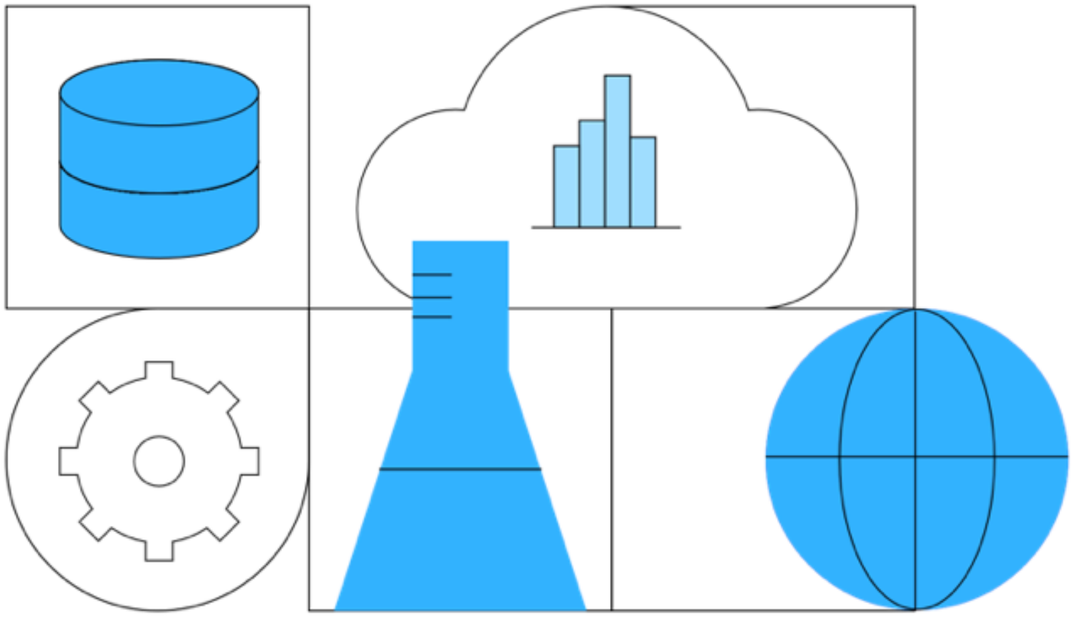
IBM SkillsBuild y SkillUp Online presentan:

Programa de inteligencia artificial



IA Generativa

SESIÓN 3 →

Fundamentos de la IA Generativa

HUGO RAMALLO

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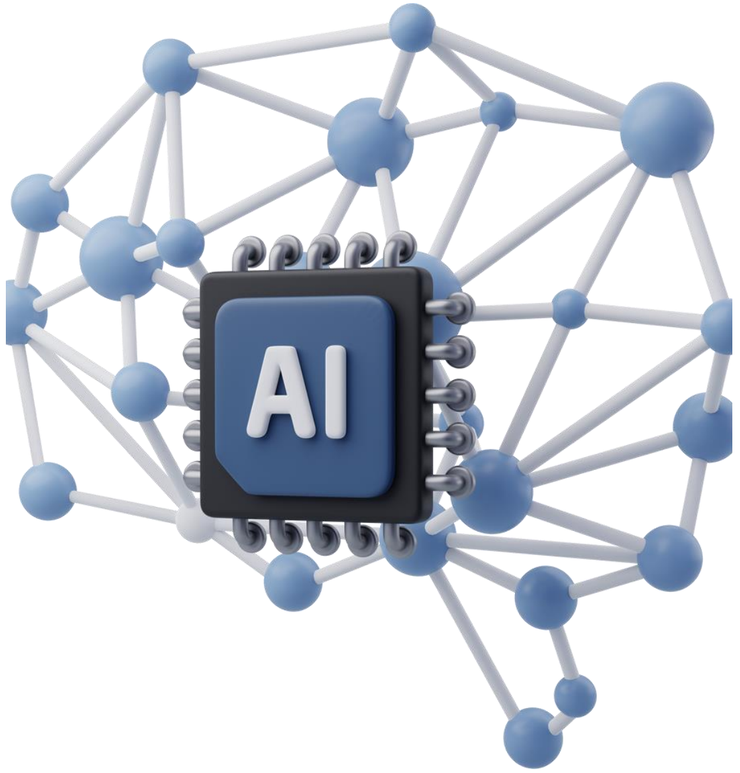
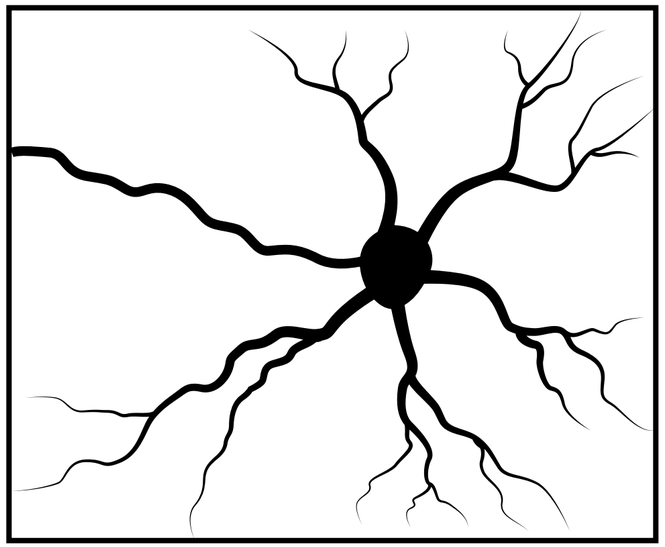
INTRODUCCIÓN A LAS REDES NEURONALES

- Qué es una neurona artificial
- Qué es una red neuronal
- Conceptos clave
- Cómo se entrena una red neuronal
- Tipos de redes neuronales: GAN´S

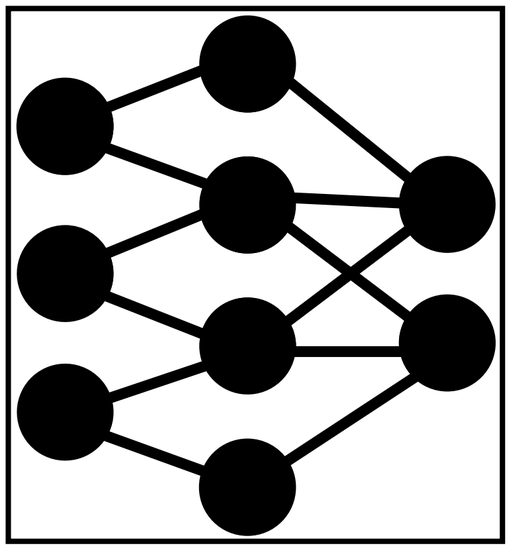


INTRODUCCIÓN A LAS REDES NEURONALES

NEURONA ARTIFICIAL
PERCEPTRON



RED NEURONAL



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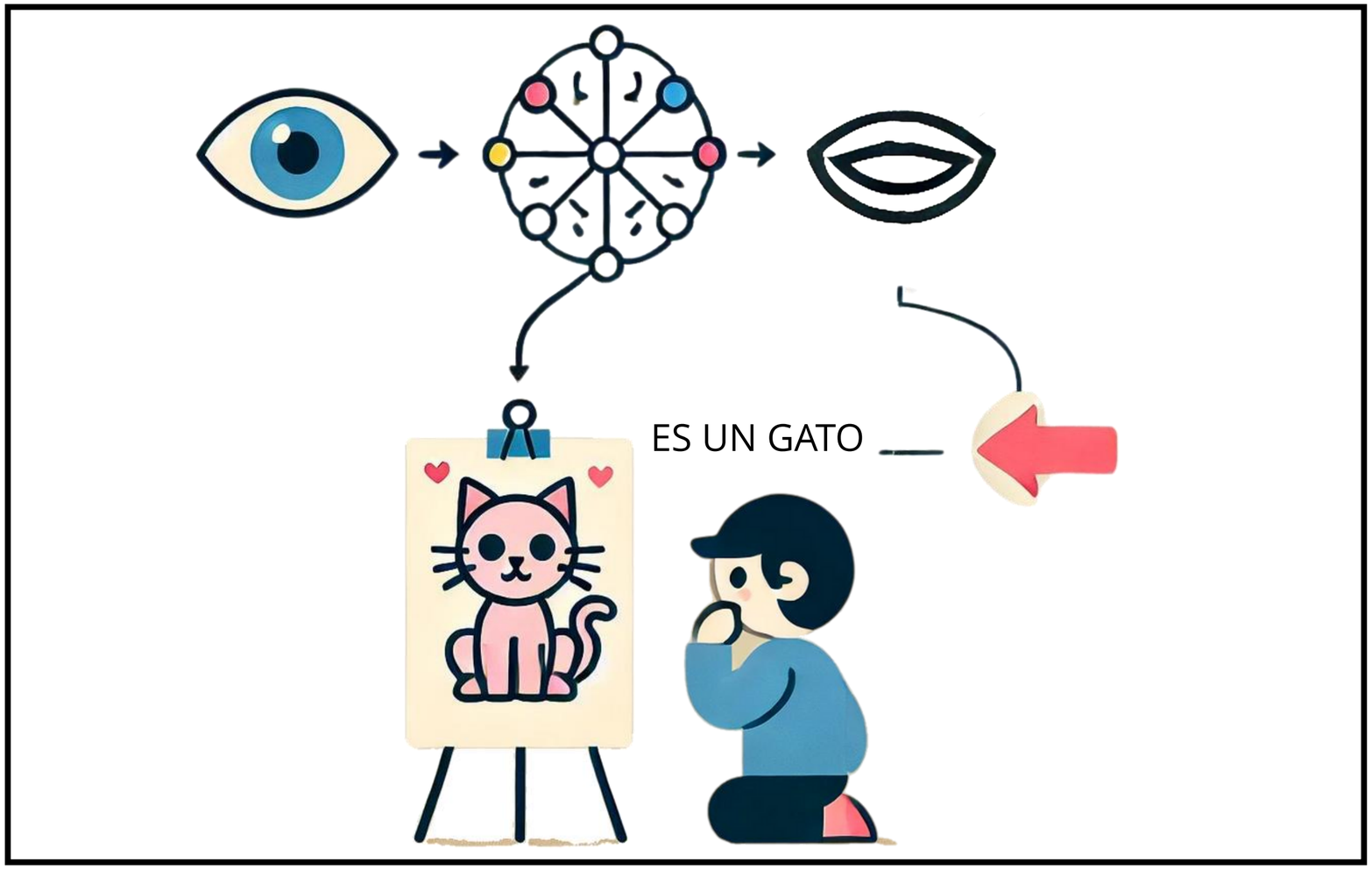
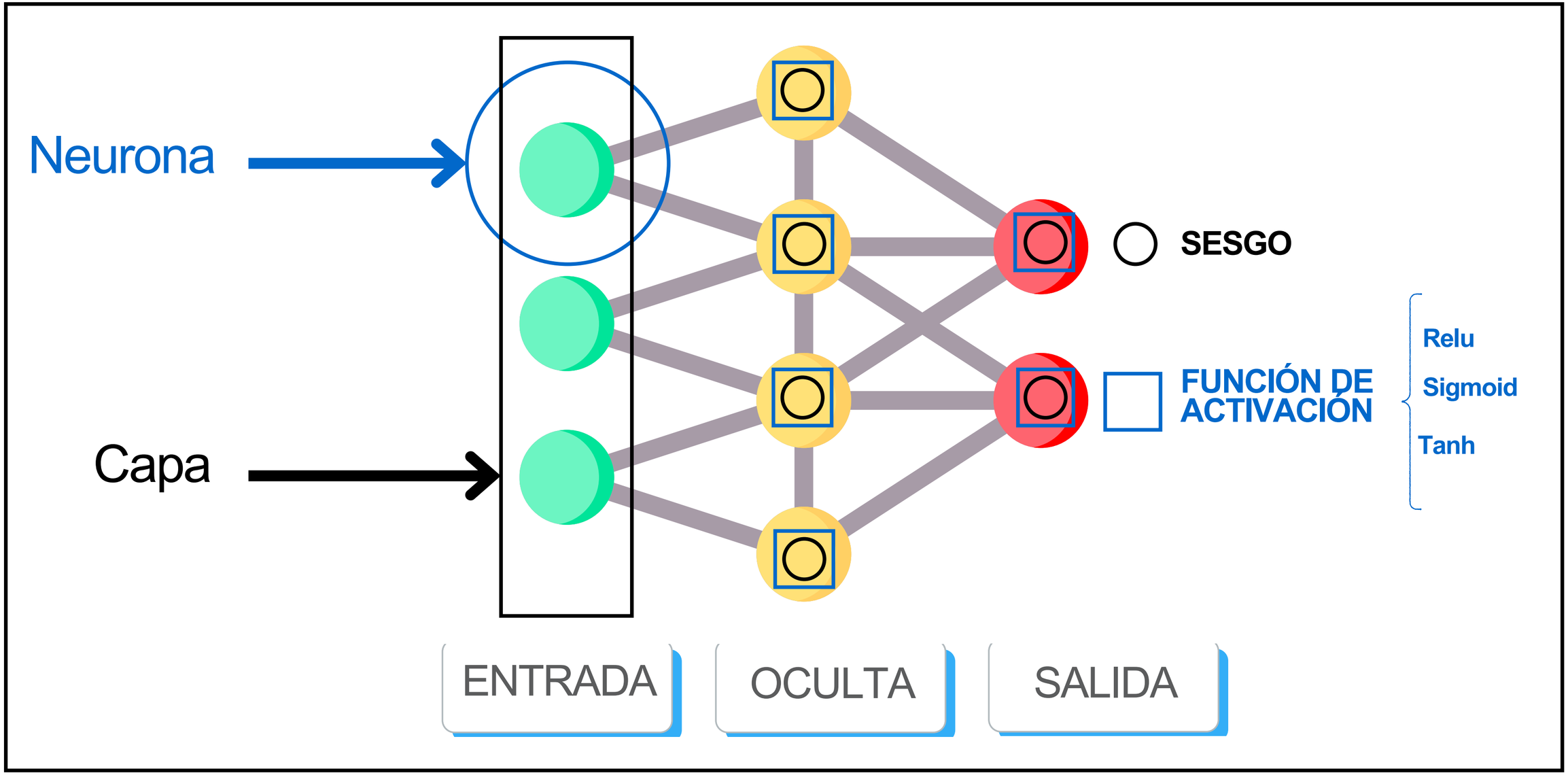
CÓMO FUNCIONAN LAS NEURONAS



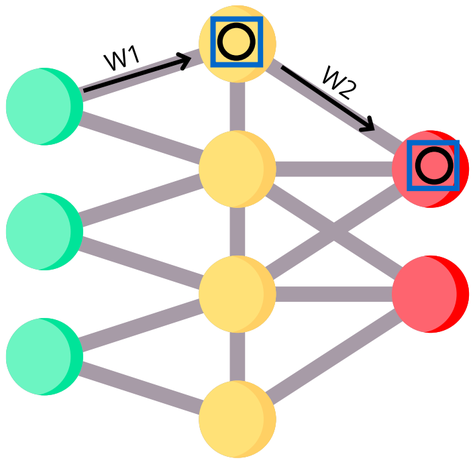

Neurona
Capa
SESGO
FUNCIÓN DE ACTIVACIÓN
Relu
Sigmoid
Tanh
ENTRADA
OCULTA
SALIDA

CONCEPTOS CLAVE

- PESOS
- SESGOS
- FUNCIONES DE ACTIVACIÓN

Proceso de una Neurona Artificial

1. Recibir el dato de entrada: 3
2. Multiplicar por el peso: 3 * 2 = 6
3. Sumar el sesgo: 6 + 1 = 7
4. Aplicar la función de activación:
   - Con ReLU: ReLU(7) = 7
   - Con Sigmoid: Sigmoid(7) ≈ 0.9991
5. Generar la salida:
   - Con ReLU: 7
   - Con Sigmoid: 0.9991



PESOS

tiempo

SI = 1

NO= 0

dinero

SI = 1

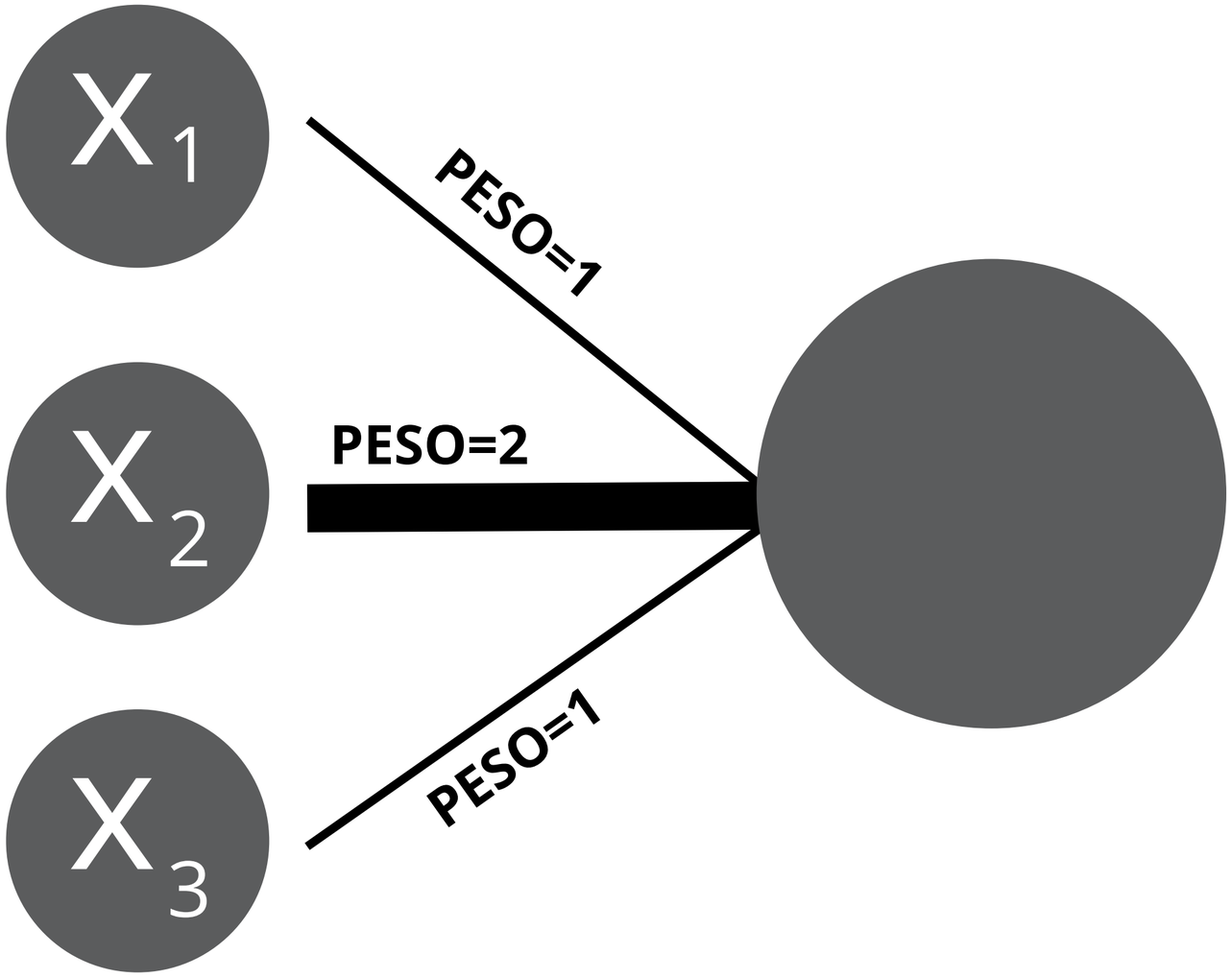
NO= 0

invitados

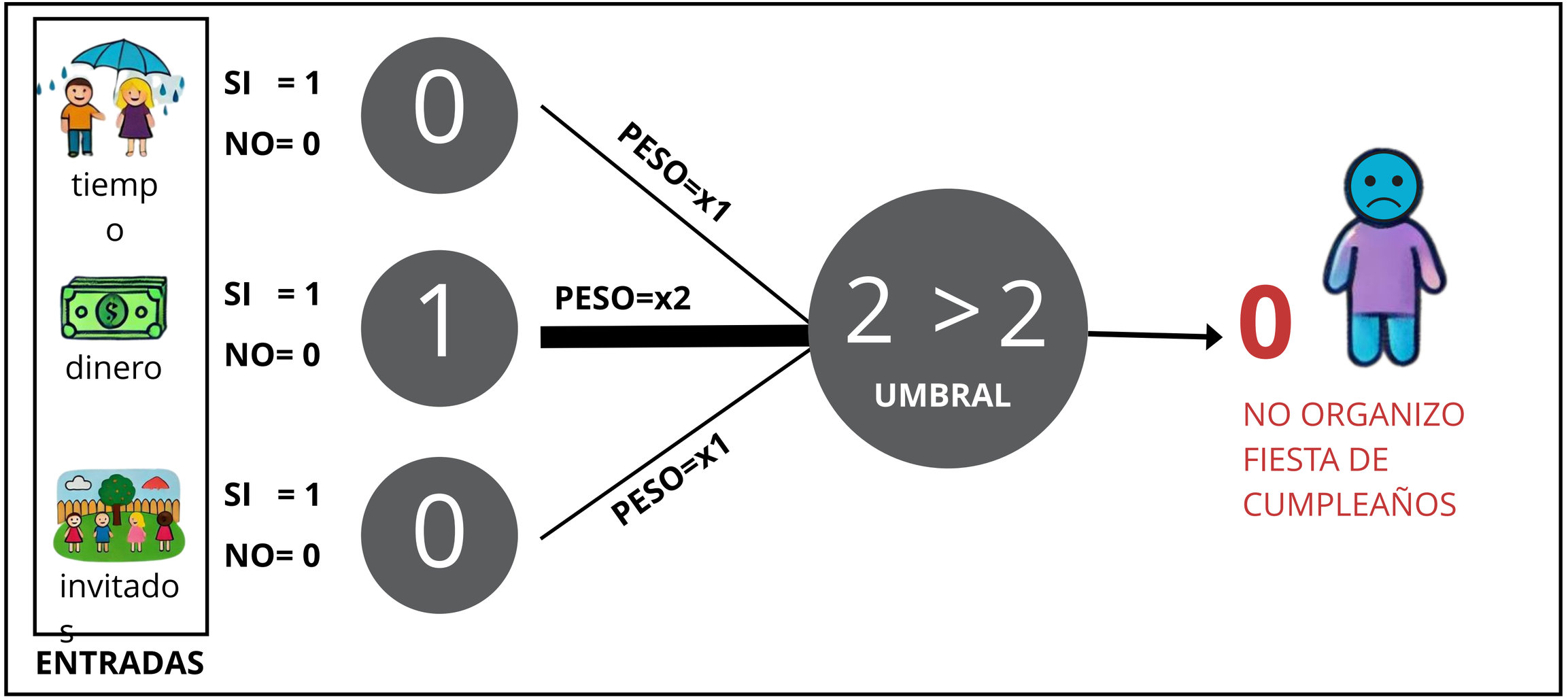
SI = 1

NO= 0

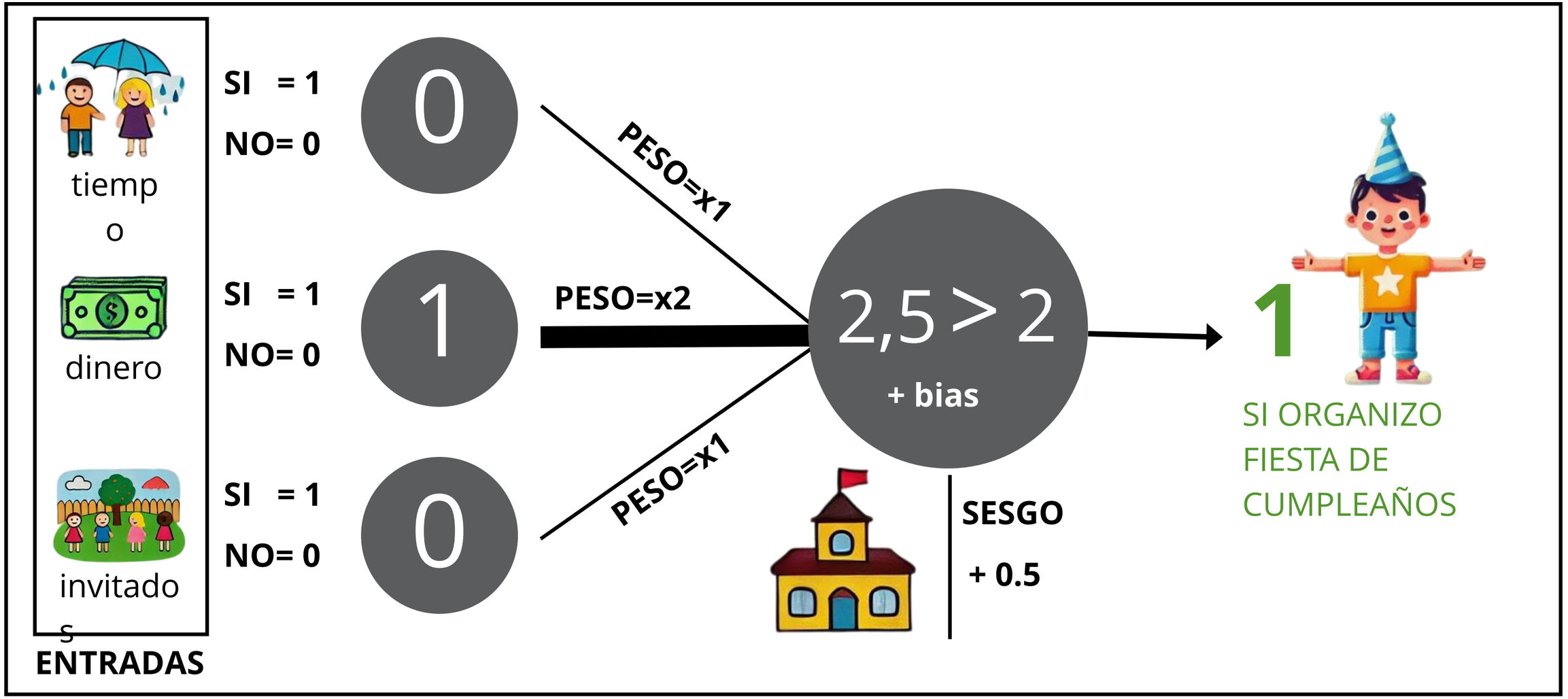
ENTRADAS



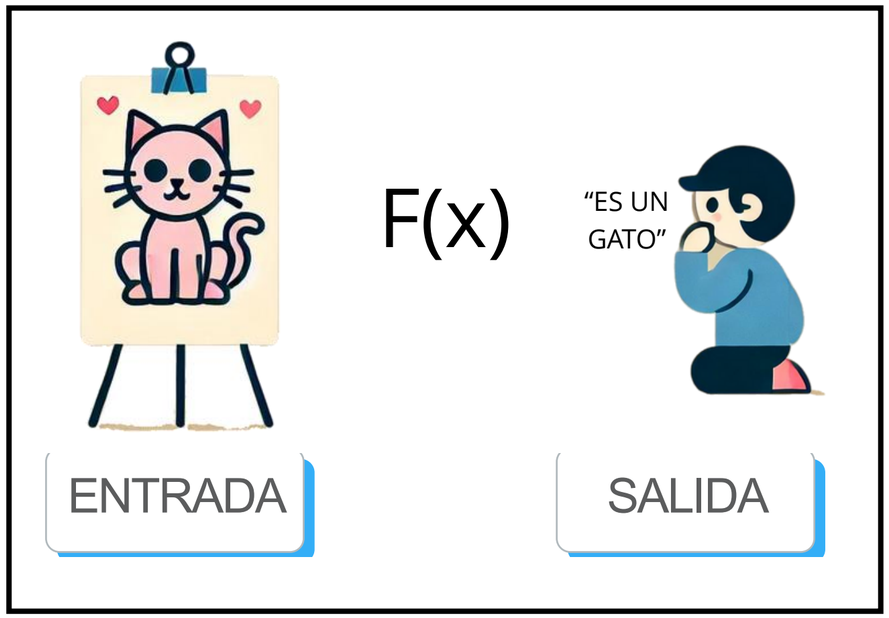
PESOS (W)


tiempo
dinero
invitados
ENTRADAS
SI = 1
NO= 0
SI = 1
NO= 0
SI = 1
NO= 0
0
1
0
PESO=x1
PESO=x2
PESO=x1
2 > 2
UMBRAL
0
NO ORGANIZO FIESTA DE CUMPLEAÑOS

SESGOS (B)


tiempo
dinero
invitados
ENTRADAS
SI = 1
NO= 0
SI = 1
NO= 0
SI = 1
NO= 0
0
1
0
PESO=x1
PESO=x2
PESO=x1
2,5 > 2
+ bias
SESGO
+ 0.5
1
SI ORGANIZO FIESTA DE CUMPLEAÑOS

FUNCIONES DE ACTIVACIÓN F(x)

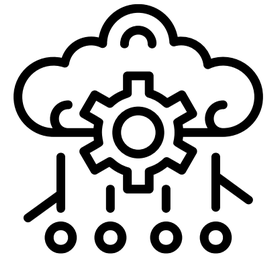


f(x)

$$f(W_1 X_1 + W_2 X_2 + W_3 X_3 + b)$$

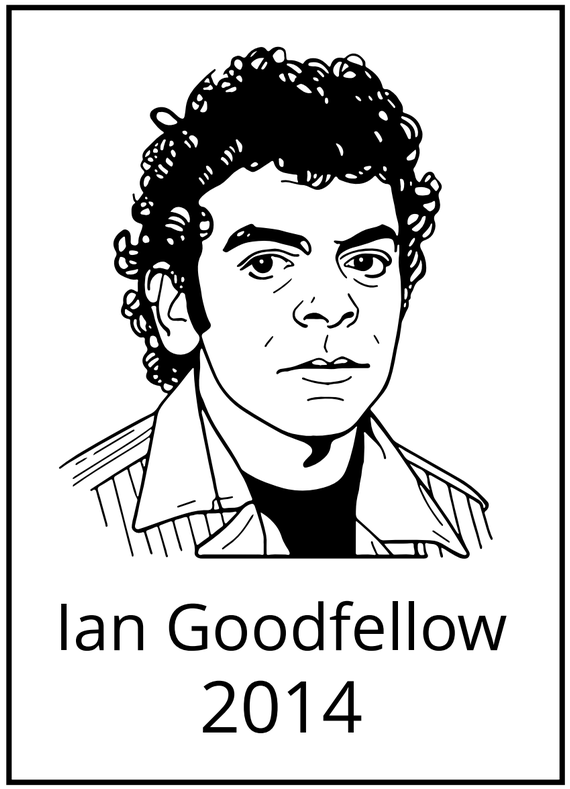
- Función RELU
- Función Sigmoide
- Función Tanh

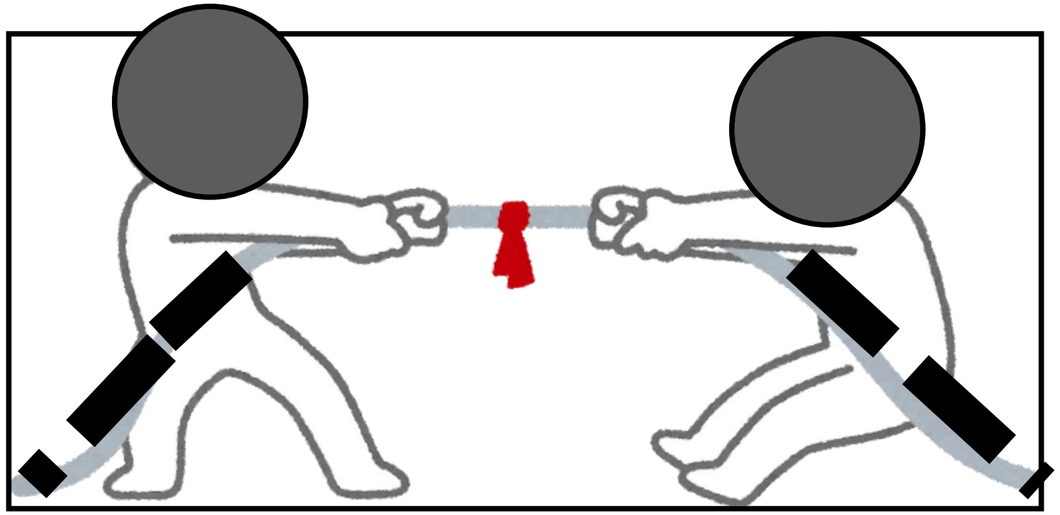
TIPOS DE REDES NEURONALES



- Perceptrón (***Perceptron***)
- Redes neuronales de capa densa (***Feedforward Neural Networks***)
- Redes neuronales convolucionales (***Convolutional Neural Networks, CNNs)***
- Redes neuronales recurrentes (***Recurrent Neural Networks, RNNs)***
- Redes neuronales de transformadores (***Transformers)***
- Redes neuronales adversarias (***Generative Adversarial Networks, GANs)***

Redes neuronales adversarias (GANs)





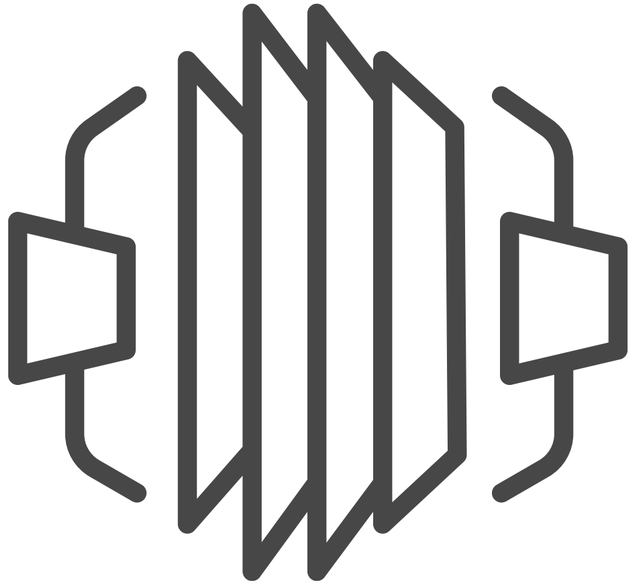
Ejemplo GANs

GENERADOR

DISCRIMINADOR

CÓMO FUNCIONAN LAS GANs

- Inicialización
- Entrenamiento del discriminador
- Entrenamiento del generador
- Ciclo de competencia



Implementación de un modelo generativo

PRÁCTICA 1: CODIFICADOR AUTOMÁTICO VARIABLE (VAE) O UNA RED GENERATIVA ADVERSARIA (GAN)

Comprender los modelos básicos

PRÁCTICA 2: EXPLORACIÓN DE MODELOS PREENTRENADOS (BERT/GPT) Y ADAPTACIÓN A TAREAS ESPECÍFICAS DE NLP

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MODELOS GRANDES DE LENGUAJE (BERT/GPT)

BERT

VS

ChatGPT

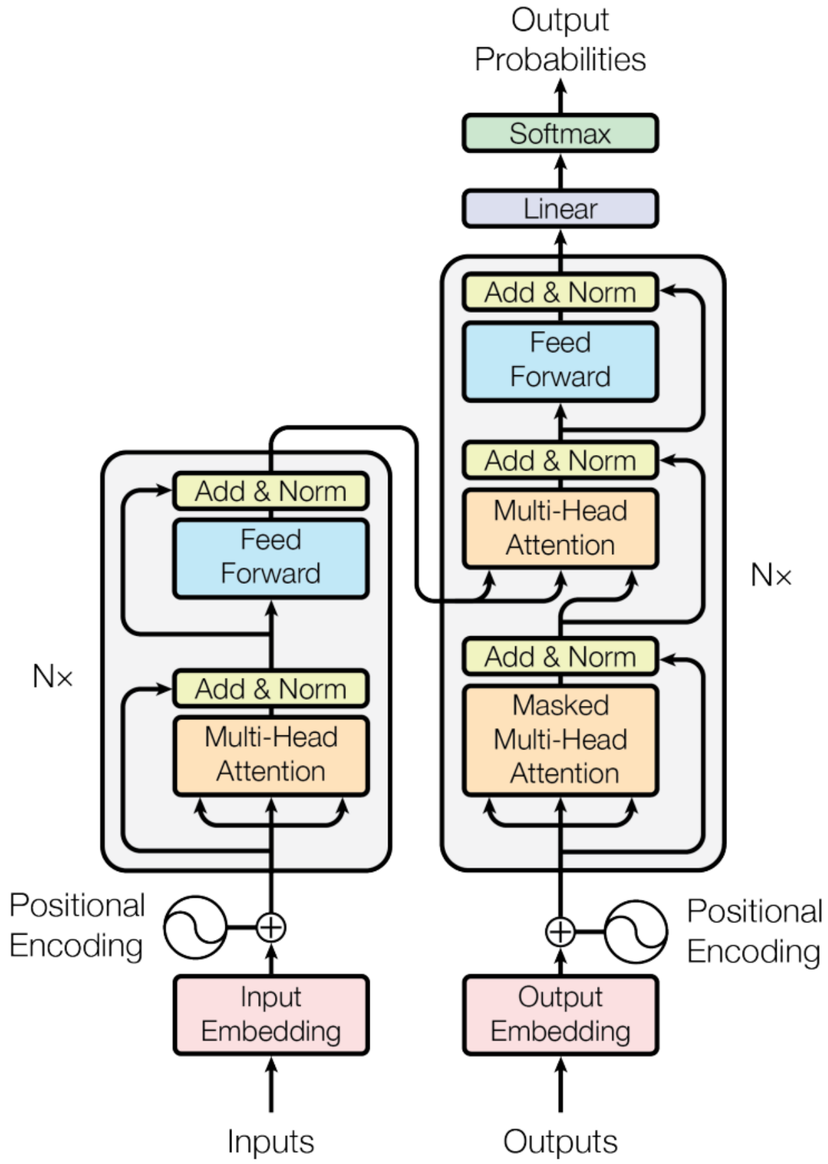
¿Qué es la tokenización?

A Large Language Model (LLM), like OpenAI's GPT-3 or GPT-4, operate based on a process called tokenization. Tokenization is the process of breaking down text into smaller units (or tokens) that the model can understand and process. Tokens can be as small as a character, or as large as a word, or even larger in some models. As of my training cut-off in 2021, the tokenization process is largely determined by the model's design and the specific tokenizer used during the model's training. In the case of GPT-3 and GPT-4, they use a Byte Pair Enc oding (BPE) tokenizer. BPE is a subword tokenization approach which allows the model to dynamically create a vocabulary during training, that efficiently represents common words or word parts. Free Julian Assange now. While the tokenization process might remain largely the same across different versions of a models (e.g., GPT-3 and GPT-4),

¿Qué son los transfomers?

BERT

Encoder



GPT

Decoder

imagen: https://heidloff.net

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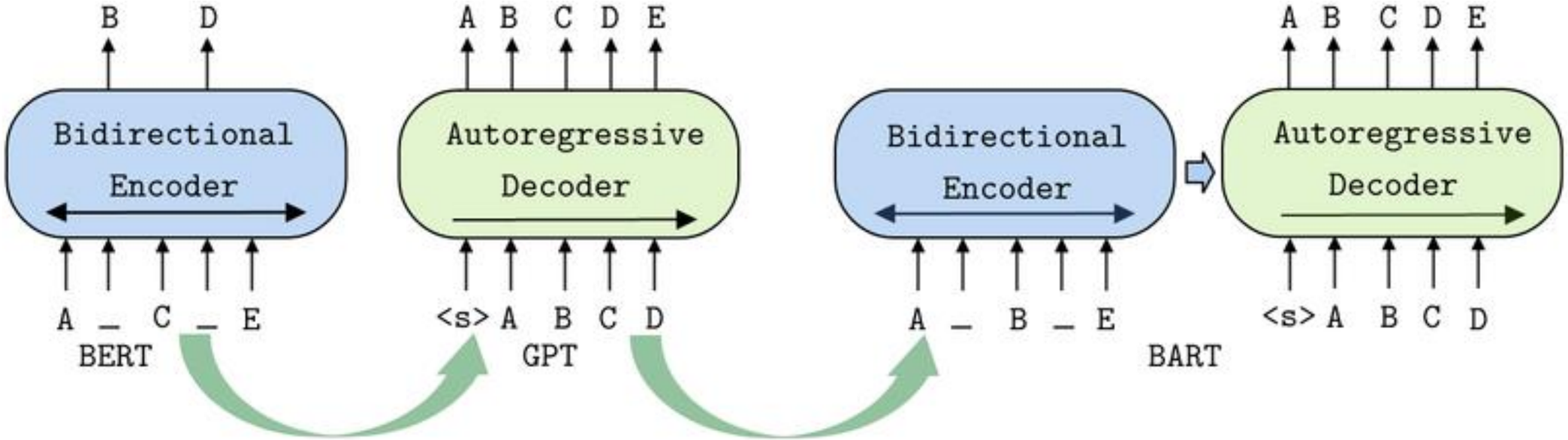
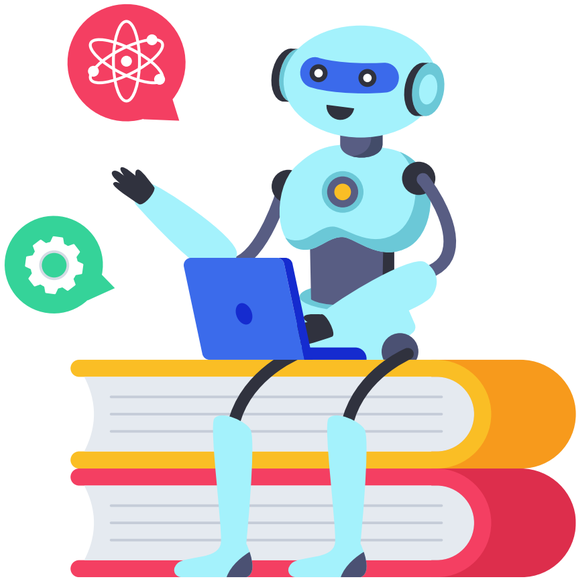
¿Qué diferencias hay entre GPT y BERT?



INFERENCIA EN MODELO PREENTRENADO

Modelo preentrenado



Adaptar a tarea específica

¿Qué es el fine tuning?

LIBRERíA

LLM
Preentrenado

Conocimiento
específico

Fine tuning
supervisado

LLM con fine
tuning

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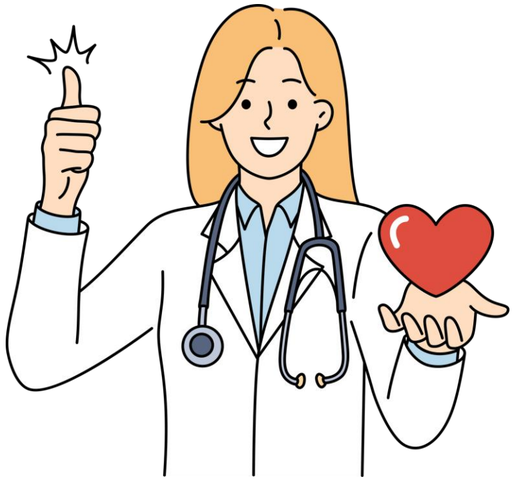
¿Qué pueden hacer los chatbots?



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PRÓXIMA SESIÓN 4 - IA INTEGRADA

IA Integrada

PRÁCTICA 1: CHATBOTS CON PYTHON, FLASK, HTML, CSS Y JAVASCRIPT

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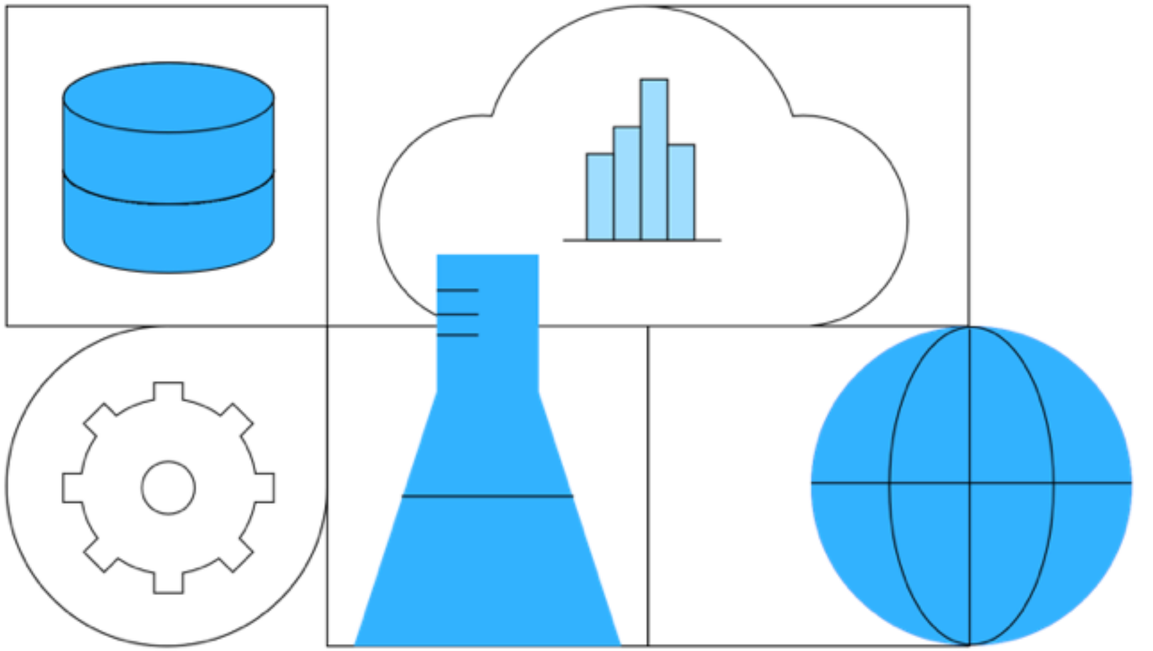
¡Gracias!



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ibmskillsbuild.eu@skillup.online