

Intro to

ai



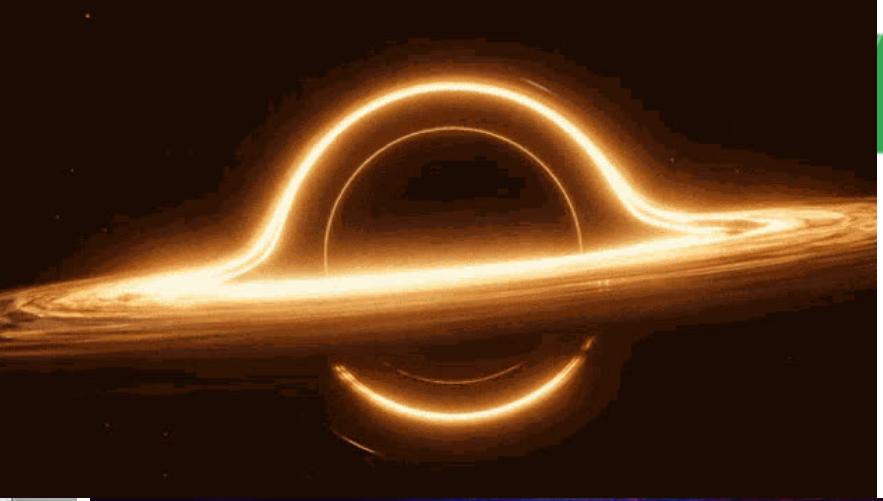
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**AI -> What, Why, Types**

**Key Concepts -> ML, Neural Networks, DL**

**Neural Networks -> Structure, Function**

# Abdul Rasheed Esa

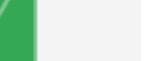
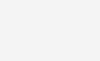


**1st Prize in Nawab shah Alam hackathon**

**1st Prize in HackSrm AP Hackathon**

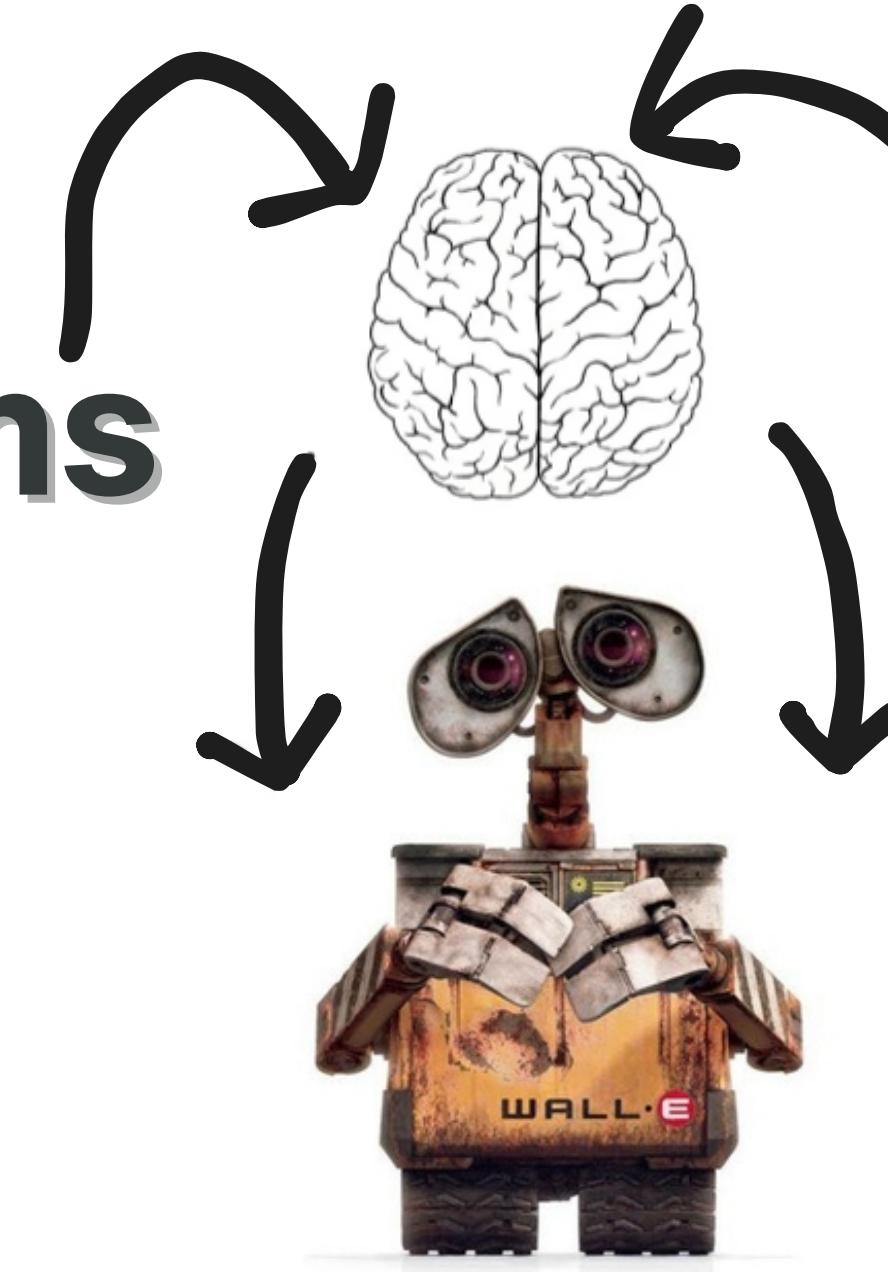
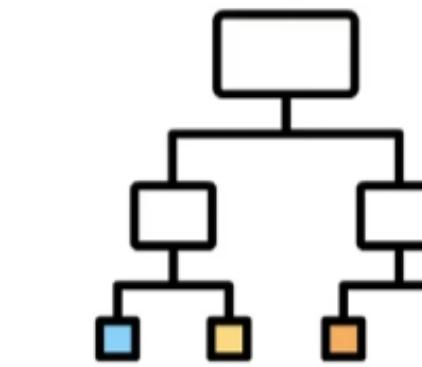
**Winner of Code for India Hackathon**

**2nd in Grand finale of SIH 2022**

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            <img alt="Muffakham Jah College of
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**AI is the theory and development  
of computer systems able to **perform tasks**  
**normally requiring human intelligence.****

# Algorithms



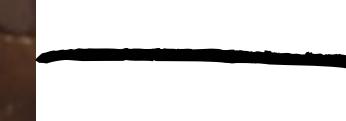
# Functions

$$f(x)$$

# AI Adapts



Old environment



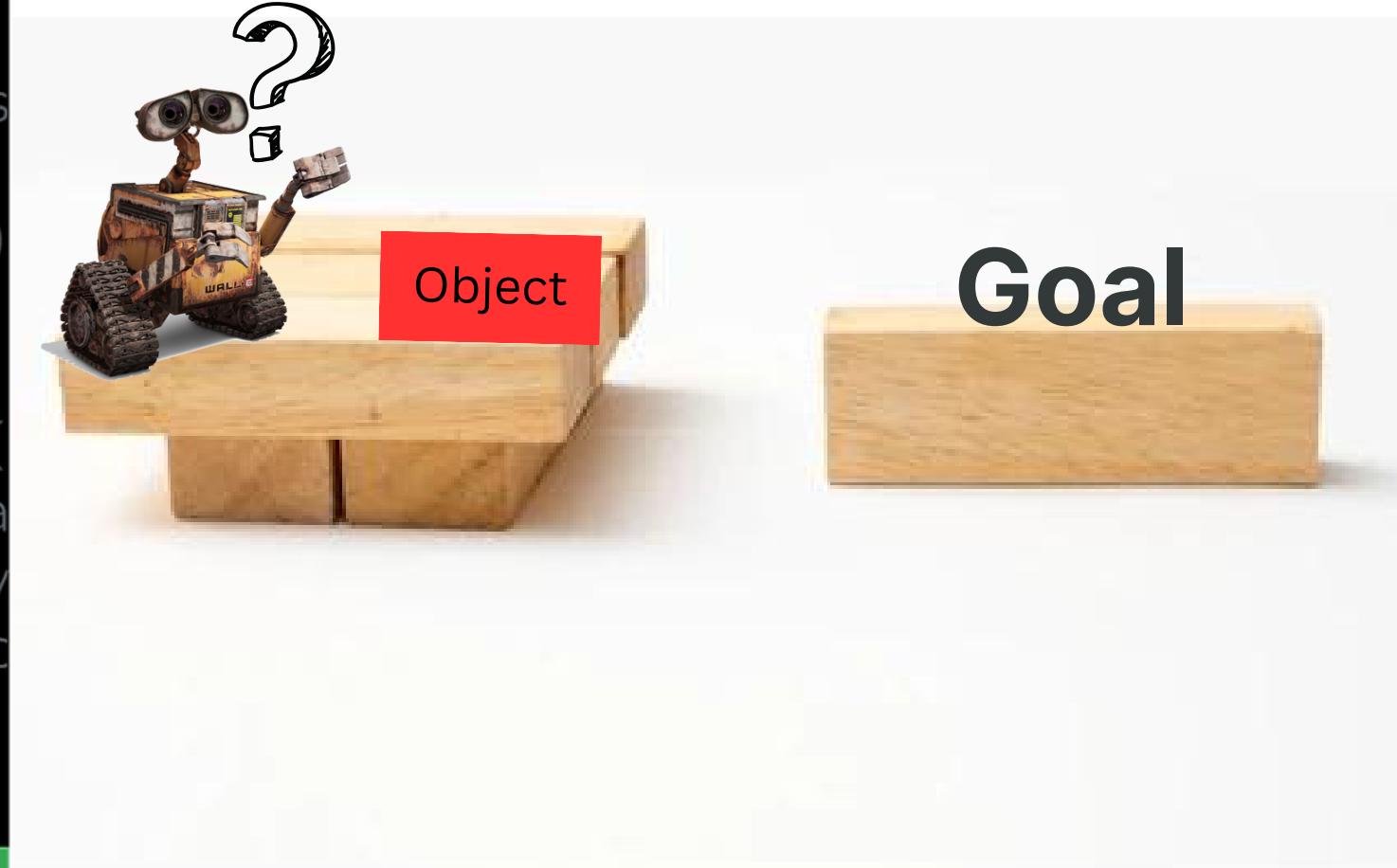
New environment

**“...your homework”**

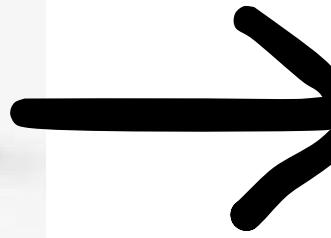


# AI Decides

# AI Overcomes



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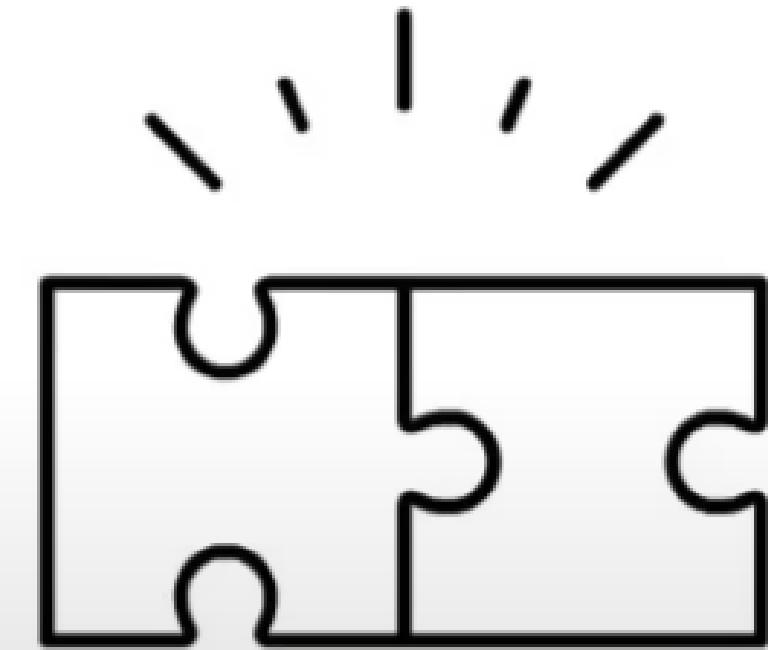
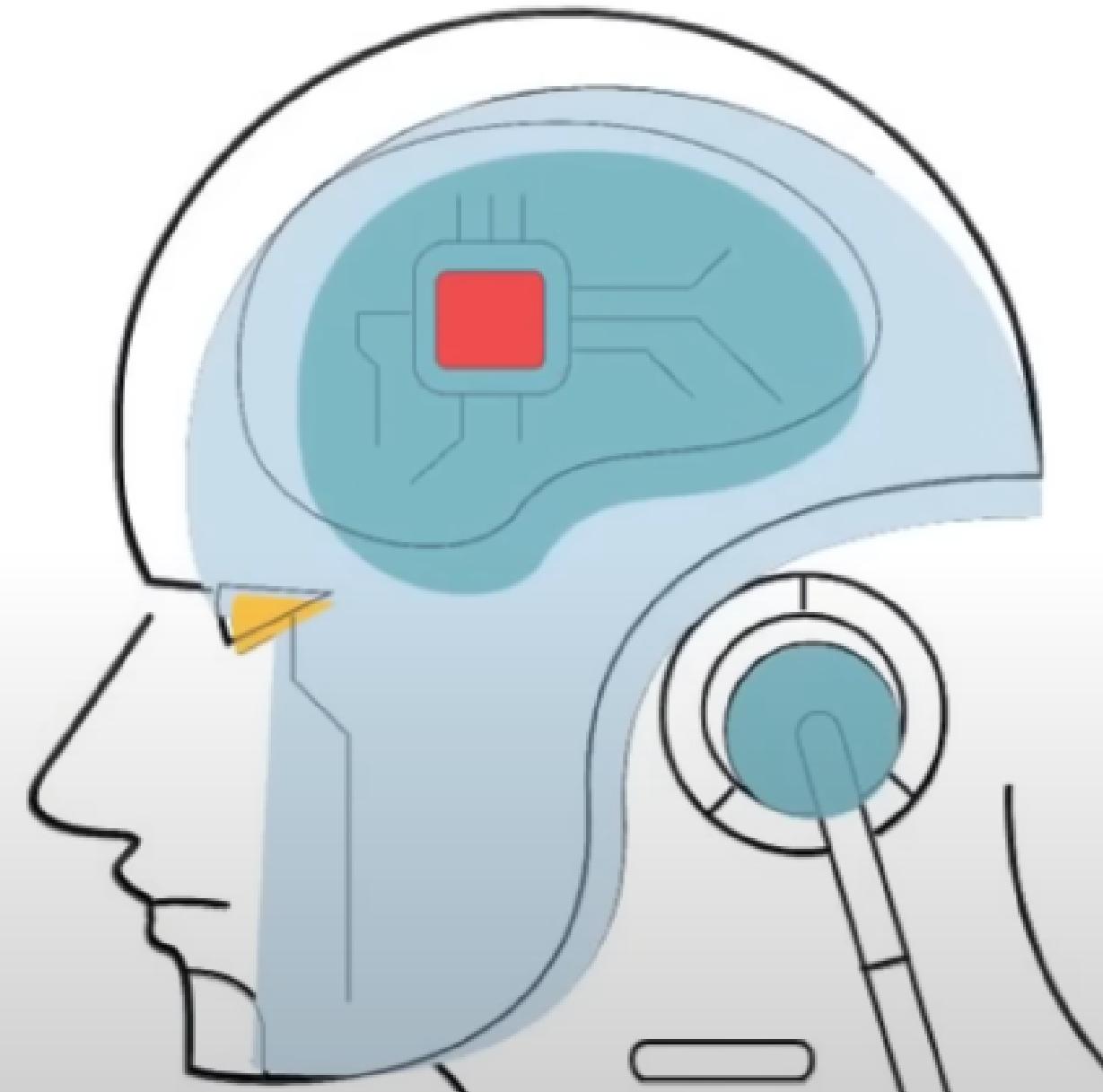
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**REASON**



**ADAPT**



**PROVIDE SOLUTIONS**



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# Types of AI

*A broad classification*





# Strong AI

(performing like a human being)

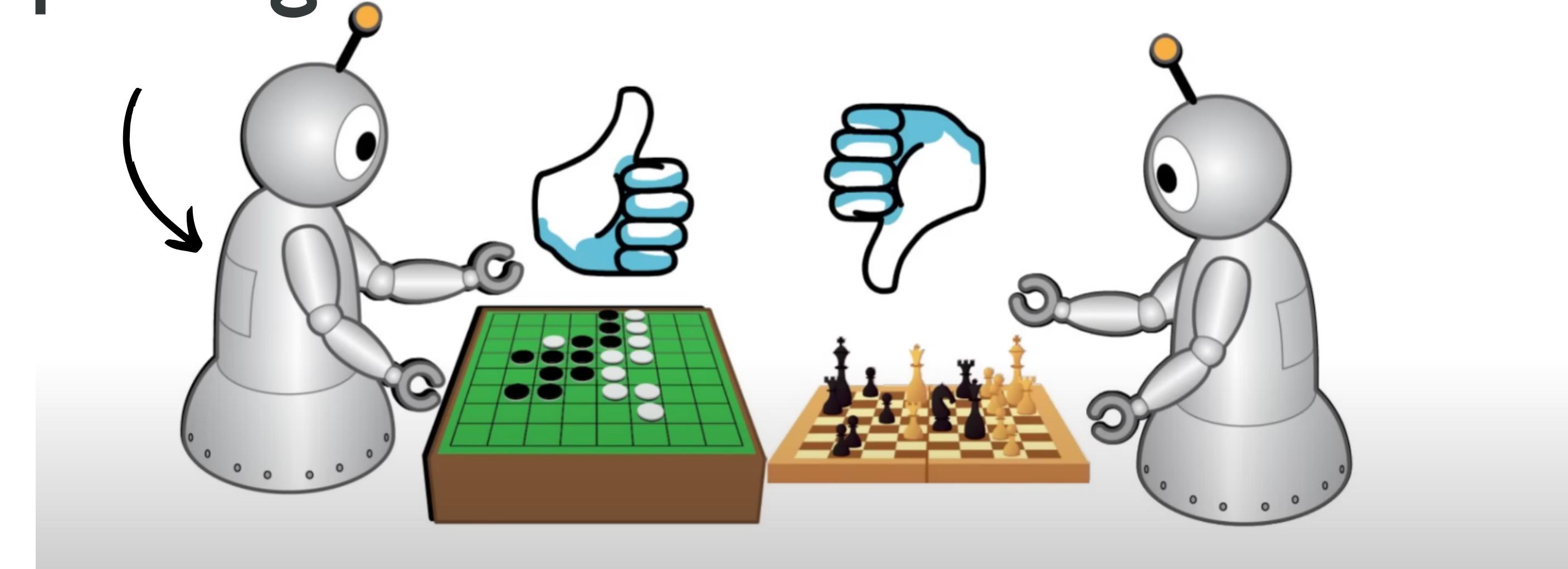
# Weak AI

(performing one narrow task)

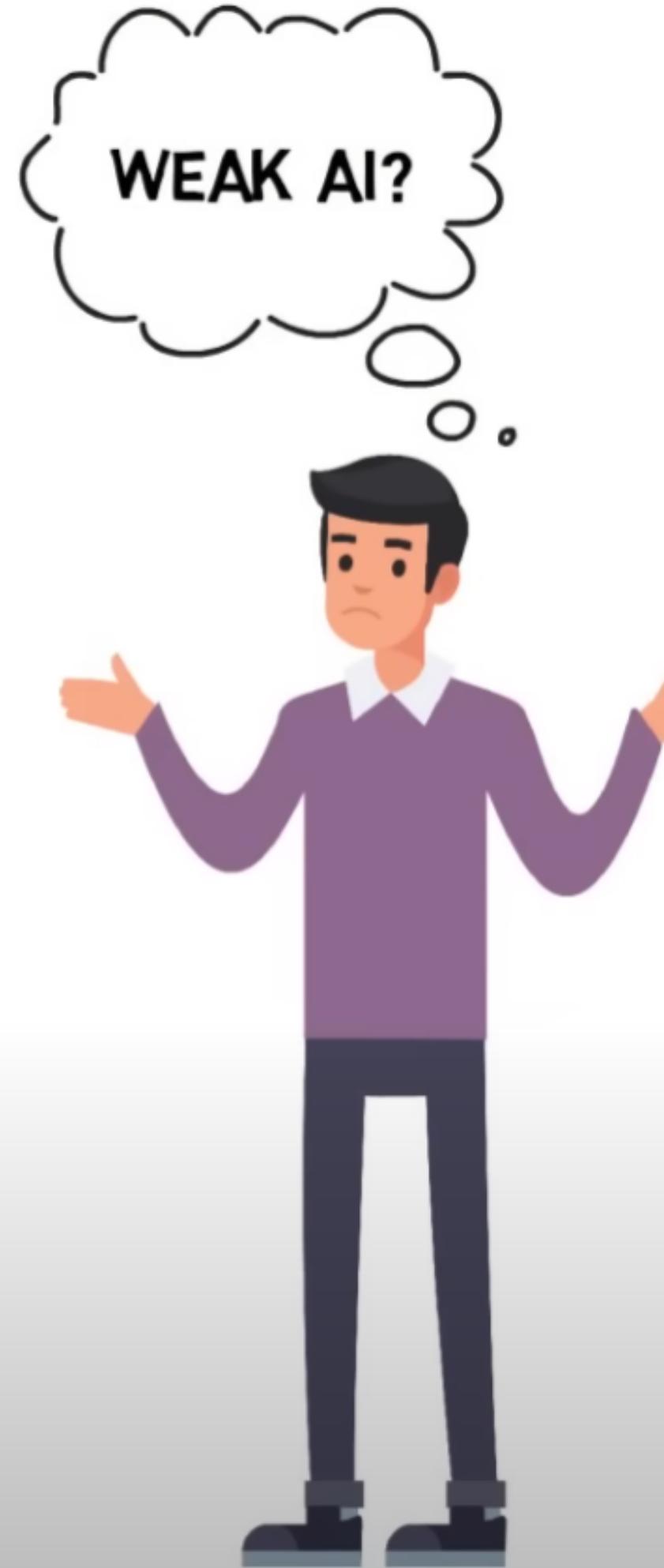
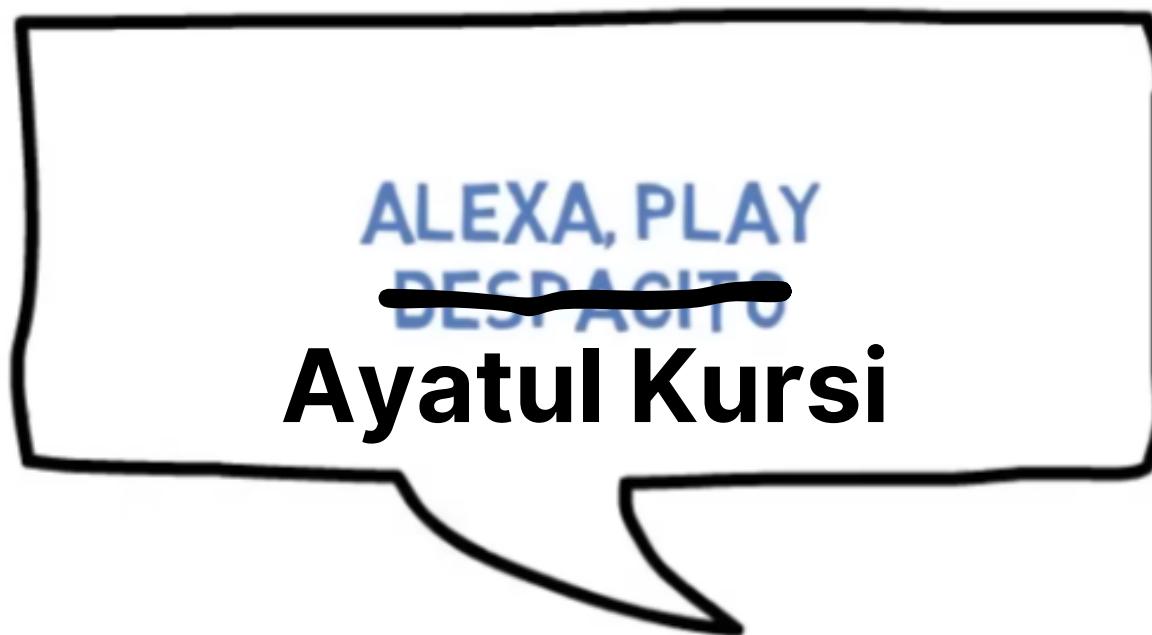


# 'Weak' AI

# ‘Alpha go



# Alexa, Weak or Strong AI?



# 'Strong' AI

## INDISTINGUISHABLE From the human mind



# AKA AGI

# Artificial General Intelligence

## Artificial General Intelligence

Creativeness

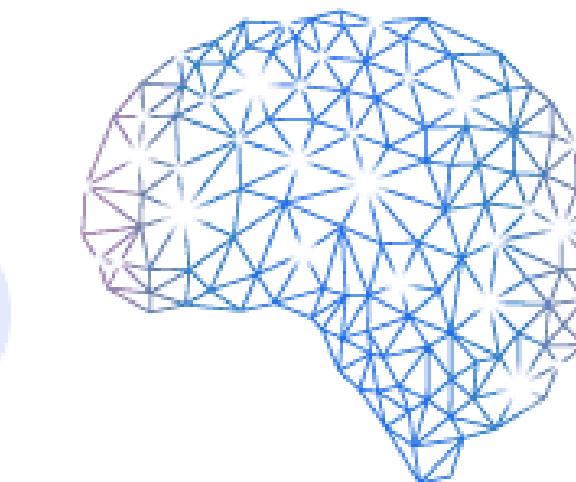
Abstract thinking

Background Knowledge

Transfer learning

Comprehension of cause and effect

Following common sense in making decisions





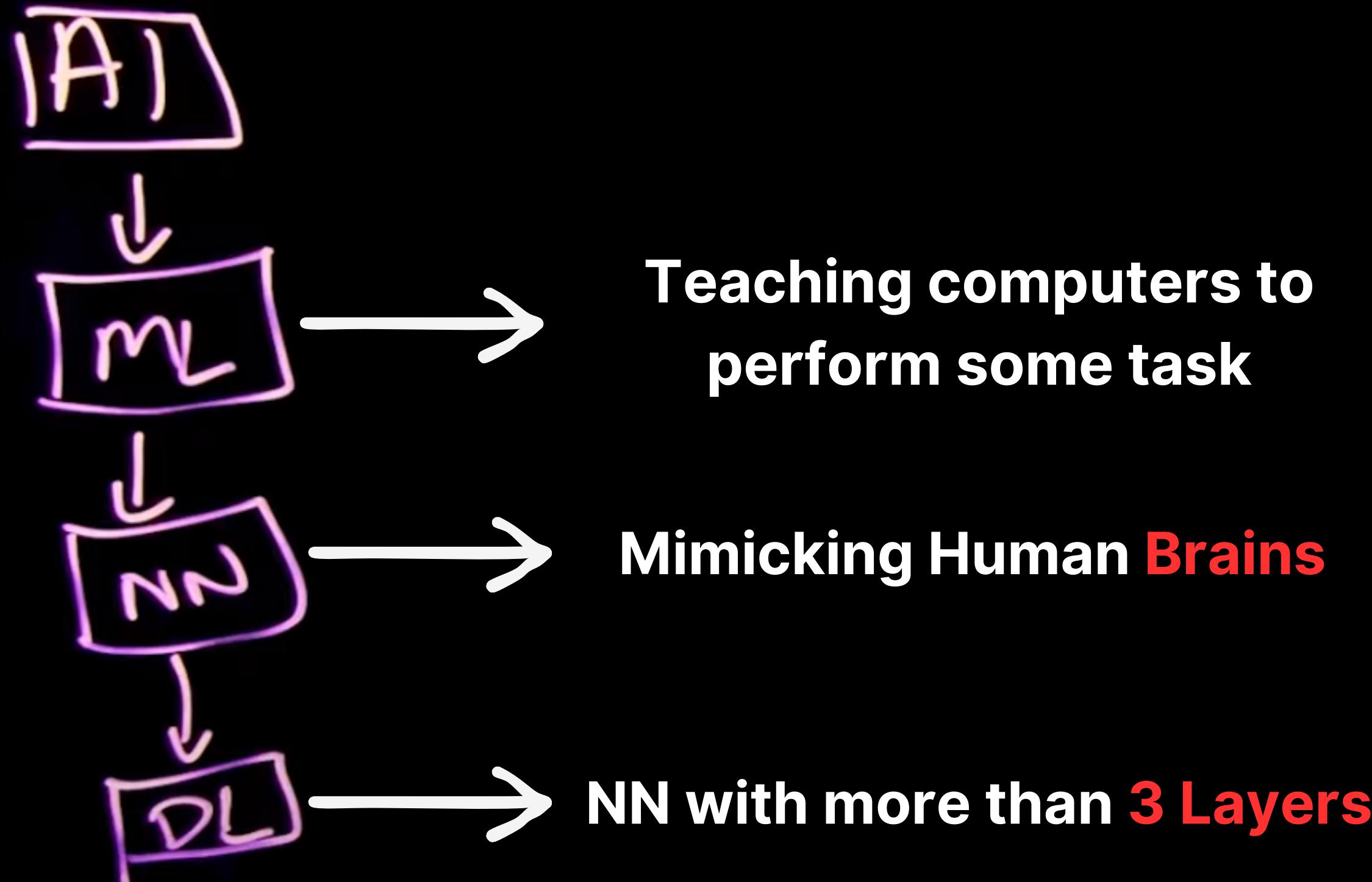
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# Key Concepts of AI

***Neural networks, ML,  
Deep learning***

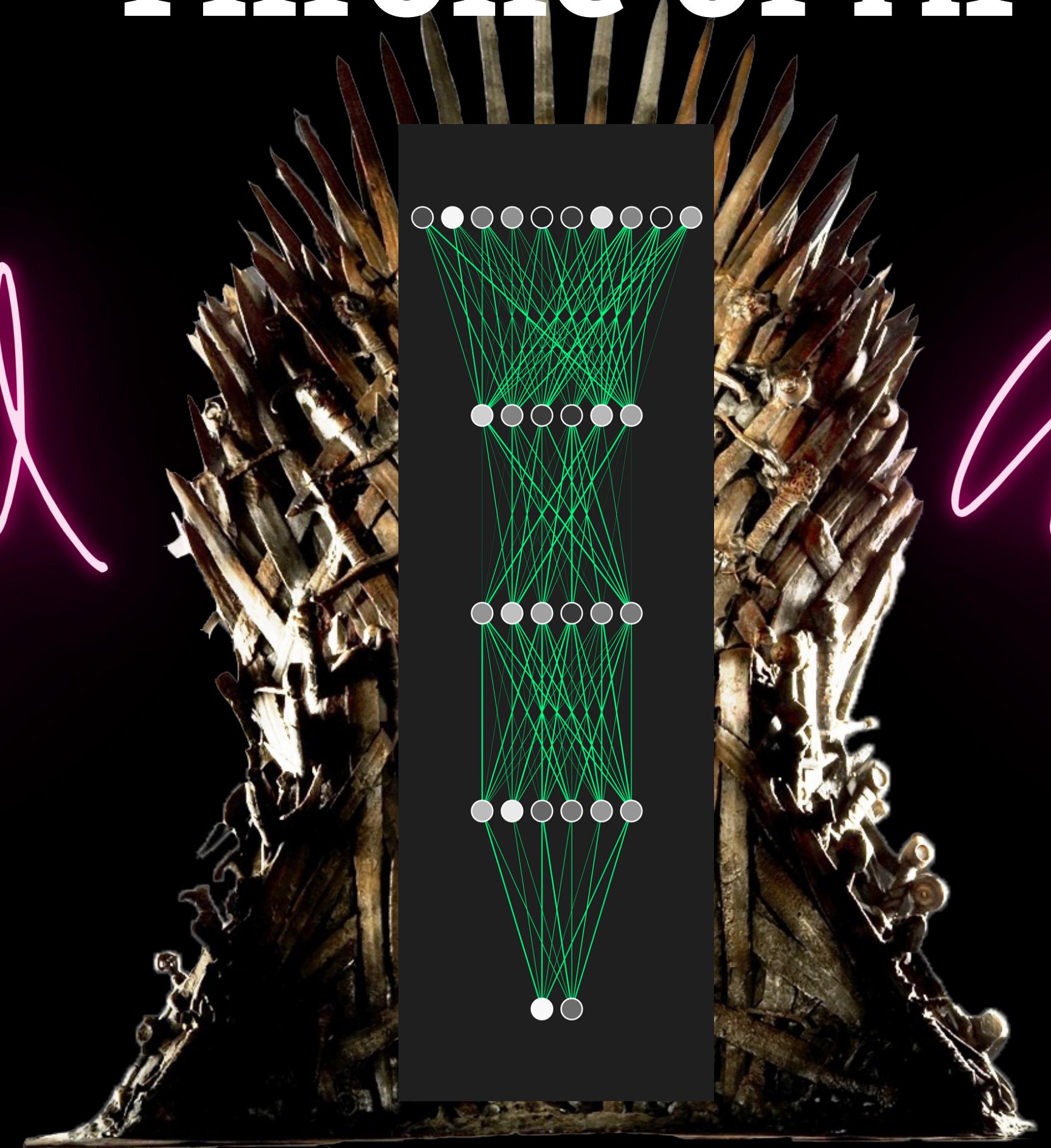


# Hierarchy



# Throne of AI

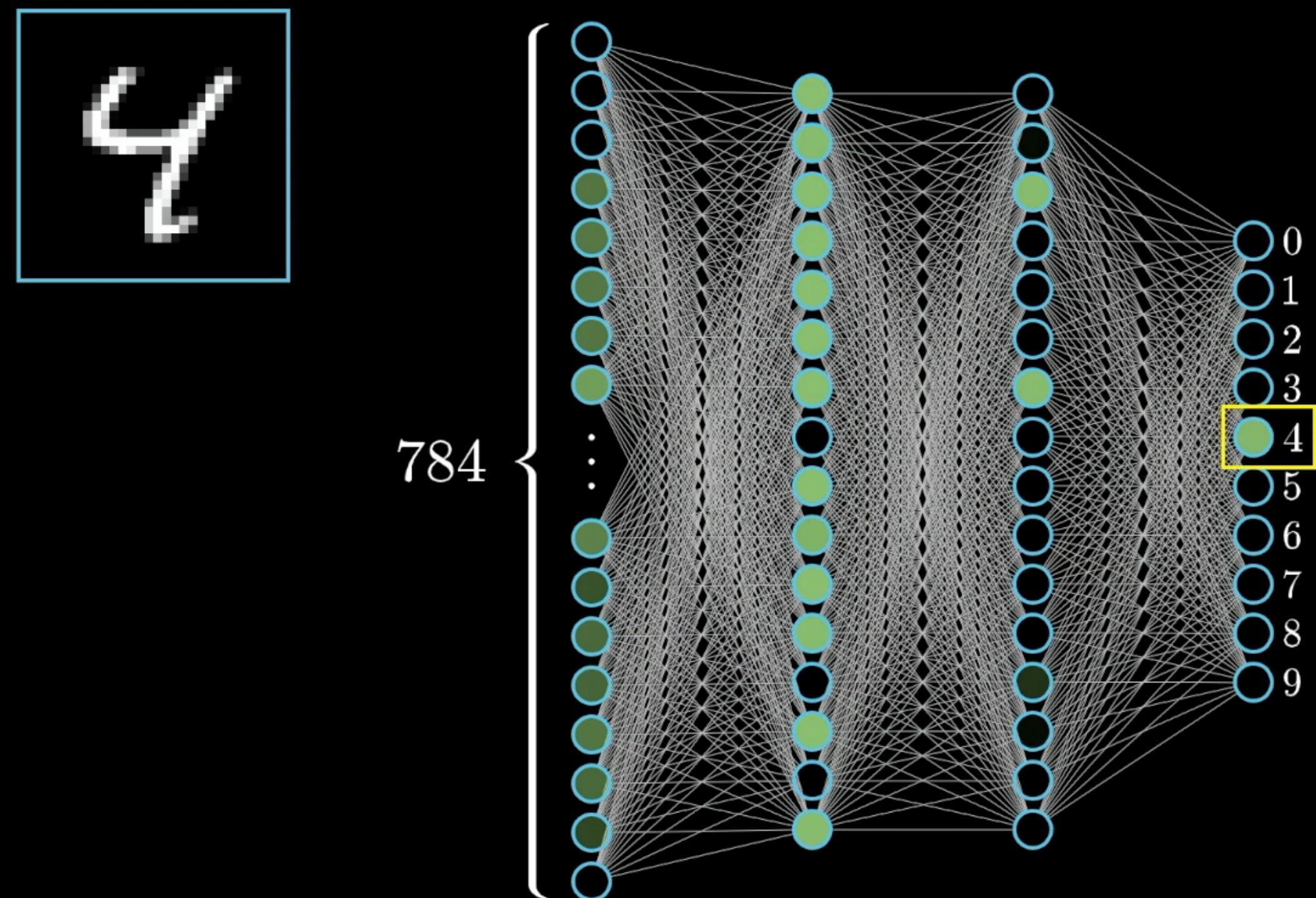
Venral



Oktawojsky

# Plain vanilla

(aka “multilayer perceptron”)



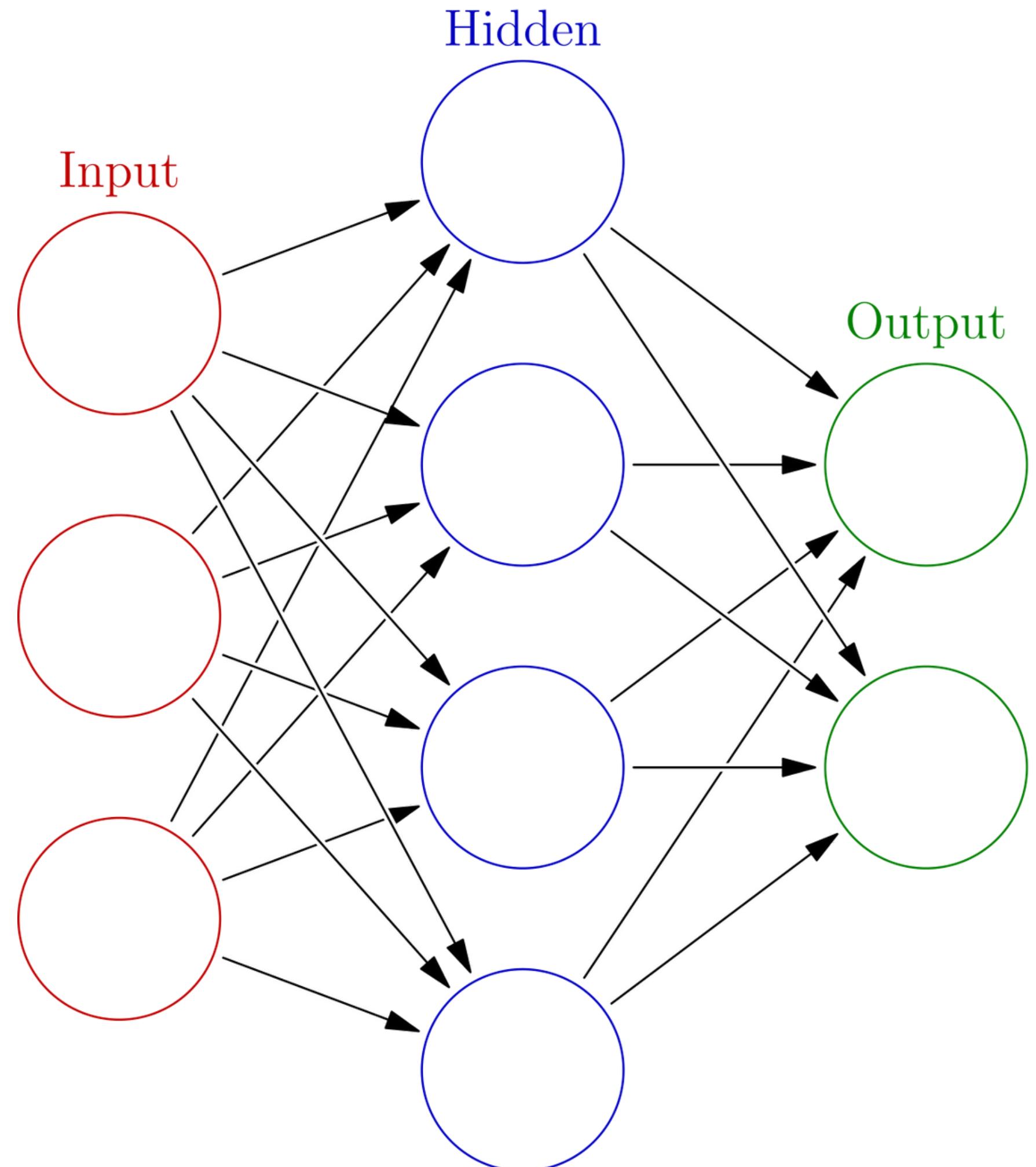
# Building Block

**‘Neuron’**

“a thing that holds a number.”



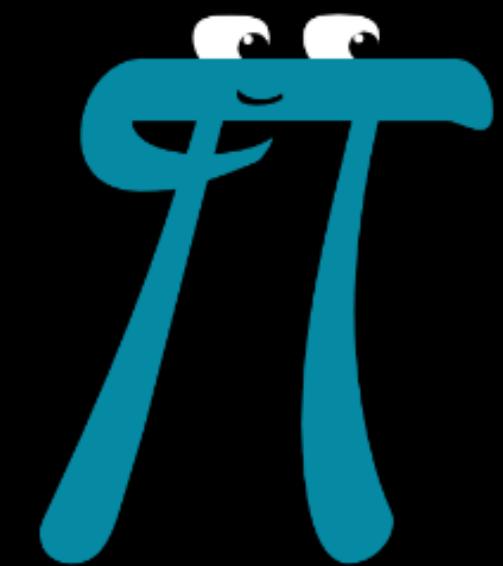
# Structure of a Neural Network





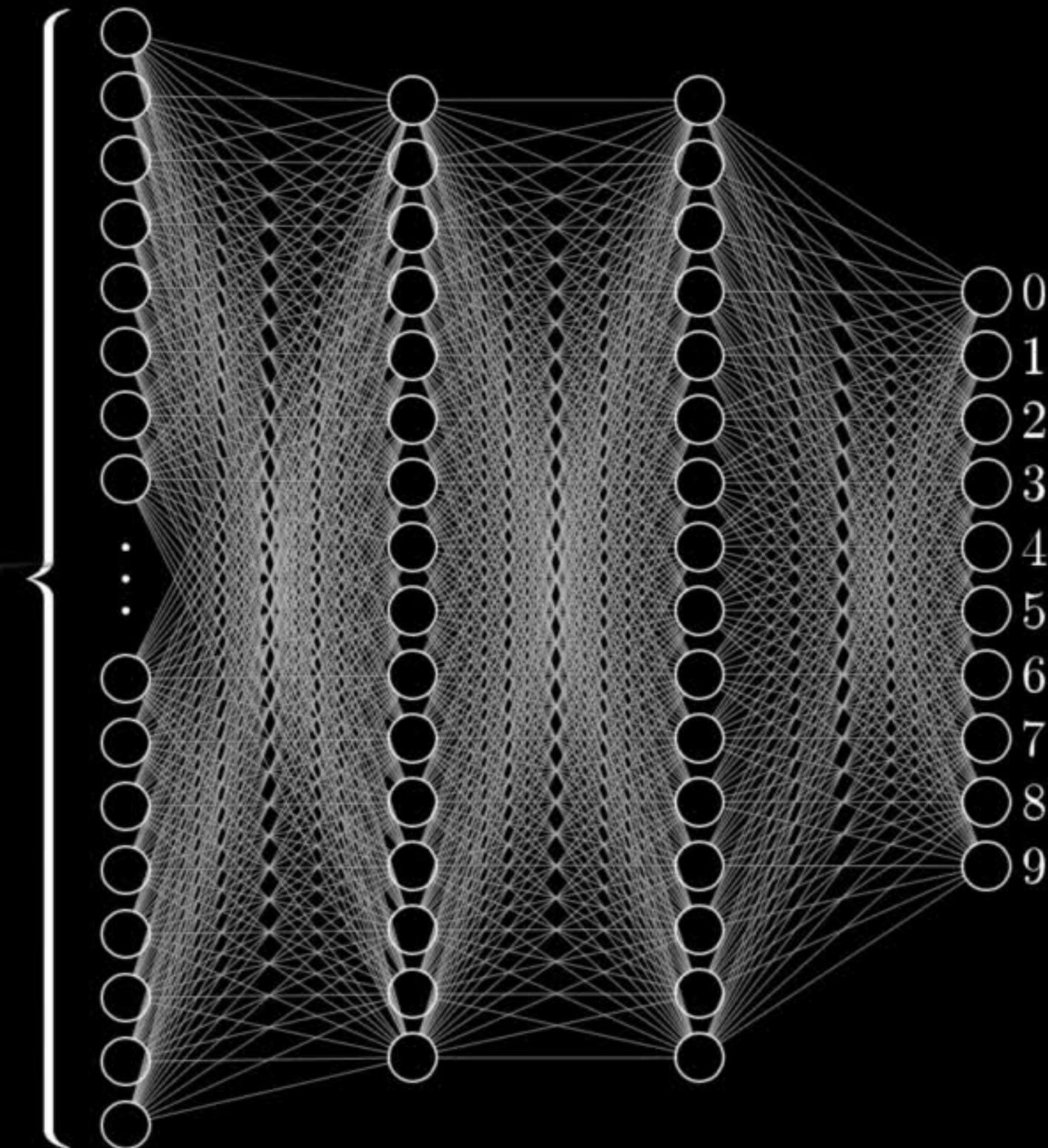
Pedro

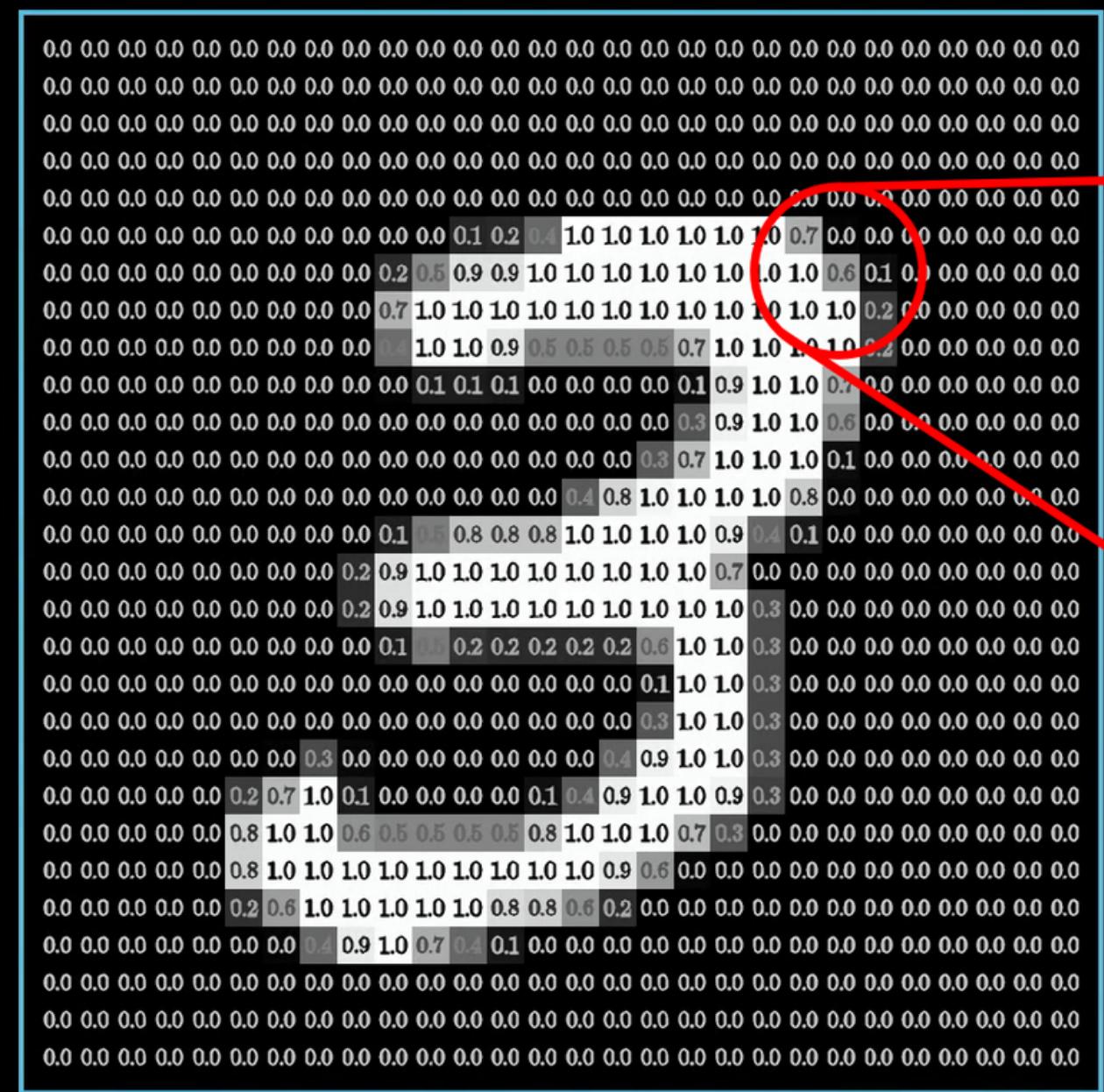
# Explain this to a computer





784

A small diagram illustrating the input layer size. It shows a triangular arrangement of gray dots forming a 28x28 grid. Below this grid, a cyan bracket groups the bottom-most 784 dots, with the number '784' written next to it.



A horizontal row of 20 small circles, evenly spaced, representing a sequence or a set of discrete items.

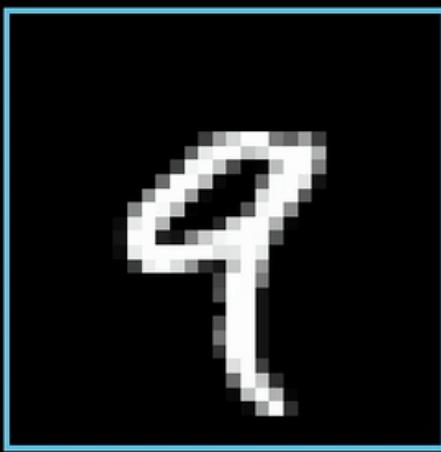
A horizontal sequence of 20 circles. The first 14 circles are white, followed by 3 grey circles, and then 3 more white circles.

A decorative horizontal bar at the bottom of the page, composed of a series of circles in different sizes and shades of gray, creating a textured pattern.

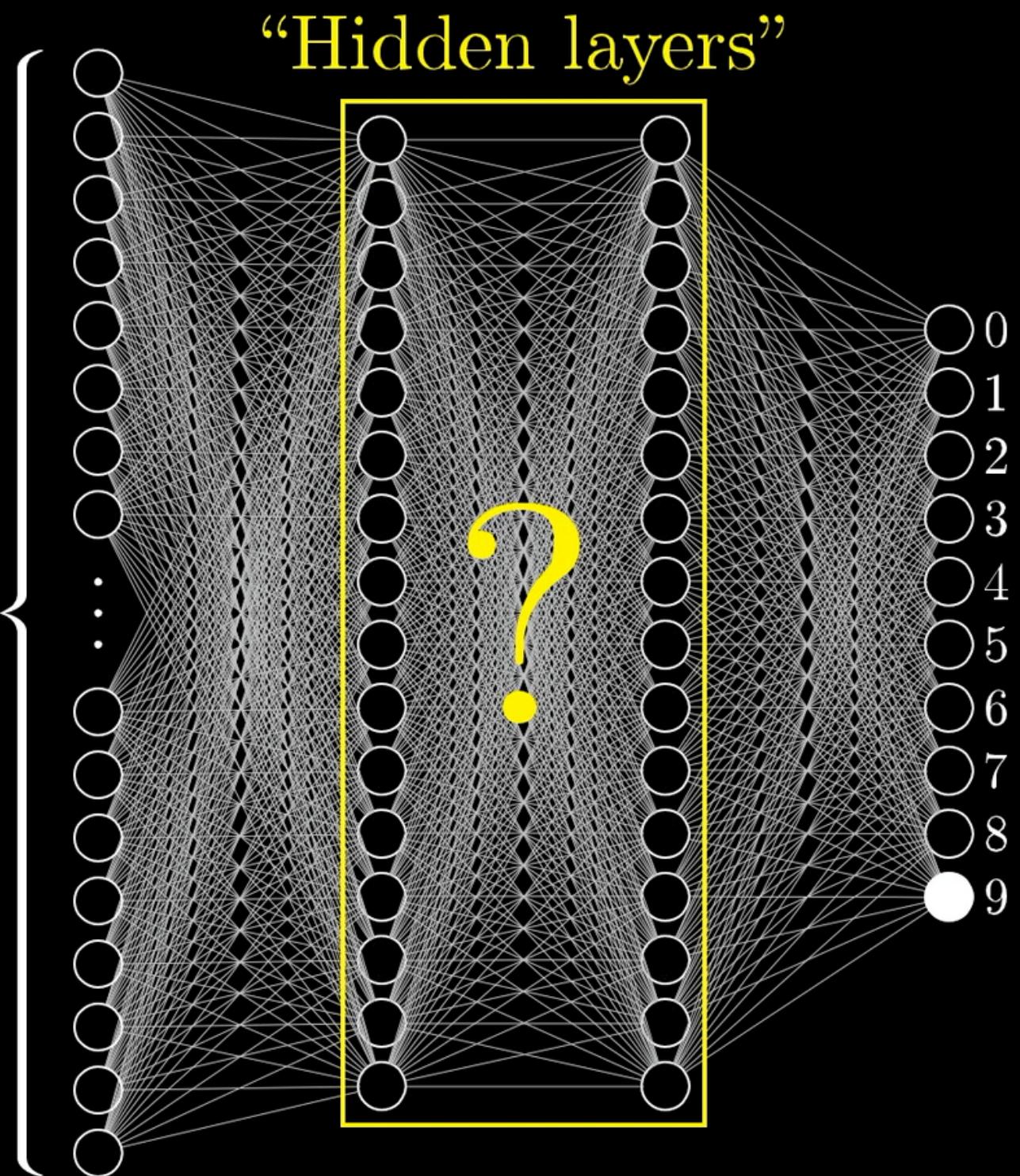
A horizontal sequence of 20 circles. The first 10 circles are white with black outlines, and the last 10 are black with white outlines.

A decorative horizontal bar at the bottom of the page, composed of a series of circles in different sizes and shades of gray, creating a repeating pattern.

784



784



# Numbers = Sum of Shapes

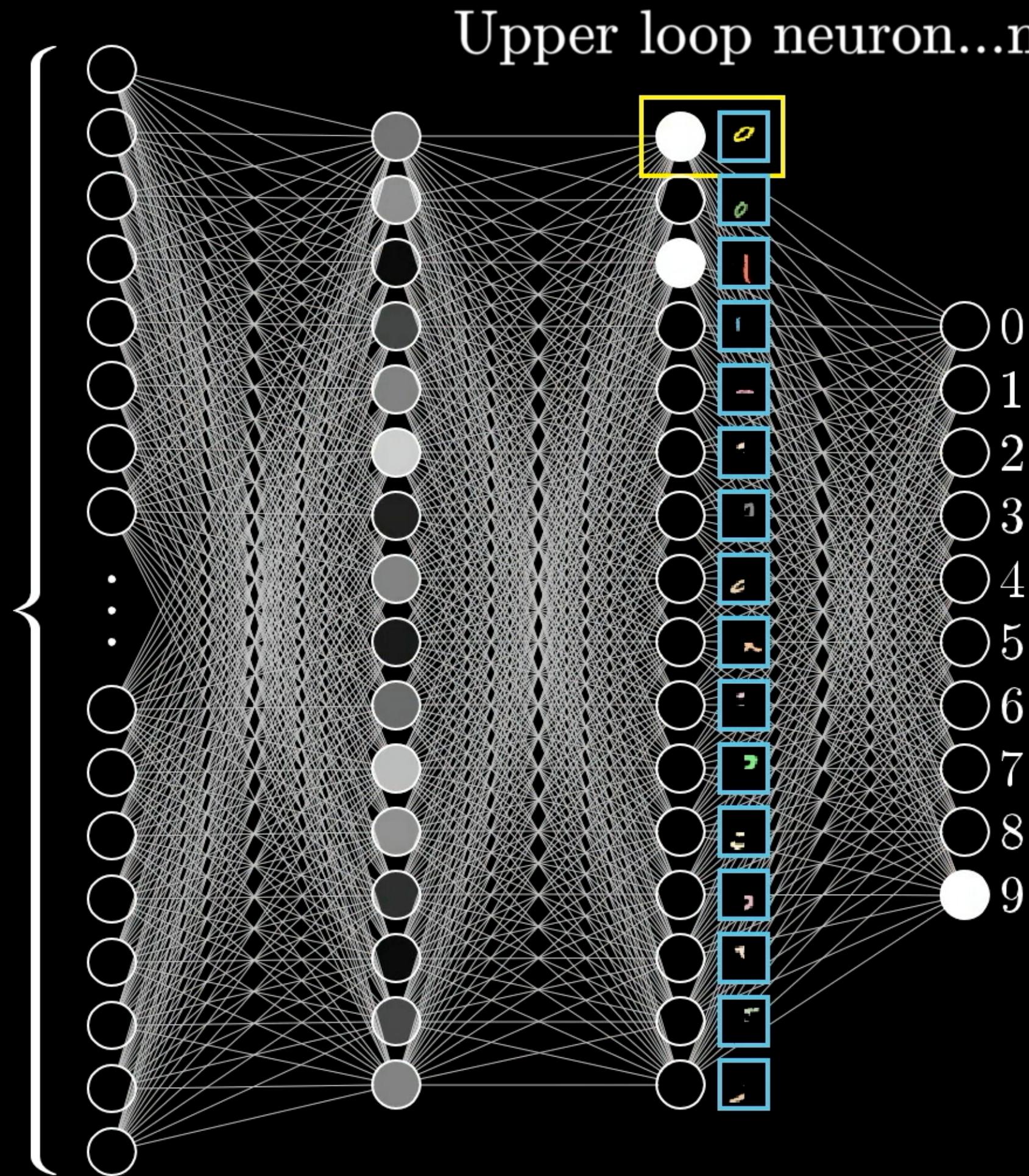
$$9 = \text{Yellow Circle} + \text{Red Vertical Line}$$

$$8 = \text{Yellow Circle} + \text{Green Horizontal Line}$$

$$4 = \text{Red Vertical Line} + \text{Blue Vertical Line} + \text{Pink Horizontal Line}$$

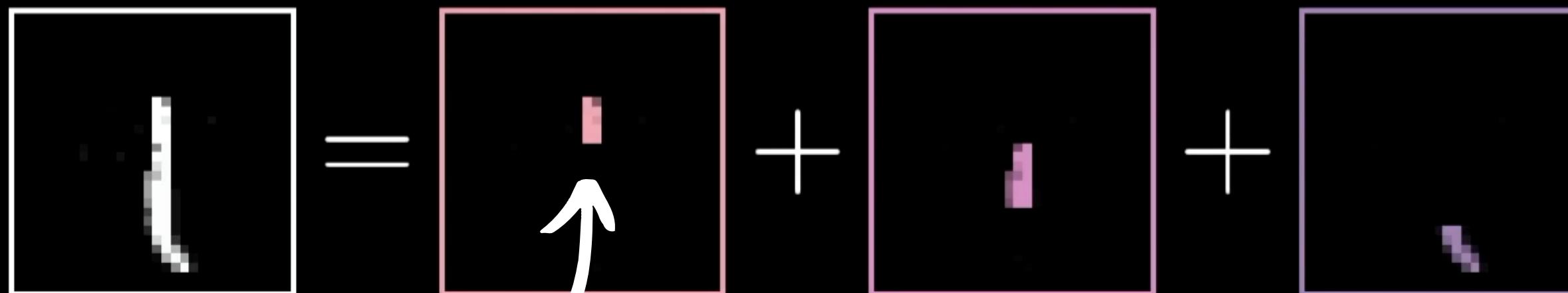
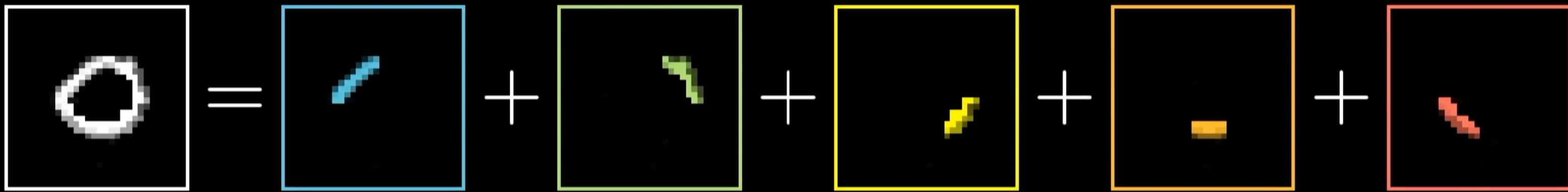


784



Upper loop neuron...maybe...

# Not just perfect shapes



Edge



Pixels



Edges



Shapes



Digits

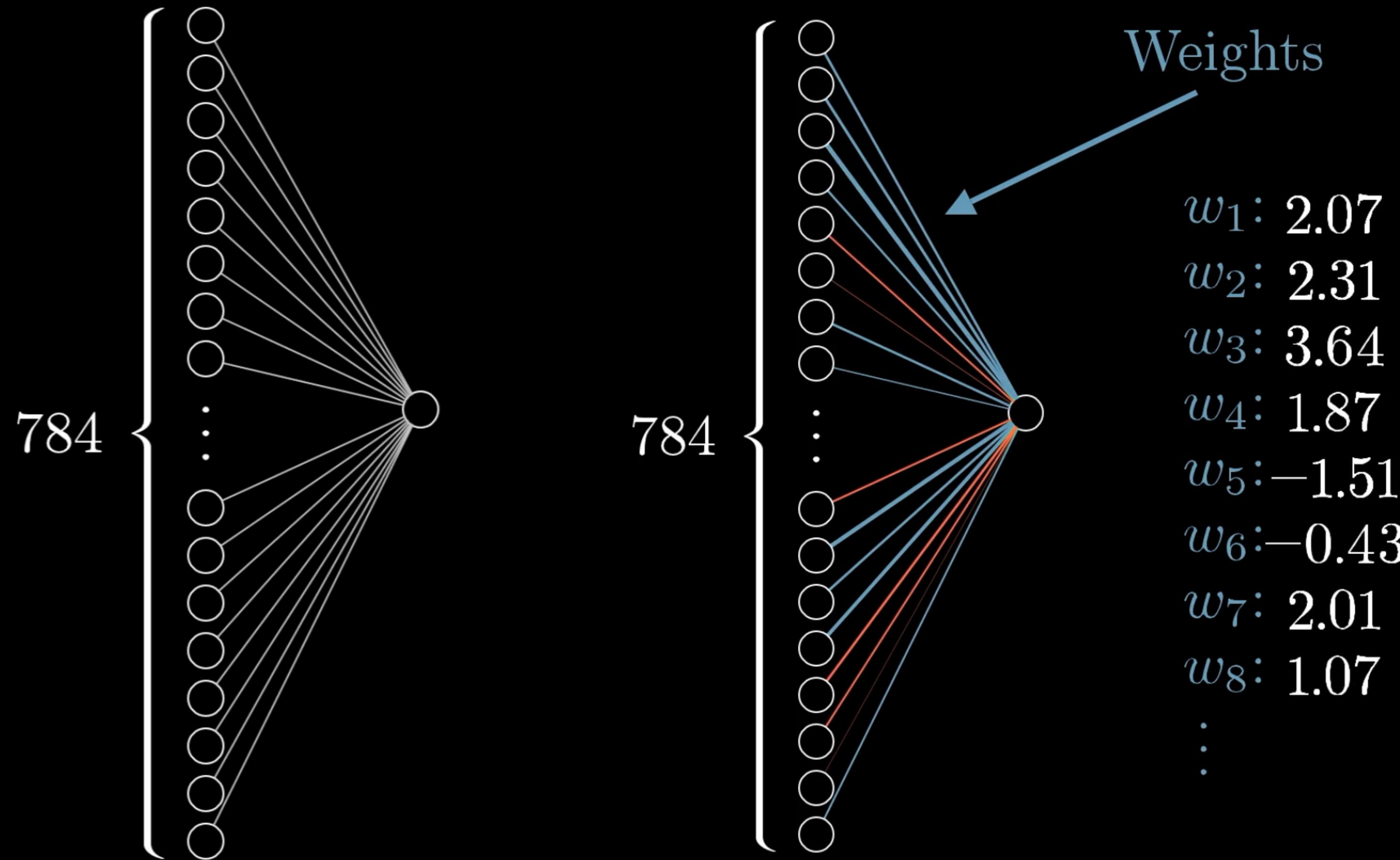


 → recognition → re·cog·ni·tion → recognition

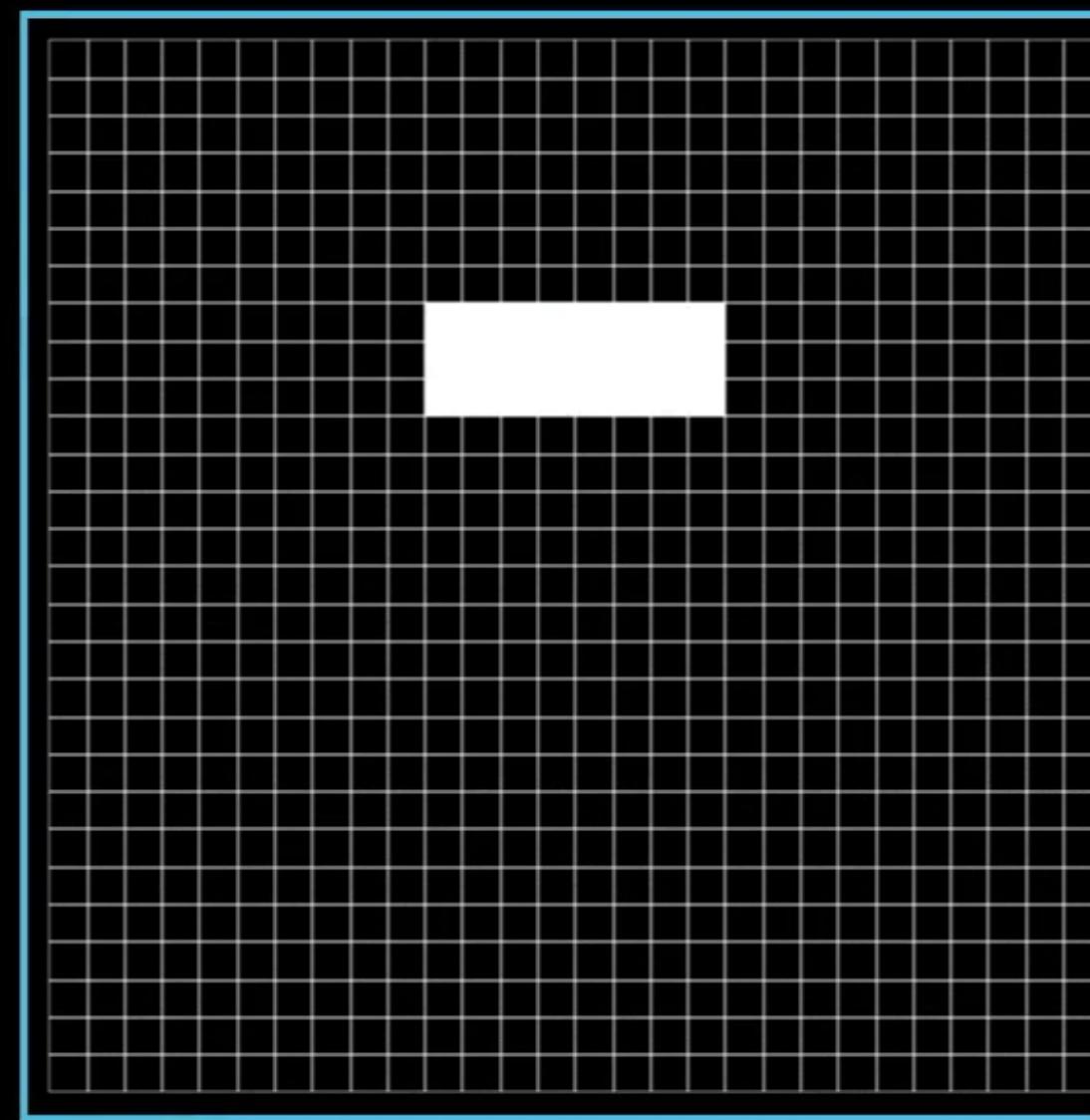
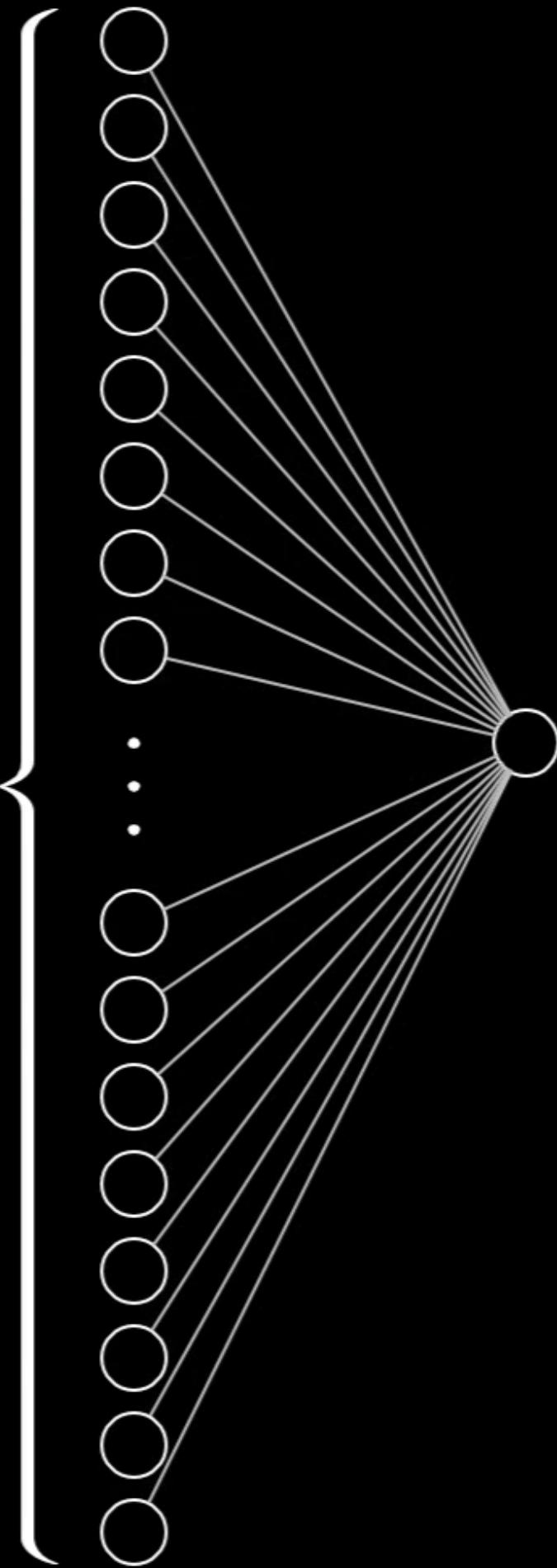
Raw audio

**But how do we ACTUALLY  
detect these features?**

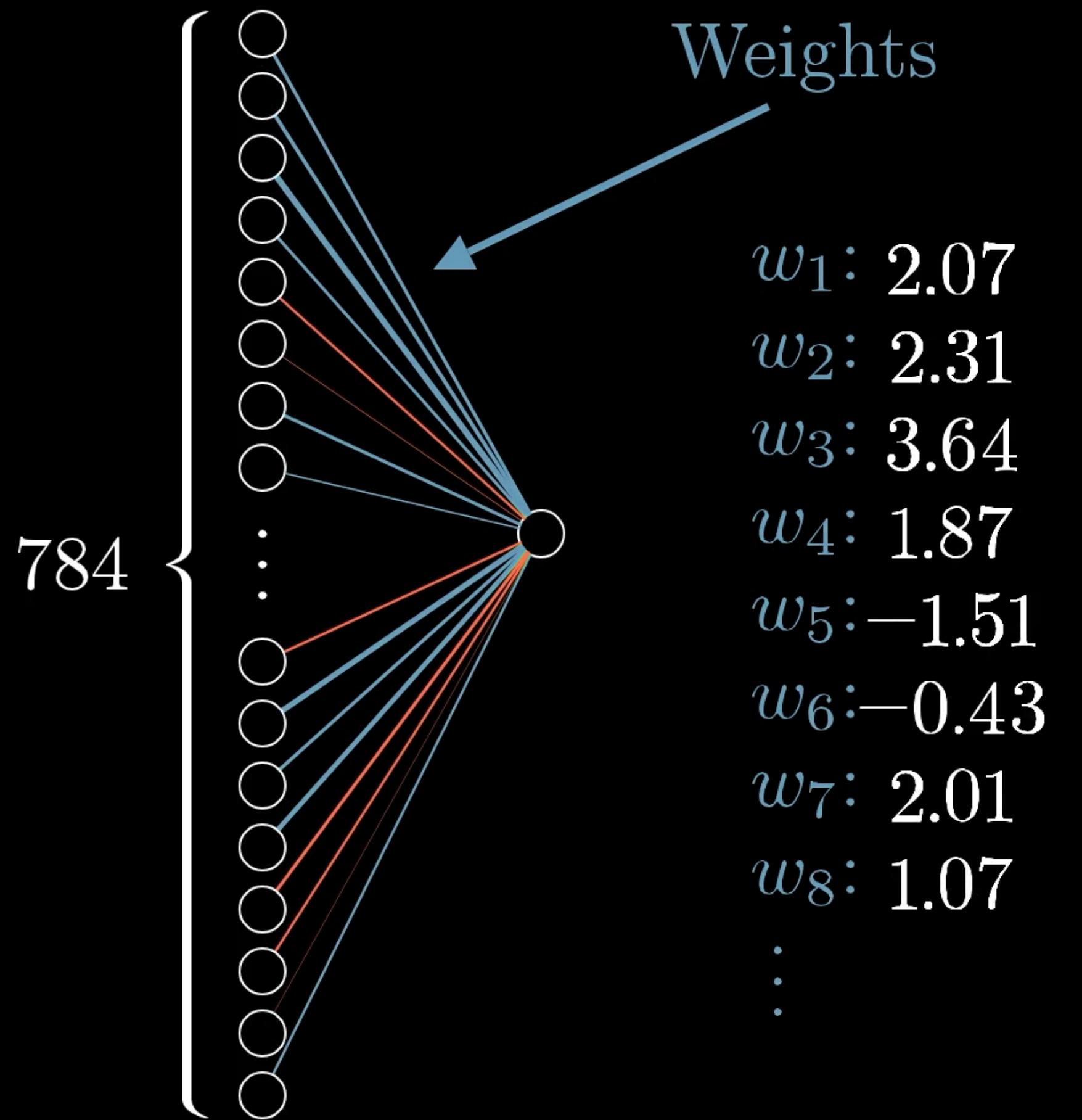
math



784



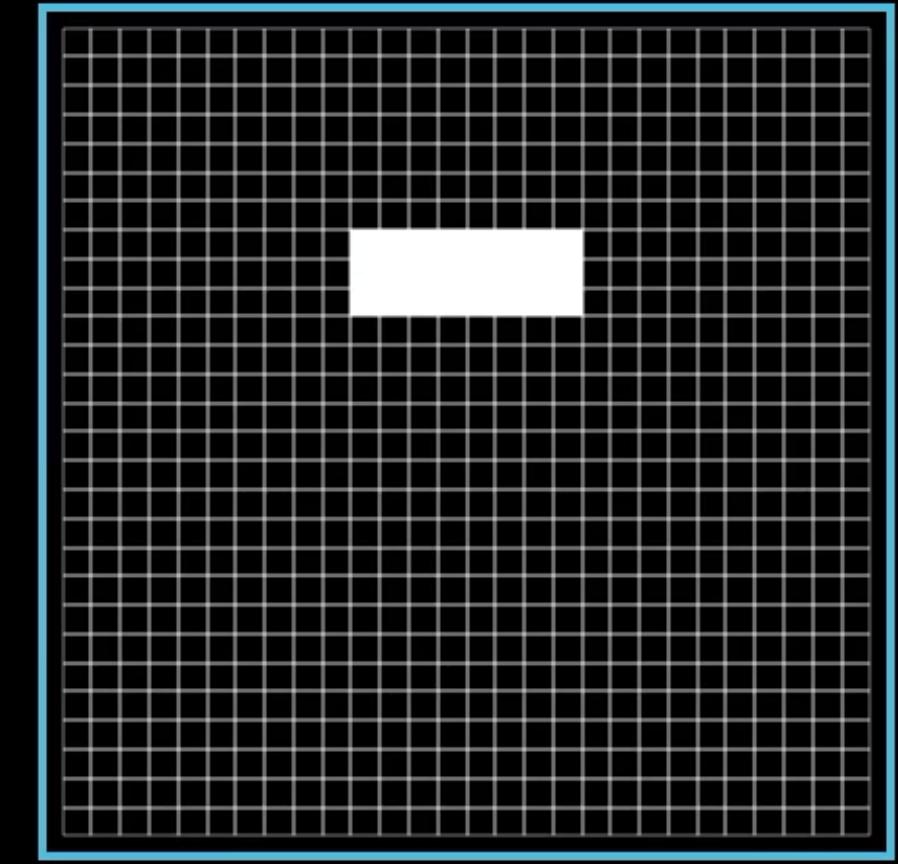
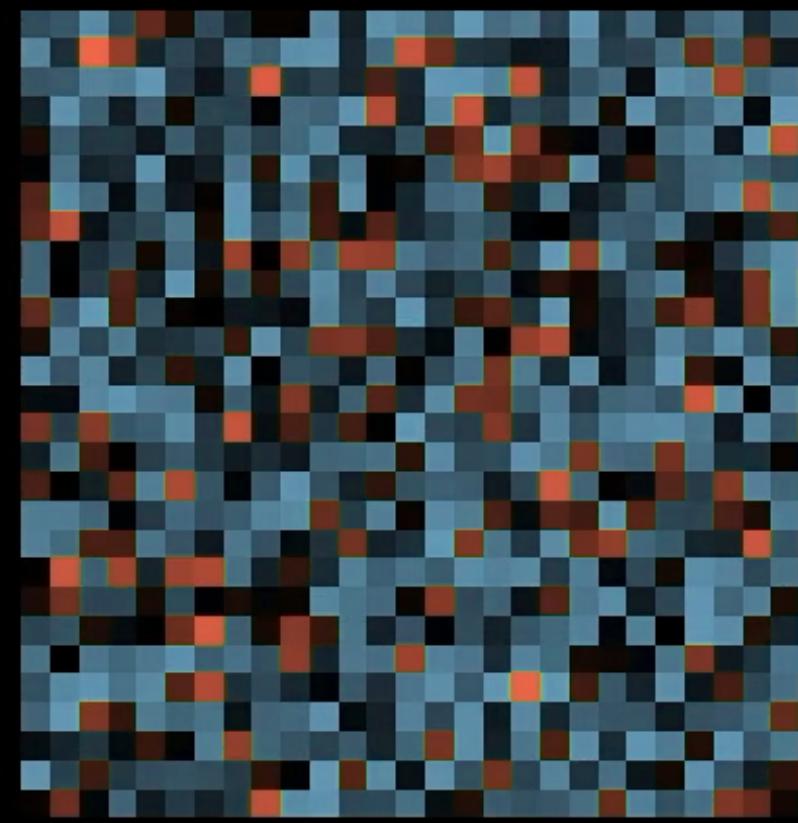
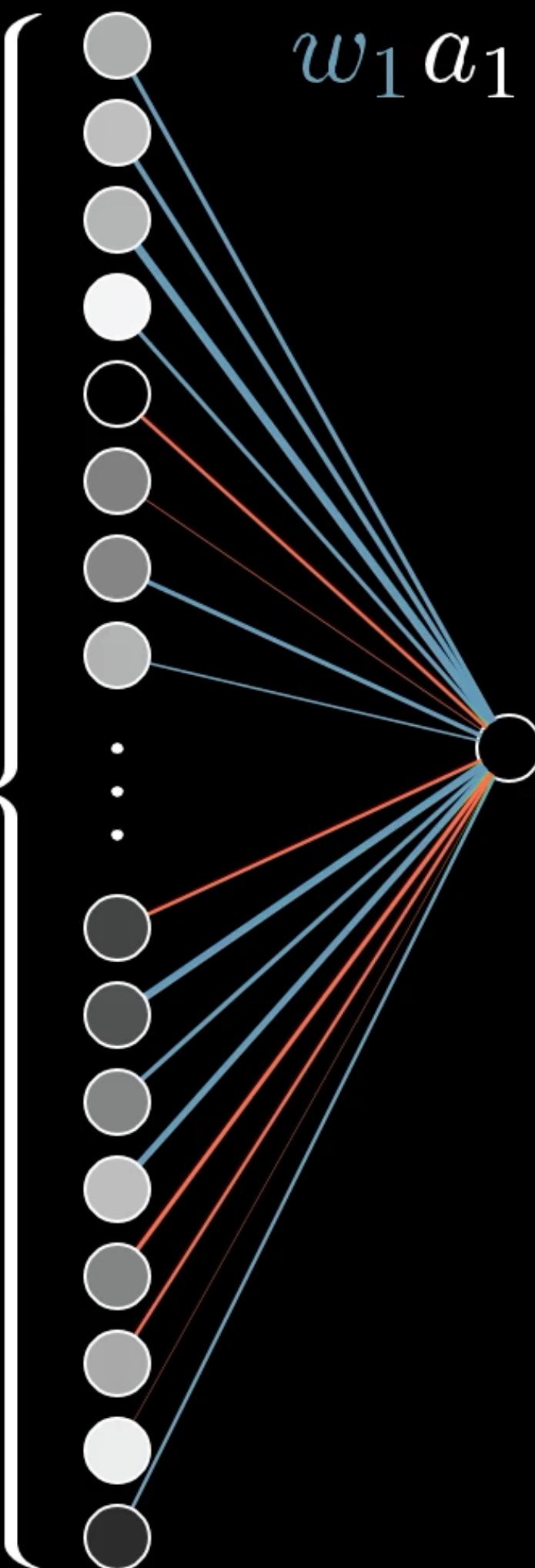
**let's say that the hope is  
for this one particular  
neuron in the second layer  
to pick up on whether or  
not the image has an edge  
in this spot**

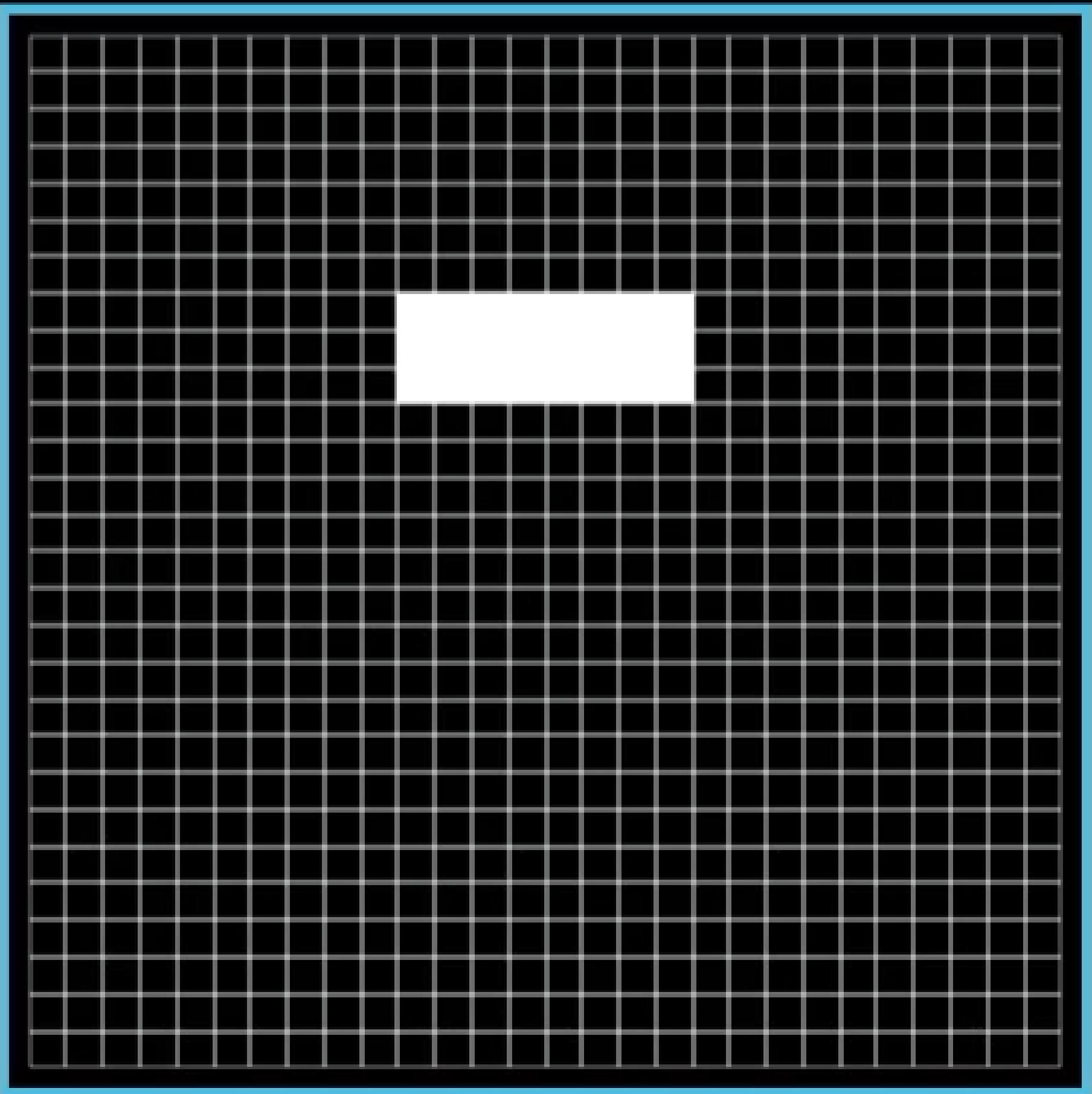
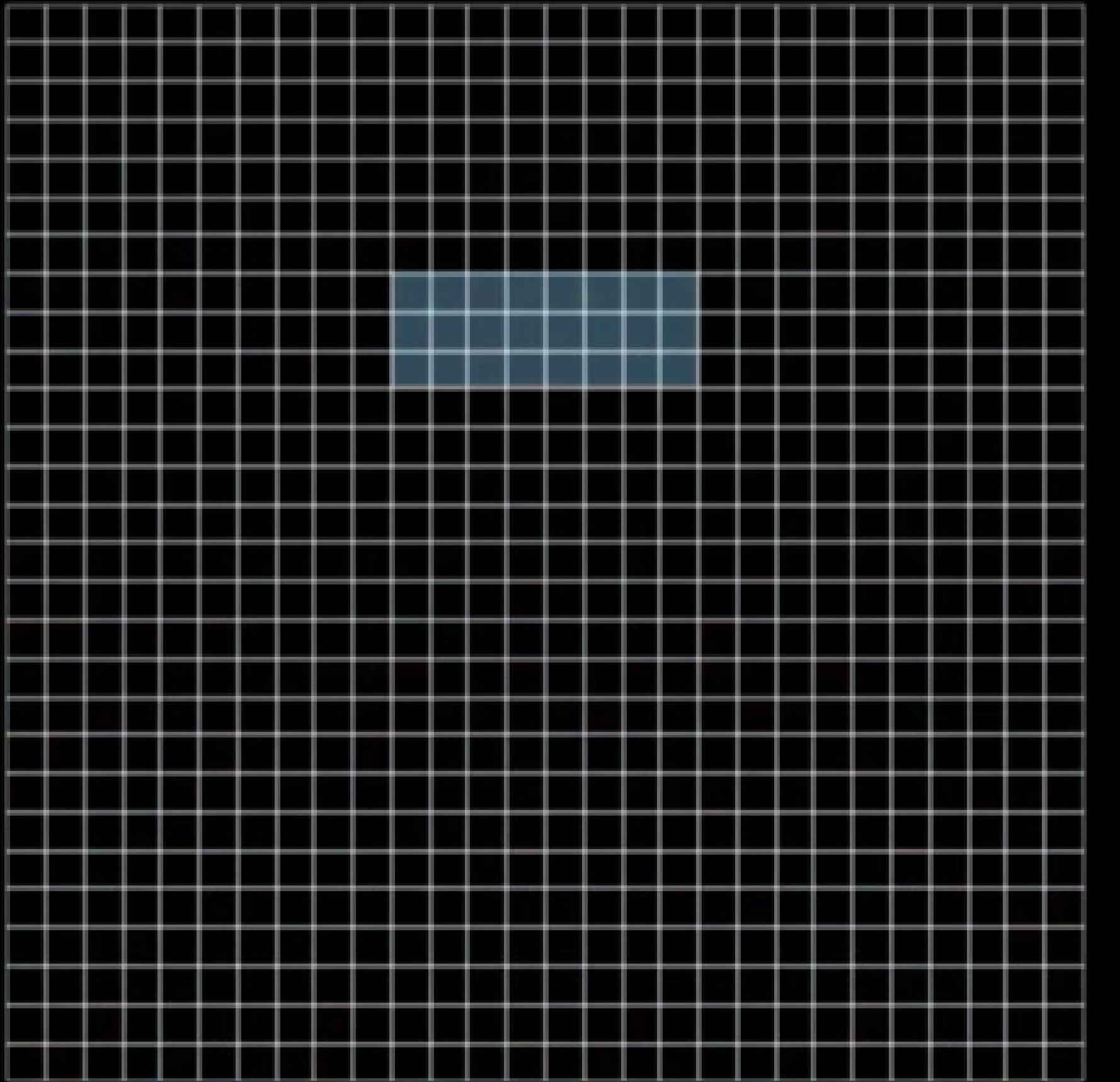


a **positive weight** suggests that the neuron in the second layer should also be on, and a **negative weight** suggests that the neuron in the second layer should be off.

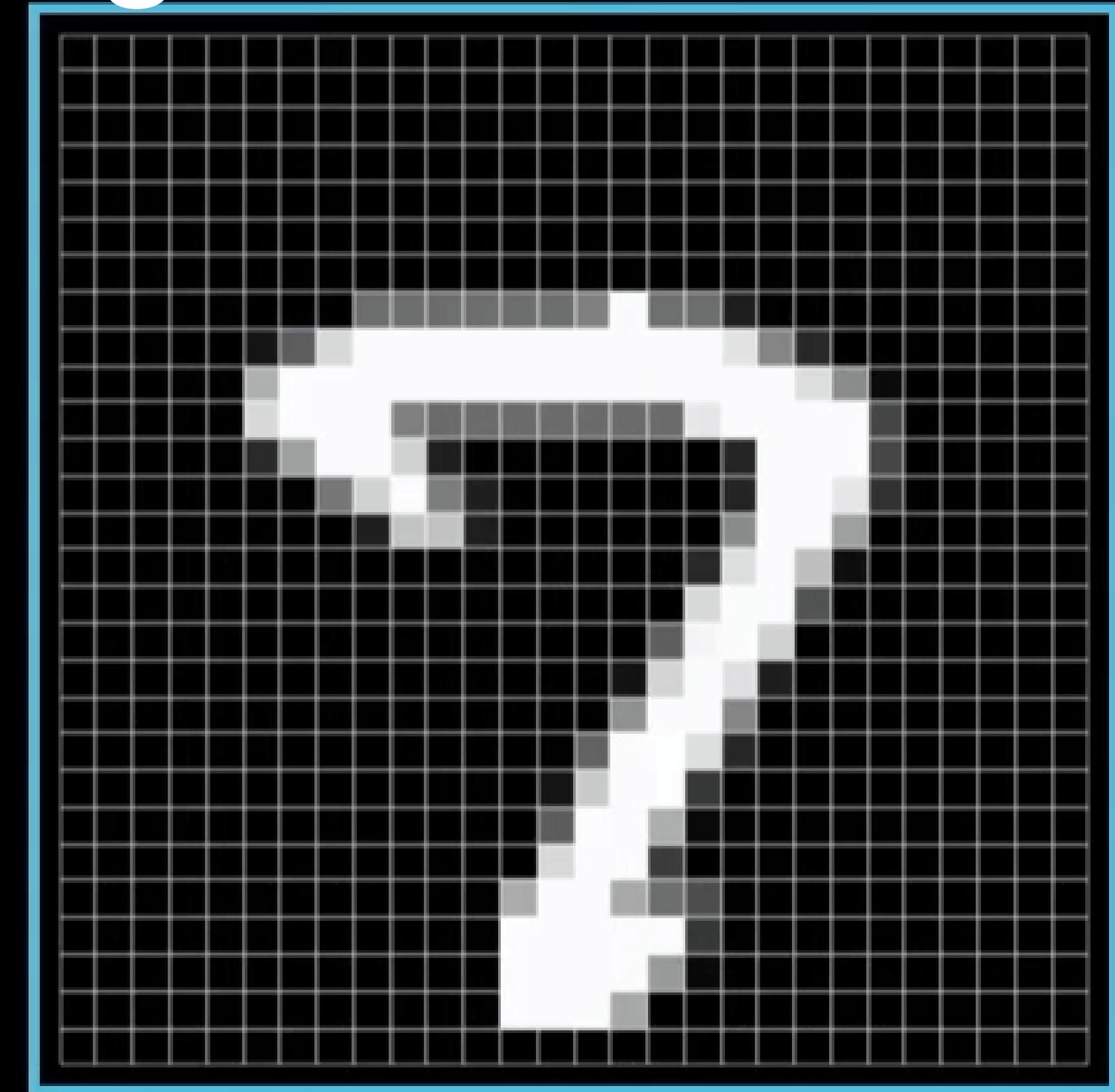
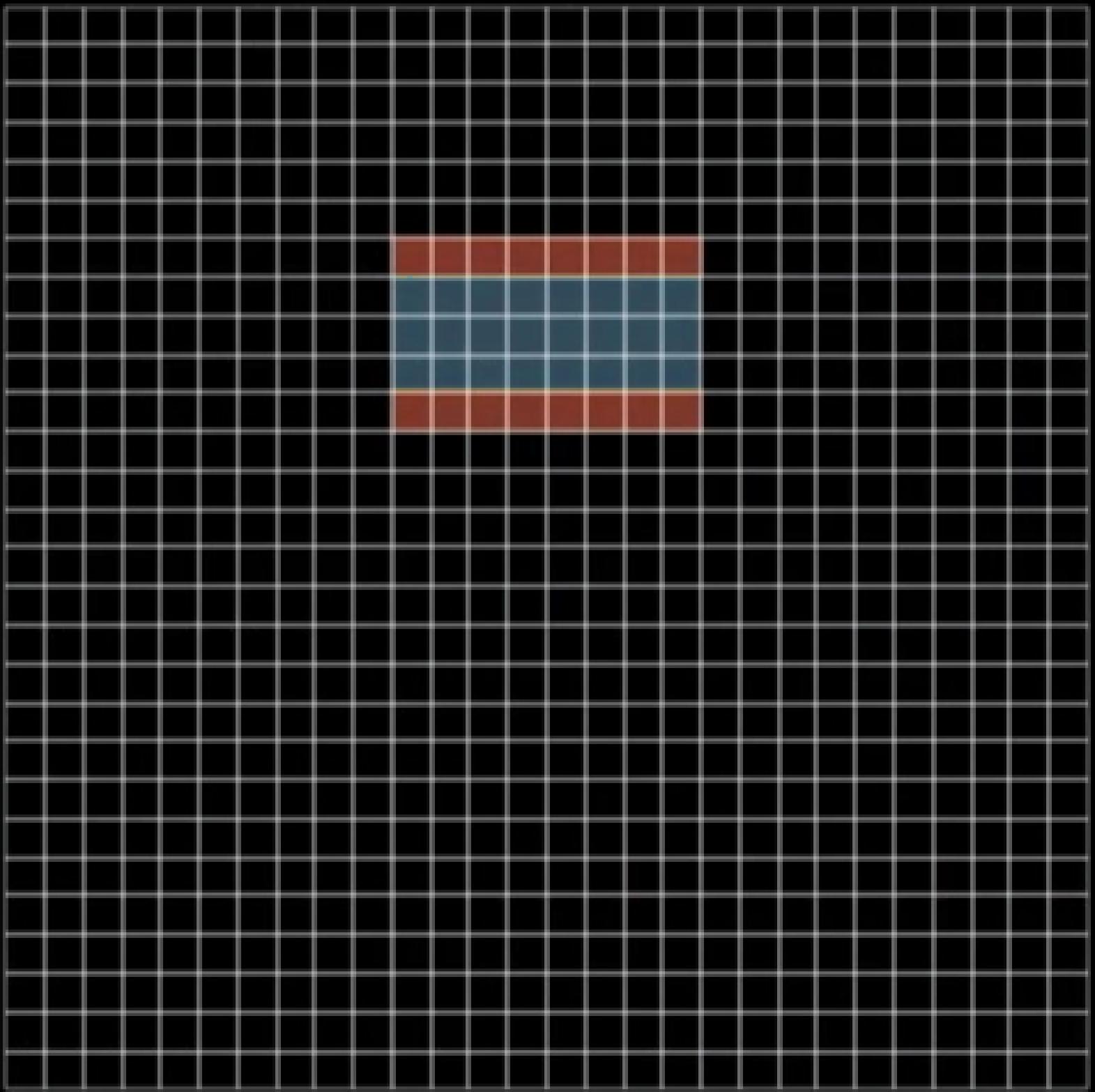
$$w_1 a_1 + w_2 a_2 + w_3 a_3 + w_4 a_4 + \cdots + w_n a_n$$

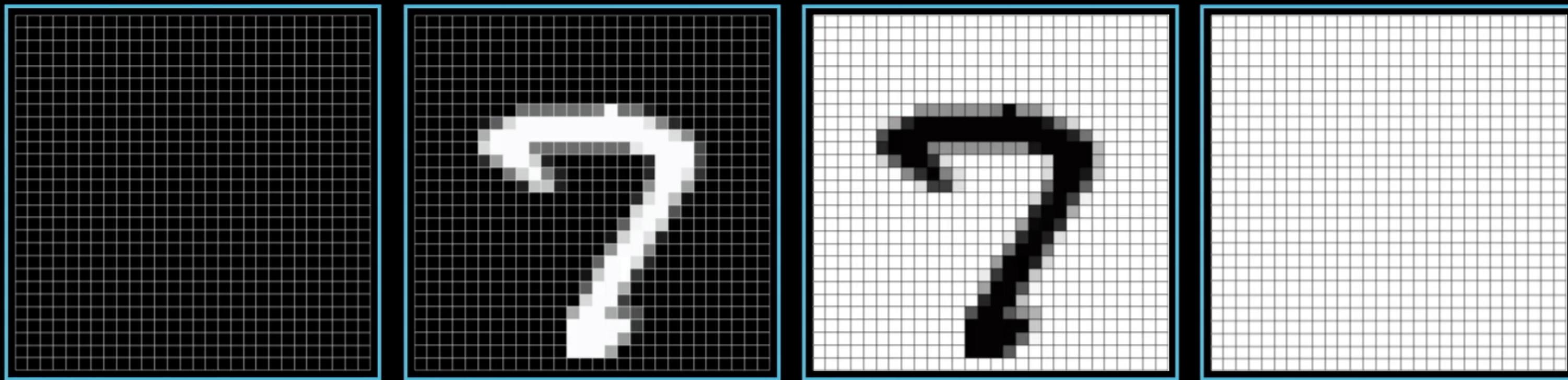
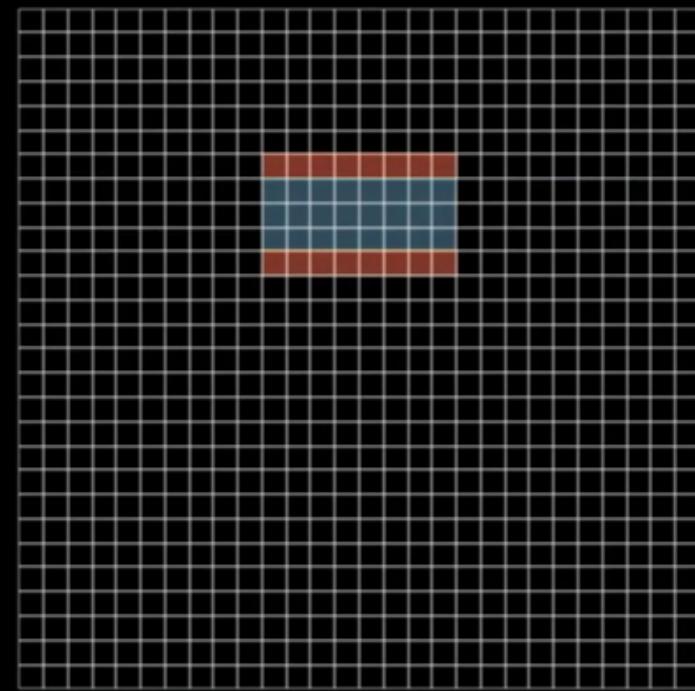
784





# Ensuring Narrow Edge





A

B

C

D

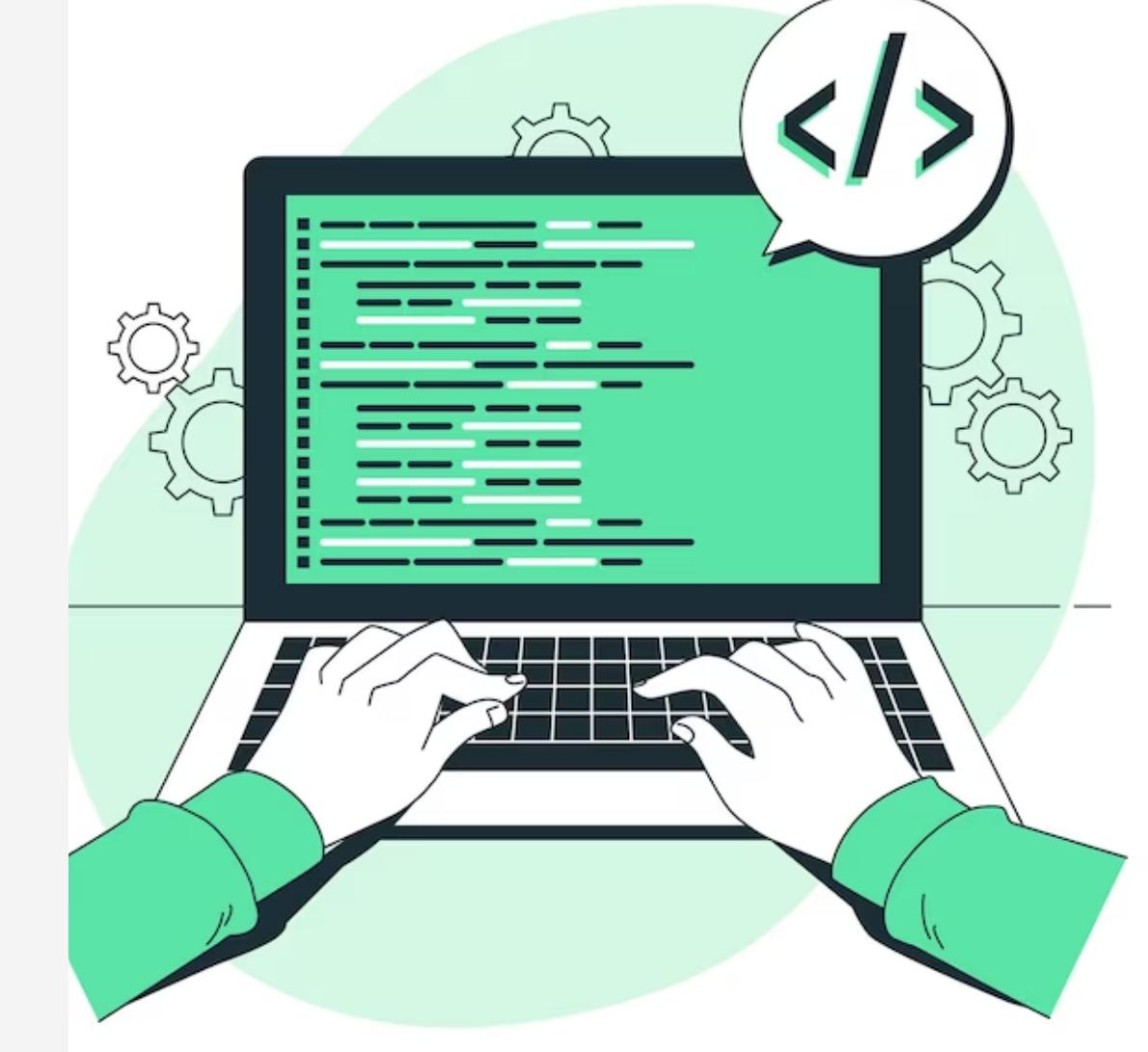
Order of Activation?

Thank  
you!

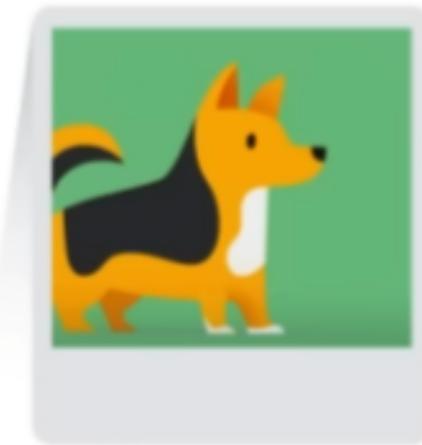
# Generative AI

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***Neural networks, ML,  
Deep learning***



Discriminative  
technique

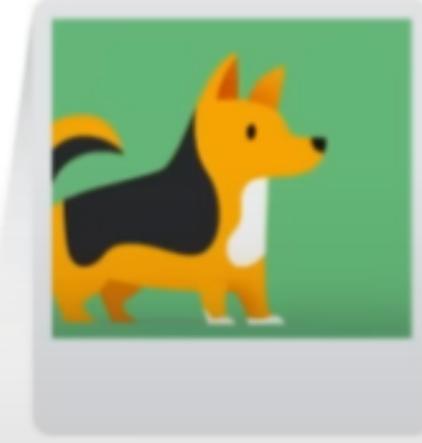


Classify

Discriminative model  
(classify as a dog or a cat)

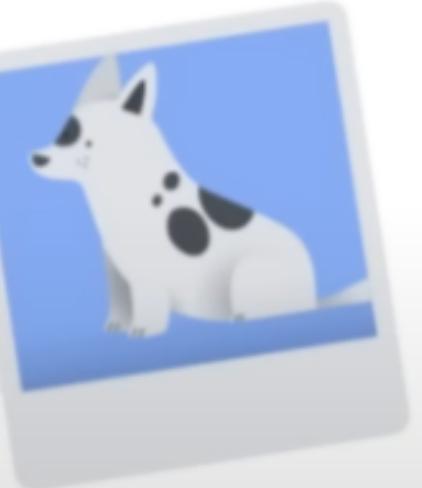


Generative  
technique

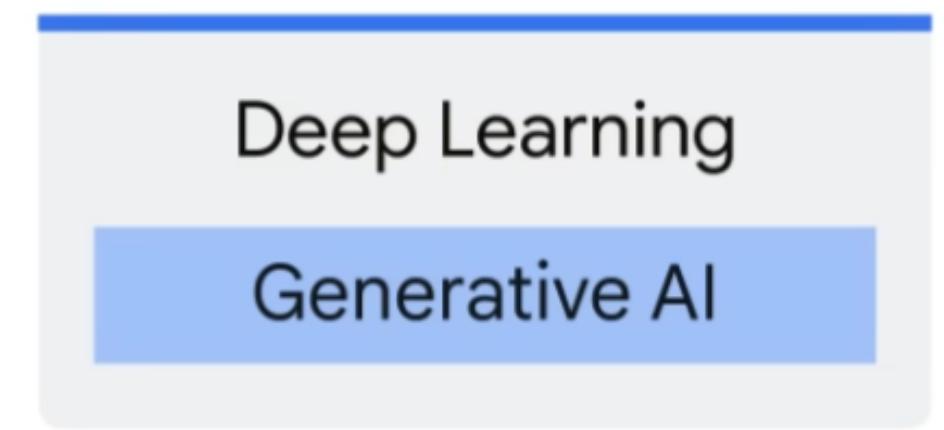
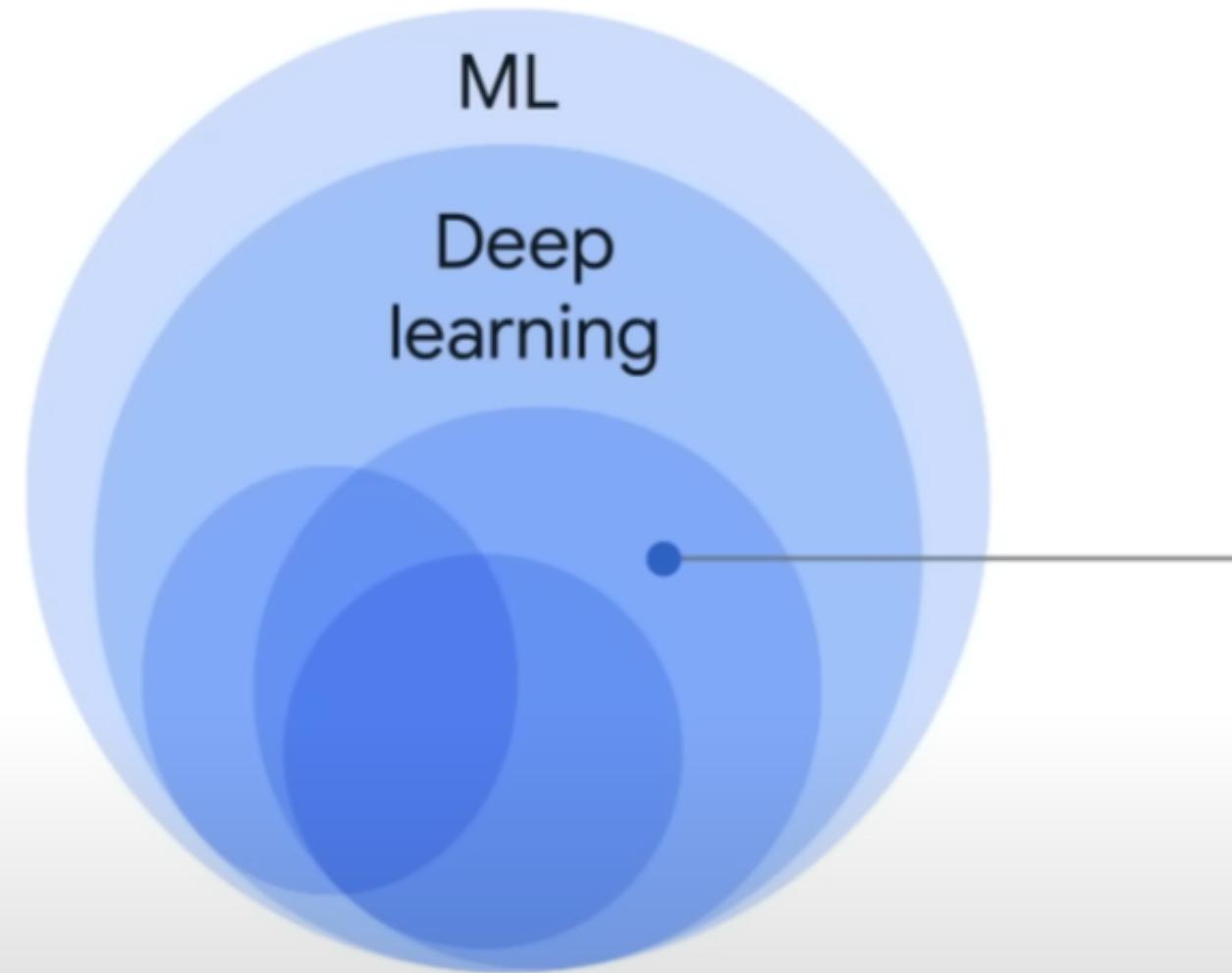


Generate

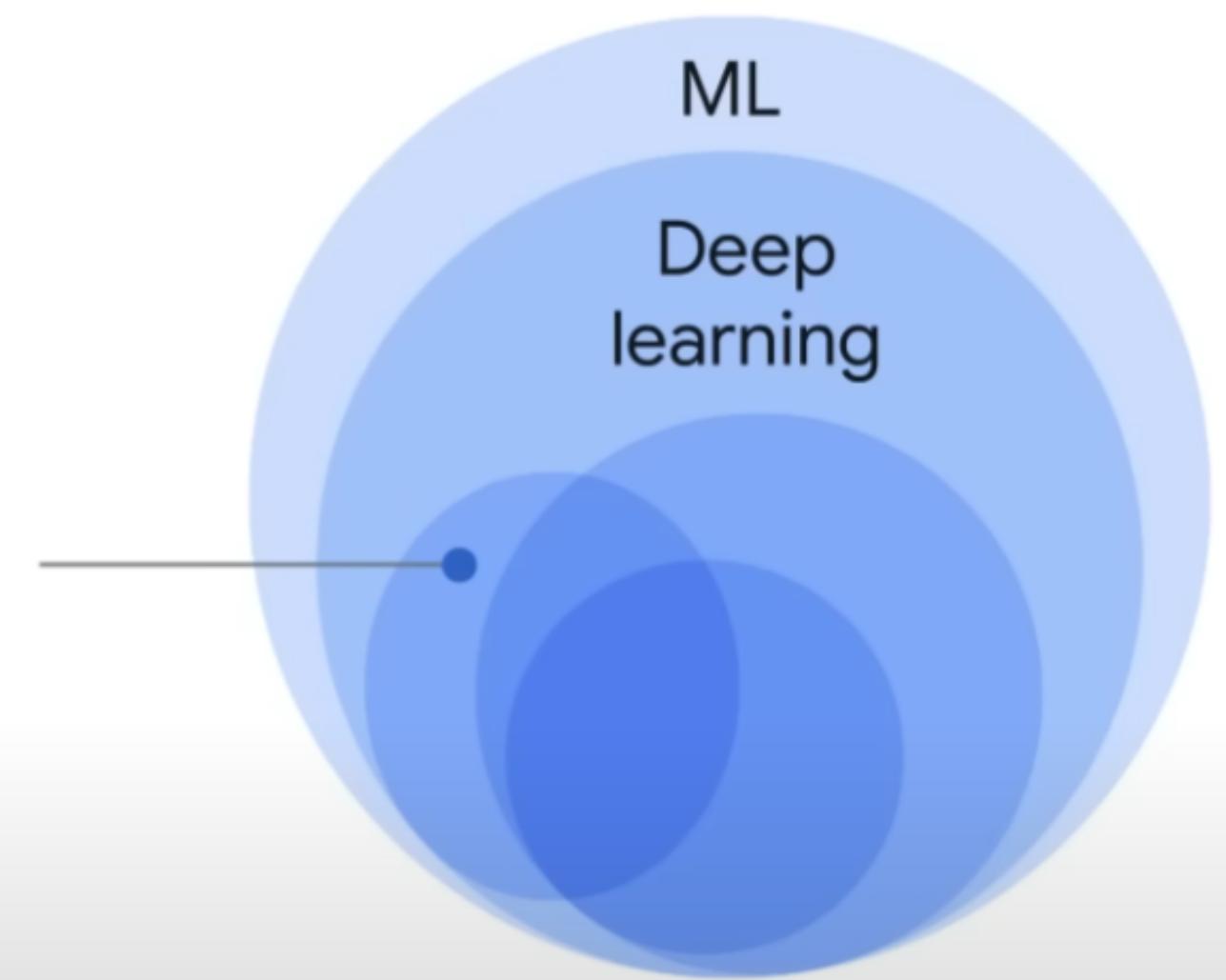
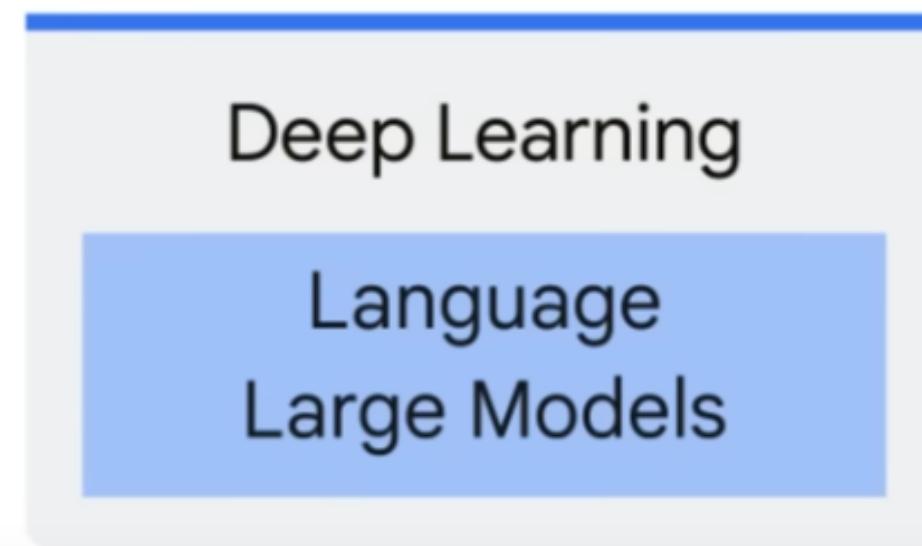
Generative model  
(generate dog image)

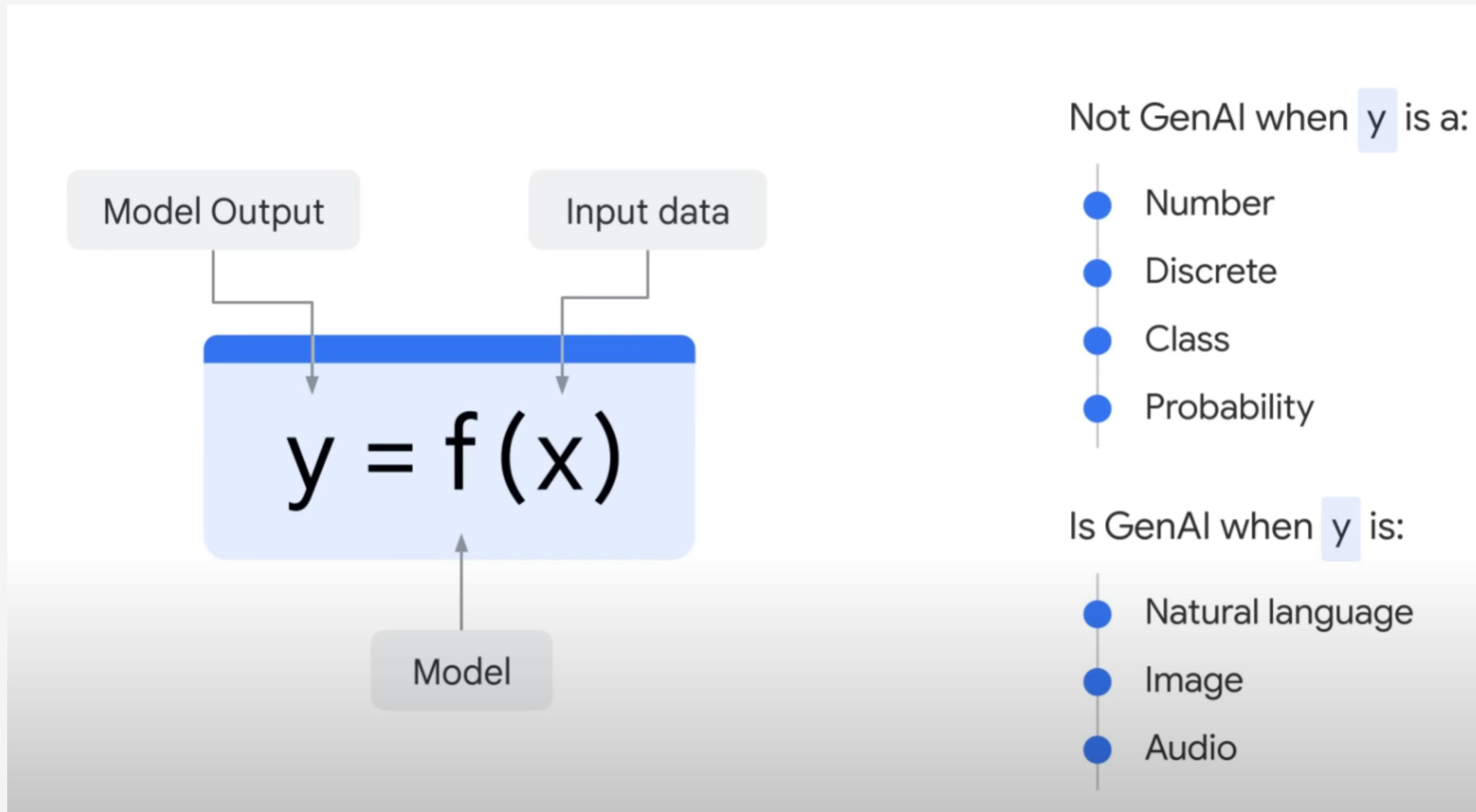


**Generative AI**  
is a **subset of**  
**Deep Learning**



**Large Language  
Models (LLMs)  
are also a **subset**  
of Deep Learning**

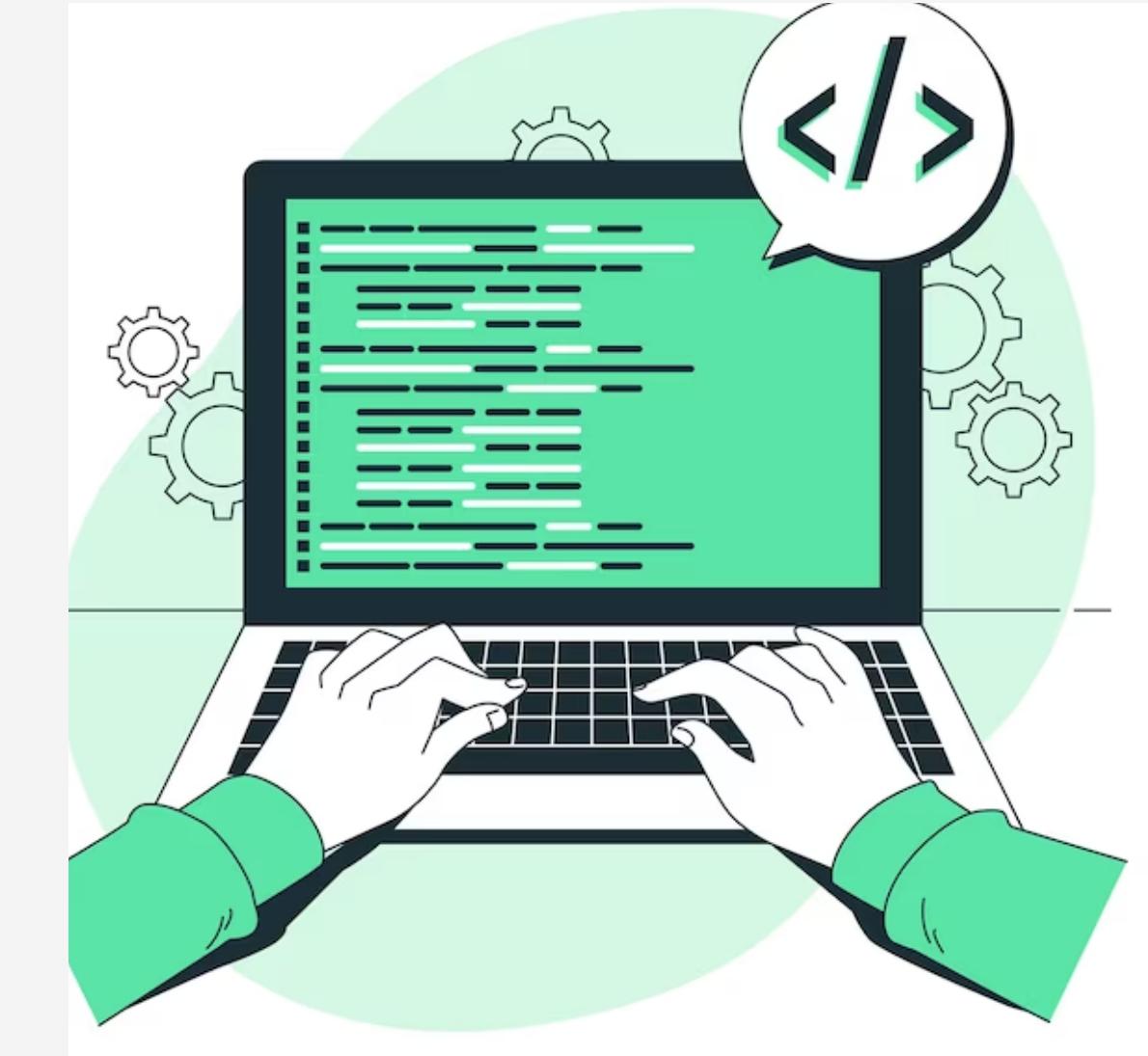




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    label  
  style:
```

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# Generative Language Models



***Neural networks, ML,  
Deep learning***

# Generative language models

---

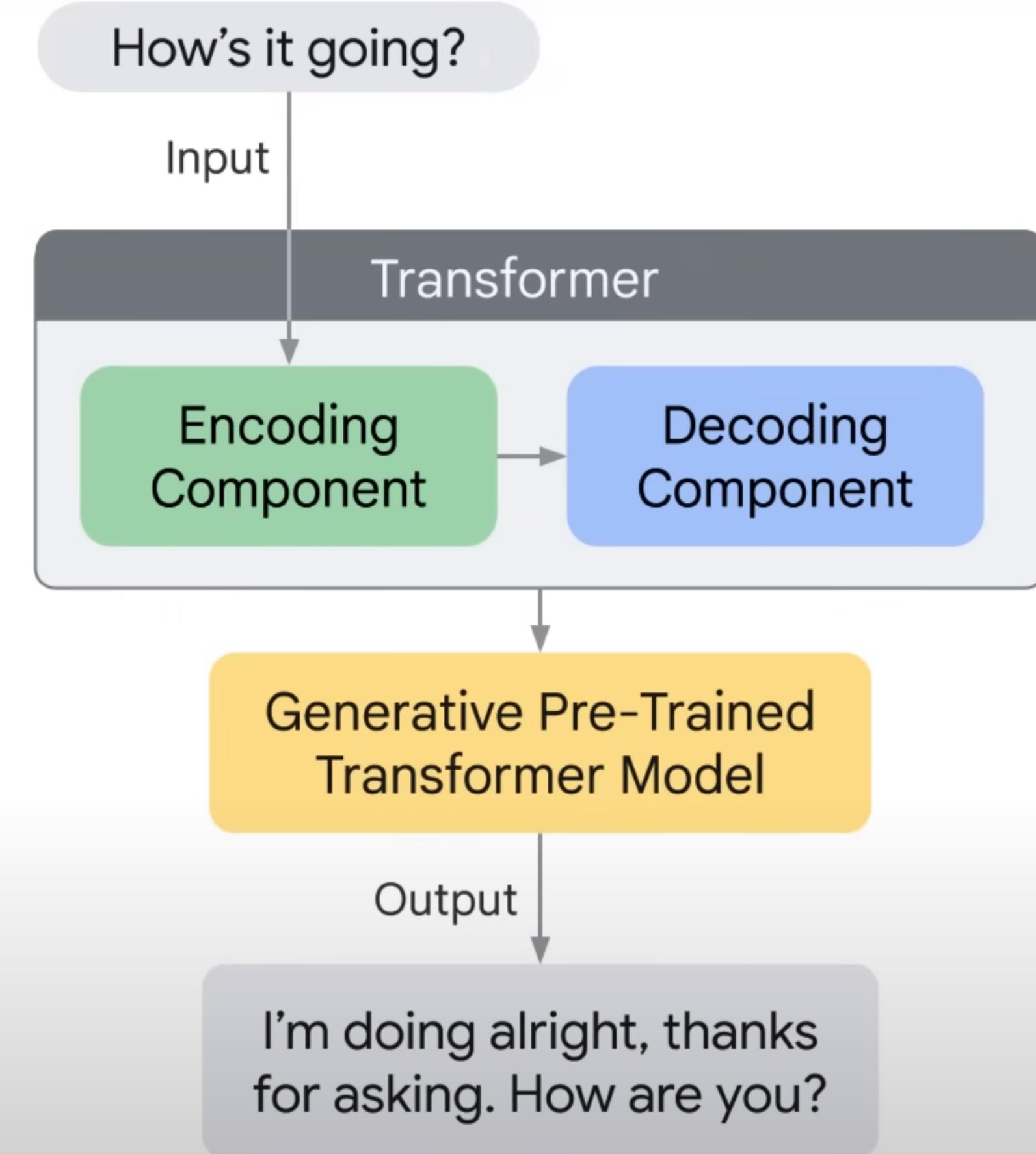
Generative language models learn about patterns in language through training data.

Then, given some text, they predict what comes next.

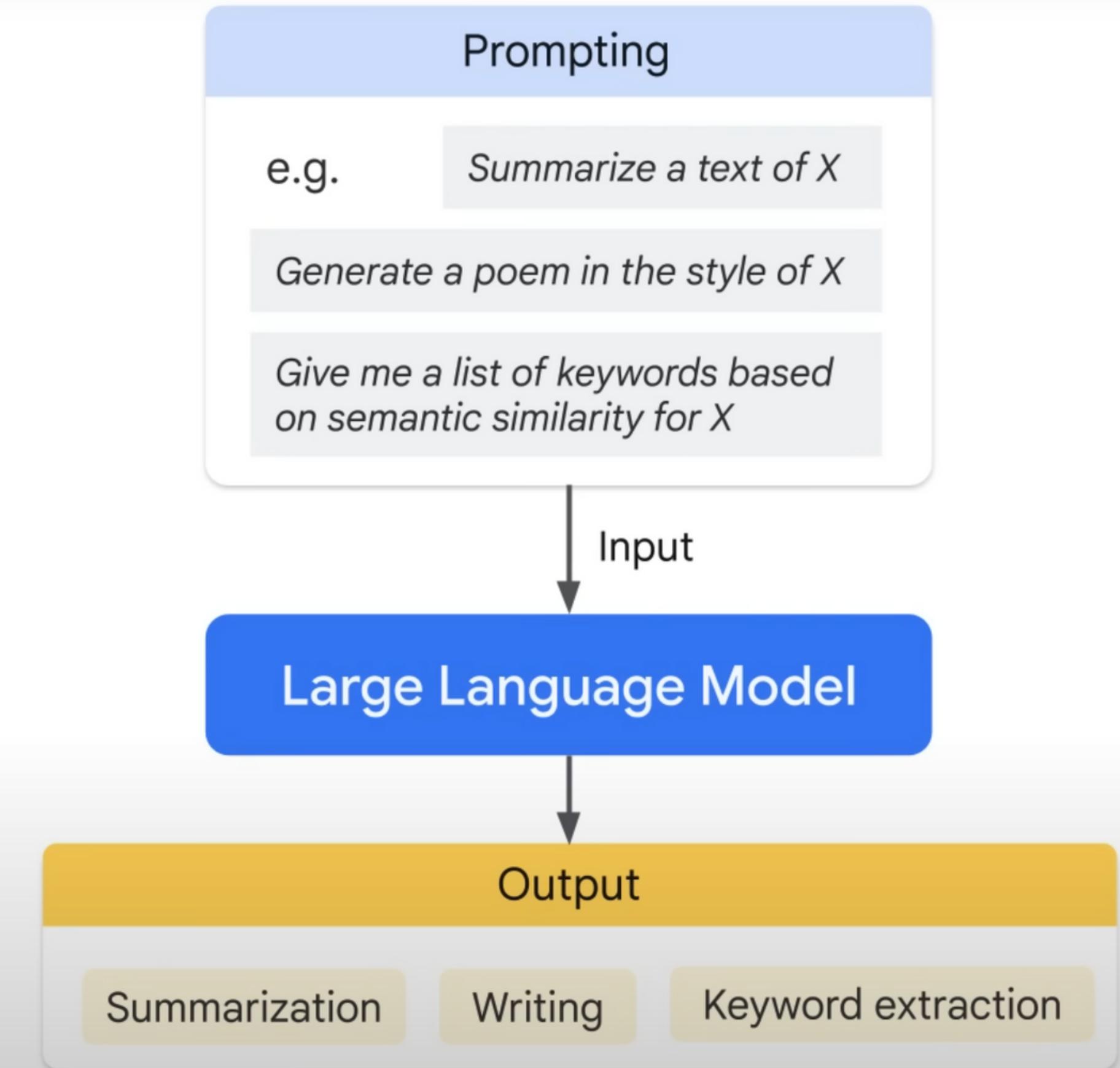
# How it Works

## Pre-Training:

- Large amount of Data
- Billions of parameters
- Unsupervised learning

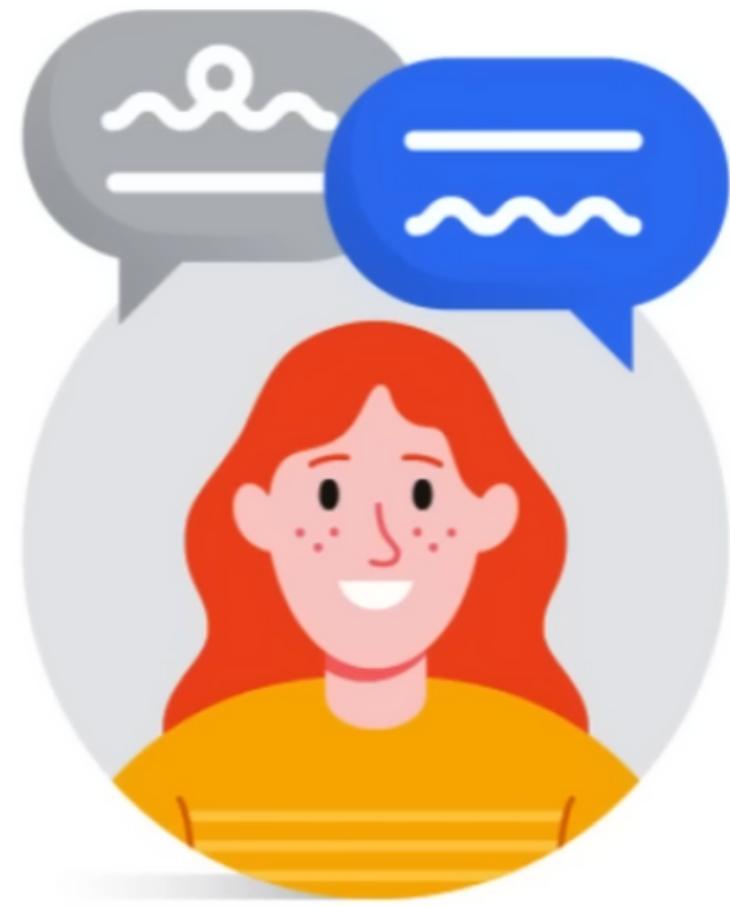


**Prompt Design:  
the quality of the  
input **determines** the  
quality of the output.**

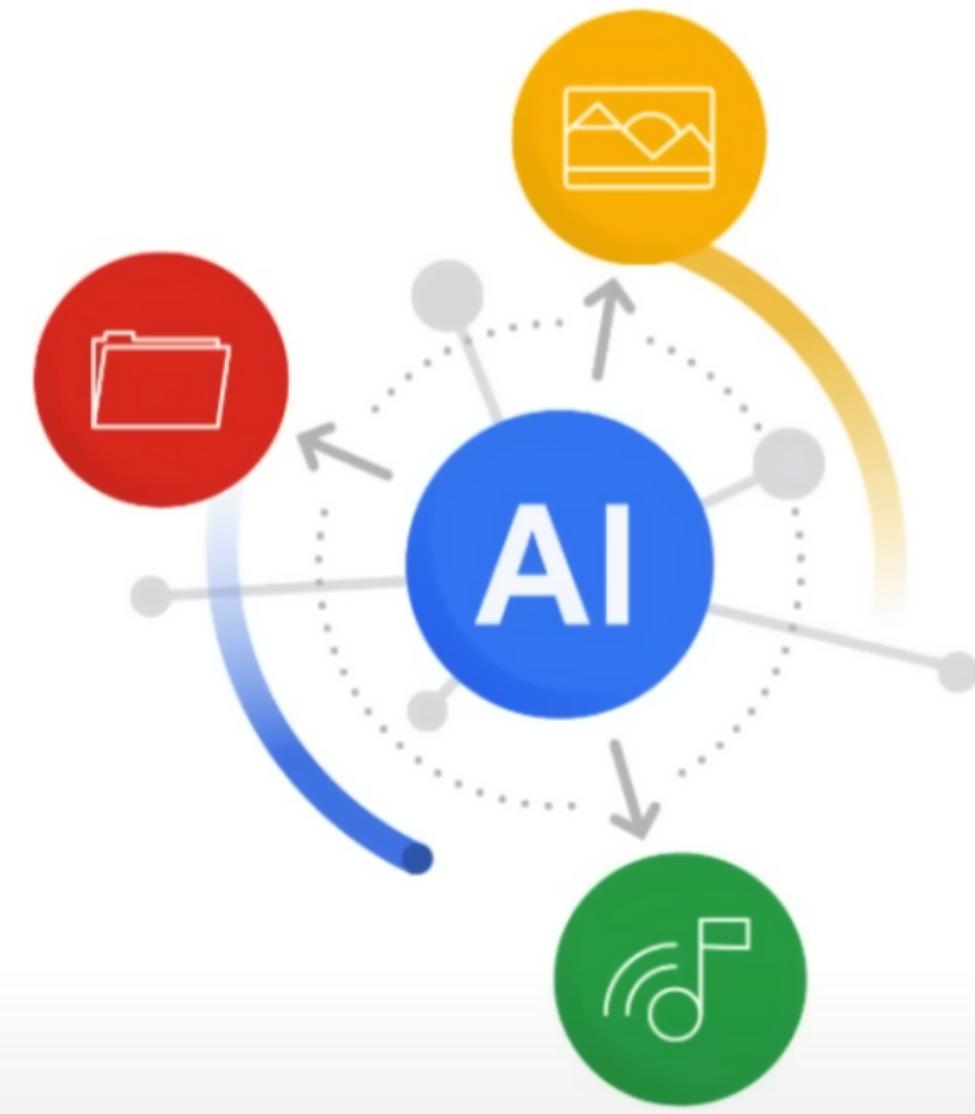




Forming a Database



Inputting a Prompt



Generating content

# Bard code generation

I have a Pandas DataFrame with two columns – one with the filename and one with the hour in which it is generated:

File	Hour
F1	1
F1	2
F2	1
F3	1

I am trying to convert it to a JSON file with the following format:

```
{"File":"F1","Hour":1}  
 {"File":"F1","Hour":2}  
 {"File":"F2","Hour":1}  
 {"File":"F3","Hour":1}
```

How can I do this?

