

# Deep Learning

Getting Started

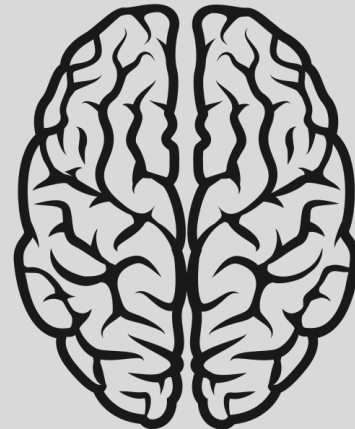
**Kya hai Deep Learning?**

# Kya hai **Deep Learning**?

Subfield of **Machine Learning**

Inspired by

**Structure and Functioning**



# Artificial Neural Network

**Let's Do some Math**

# What is **$f(x)$** ?

$$f(2) = 4$$

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$$f(2) = 4$$

$$f(3) = 9$$

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$$f(2) = 4$$

$$f(3) = 9$$

$$f(4) = 16$$



# What is **$f(x)$** ?

$$f(2) = 4$$

$$f(3) = 9$$

$$f(4) = 16$$

$$f(5) = ?$$

# What is **$f(x)$** ?

$$f(2) = 4$$

$$f(3) = 9$$

$$f(4) = 16$$

$$f(5) = ?$$

$$f(6) = ?$$

# What is $f(x)$ ?

$$f(2) = 4$$

$$f(3) = 9$$

$$f(4) = 16$$

$$f(5) = 25$$

$$f(6) = 36$$

$$f(x) = x^2$$

**Write a program to find the square of a number**

# Write a program to find the square of a number

```
def f(x):  
    return x ** 2  
  
n = input("Enter a number: ")  
output = f(n)  
print("Square :", output)
```

```
if __name__ == '__main__':  
    main()
```

# Traditional

```
def f(x):  
    return x ** 2  
  
n = input("Enter a number: ")  
output = f(n)  
print("Square :", output)
```

# Machine Learning

$$f(2) = 4$$

$$f(3) = 9$$

$$f(4) = 16$$


$$f(5) = ?$$

$$f(6) = ?$$

$$y = f(x)$$

# Traditional

unknown      known      known




$y = f(x)$

The diagram shows the equation  $y = f(x)$  with three arrows pointing to its components. An arrow points from the word 'unknown' to the variable  $y$ . Another arrow points from the word 'known' to the function symbol  $f$ . A third arrow points from the word 'known' to the variable  $x$  inside the parentheses.

# Machine Learning

unknown

known      known



$y = f(x)$

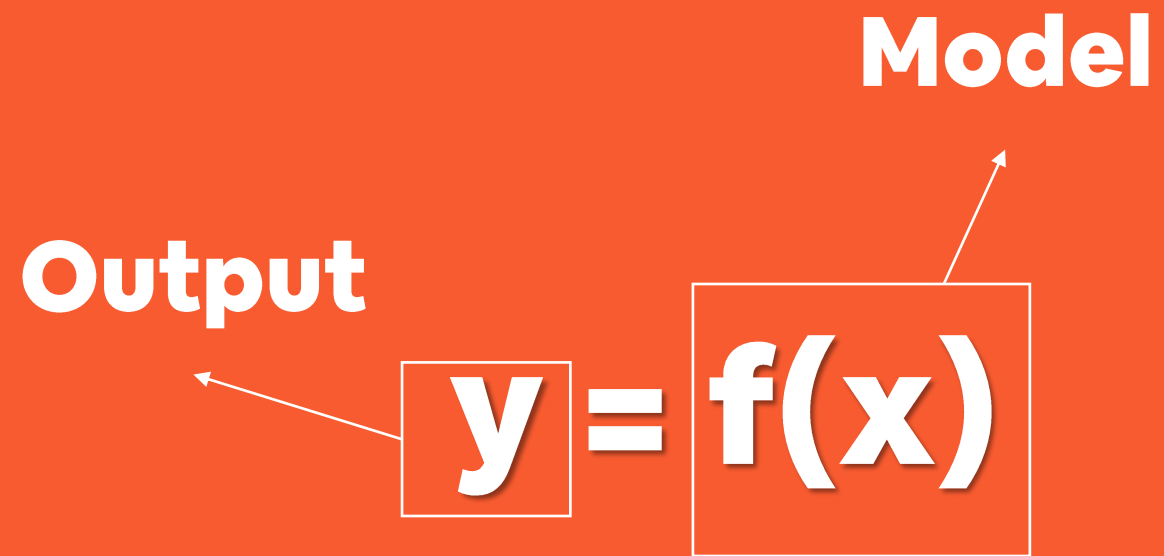
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$$y = f(x)$$



$$y = f(x)$$

**only Objective: Learn  $f(x)$**



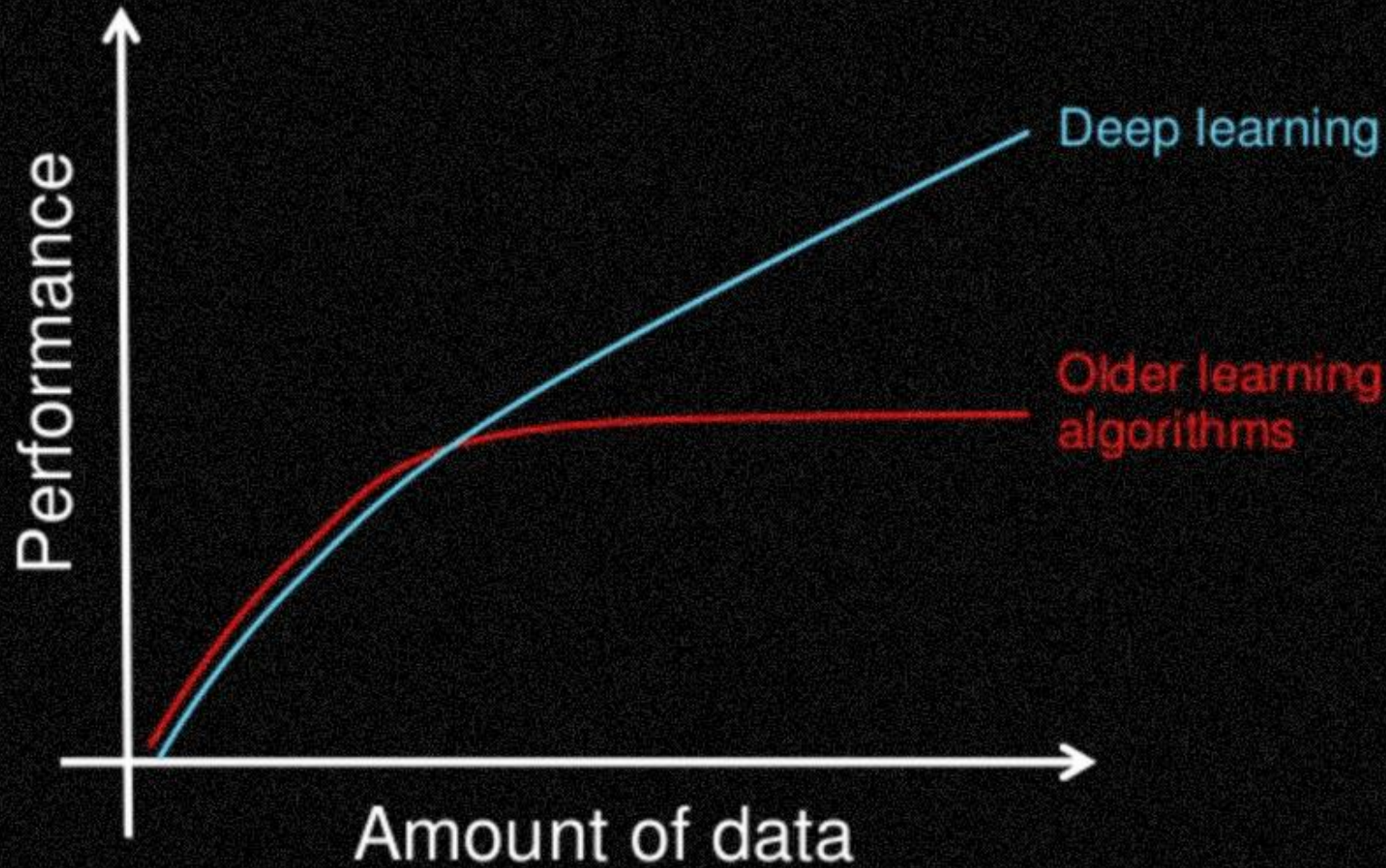
**But.....**

**why Deep Learning ??**

**Machine Learning** does the same 😞

**DATA**

# Why deep learning



How do data science techniques scale with amount of data?

## **Next Video:**

- **Getting started with PyTorch**
- **Behaviour of Deep Learning Model**