



INTRODUCTION TO:

DEEP LEARNING+ COMPUTER VISION COURSE



LET'S THINK:

1. Why are you here?

*You might be thinking that you're here to learn Deep-learning /Computer-vision, you're right to the some extent. What I want you to learn is TO THINK **with respect to** DEEP LEARNING.*

When you start doing so, you'll give your 100% concentration and that's the most vital thing in learning any new skill.

- **WHAT IS 4IR:**

We are living in an era where we're facing century's biggest paradigm shift which is 4th Industrial revolution.

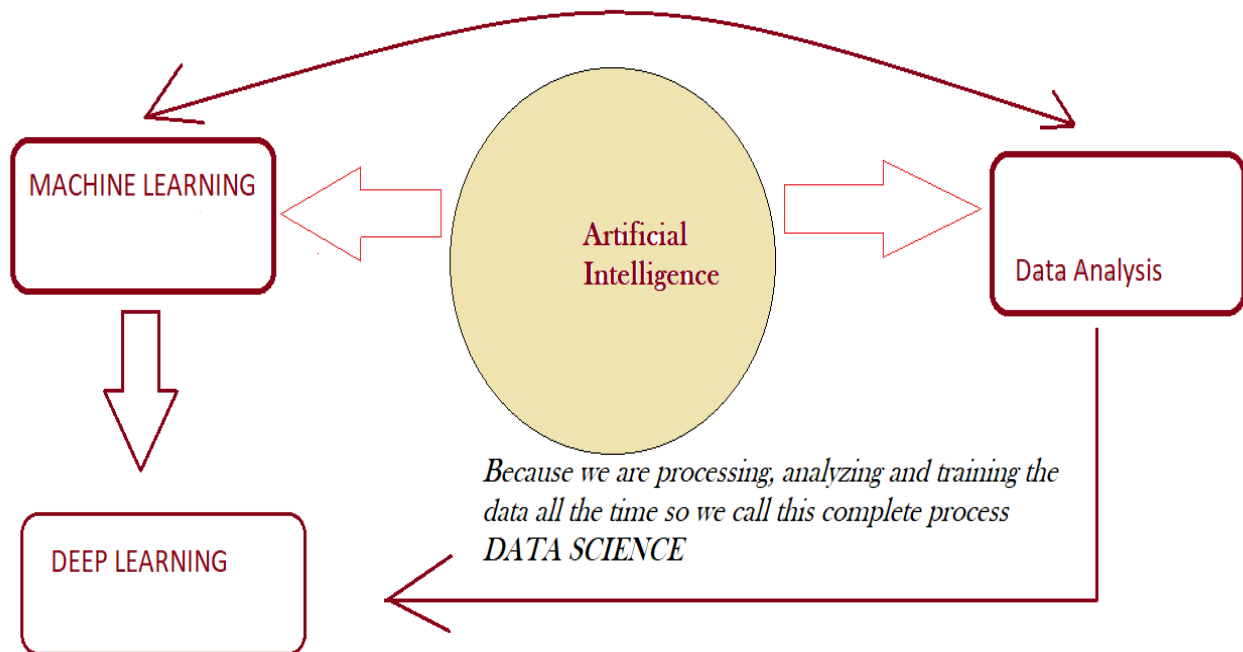
- *1st Industrial revolution was the invention of steam engine*
- *2nd Industrial revolution focused on the Electricity*
- *3rd was the invention of Computer.*

- *Let's understand the 4 pillars of '4 .I.R'.*

- *1st is Artificial Intelligence*
- *2nd is IOT (Internet of things)*
- *3rd is Cloud Computing*
- *4th is Block Chain*

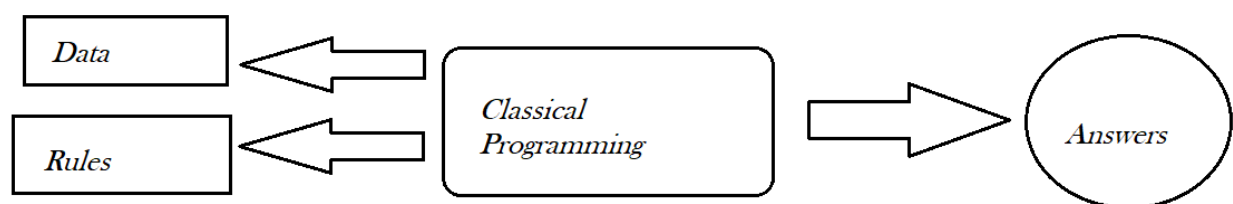
We are here to learn one of the main PILLAR of 4th Industrial Revolution

WHAT IS ARTIFICIAL INTELLIGENCE:



In this whole process, we're making an intelligent machine that can take decisions whenever it needs to be and predict some unseen output according to the previously given information. We call this information "DATA", whether it's in the form of text, image or audio.

In classically programming we give Data and rules as the Input and receive the Answer at the output



For Example:

If we have to perform the addition $2+2=4$ we have to feed the rule of addition in order to get the result.

But what if Computer learns the rules itself?

MACHINE LEARNING:

Questioning is Half of Knowledge

The concept of 'Machine Learning' start with a question: "rather feeding all the rules, what if computer learn all the rules by itself, just like HUMAN BEING.

For Example:

2 4 6 8 10 ? ?

There is a 99% possibility that you are able to predict what will be the next two numbers. We apply exactly this idea into the machines.

This is MACHINE LEARNING.

After this idea we make some Machine Learning algorithms with the help of these algorithm we are able to predict to the some extent, but this technique has a limitation, it's not good for Big DATA at this very point DEEP LEARNING joins the party.

What we will be focusing in this course is the concept of DEEP LEARNING.

DEEP LEARNING:

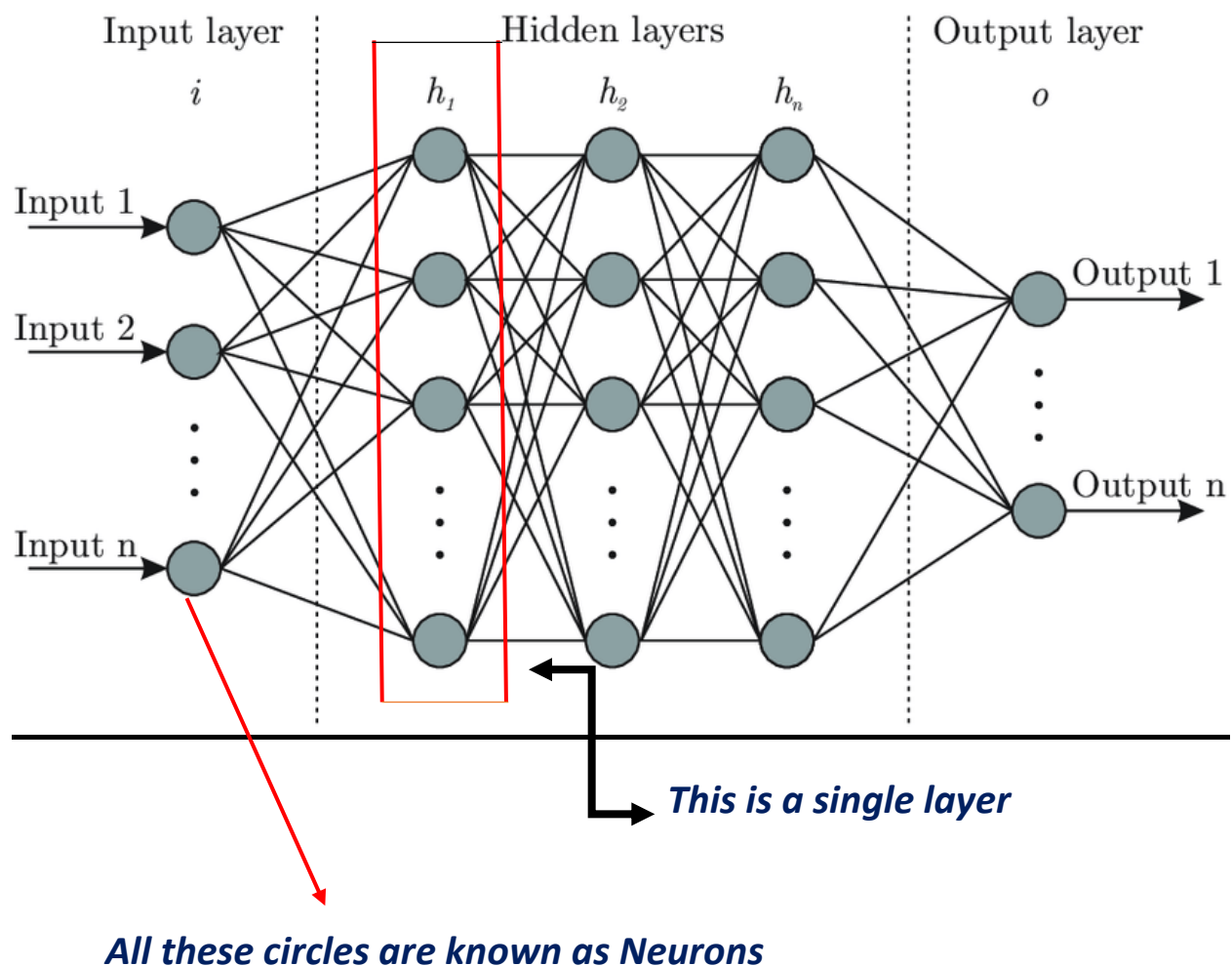
It's a technique inspired by human brain, how Human brain thinks, work and take important decision.

LET'S TAKE AN EXAMPLE:

You are currently looking at the screen with the help of your eyes you are able to “SEE”. In order to give machine the sense of sight we use our camera and we name it COMPUTER VISION.

Your eye sends the signal to your brain’s neural network in the same manner COMPUTER VISION send the signal to “DEEP NEURAL NETS”

NEURAL NETWORK:



This structure is inspired from our brain's Neural Network, the basic difference is the size.

- *In DL we use 1000's of neurons (neuron is a single circle in the network) but, our brain has trillions of neurons.*
- *In DL we use some 100s of layers, our brain has millions of layers.*

There is a limitation of Deep Learning as well which is:

- *The availability of Data*
- *The availability of Computational power*

Deep Learning is a Data hungry technique the more data we give the better result it gives us, but in the market people are so resistive to share their data. Let say we have the access of unlimited data, we don't have computation power because we use CPUs and the training procedure of DL works with GPUs and with GPUs it takes around 2 to 3 months in training with a dataset of 1-2 lac pictures.

This limitation opens the door of QUANTUM COMPUTING

I wish you all the best,

MAY ALLAH INCREASE US IN KNOWLEDGE

(AMEEN)

