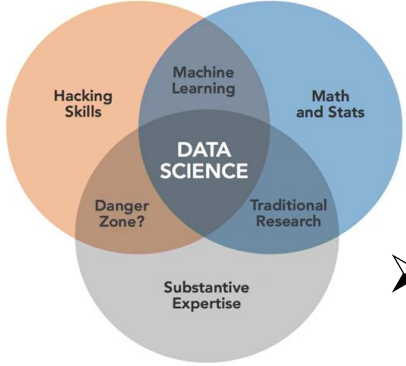




علم البيانات Data Science

حسان مشموشي





- **Data Science & AI**
- **Tools & Solutions**
- **Machine Learning**
- **Applying Data Science**
- **Artificial Neural Network**
- **Deep Learning**

مبادرة علم البيانات

➤ علم البيانات والذكاء الاصطناعي

➤ البرمجيات والحلول

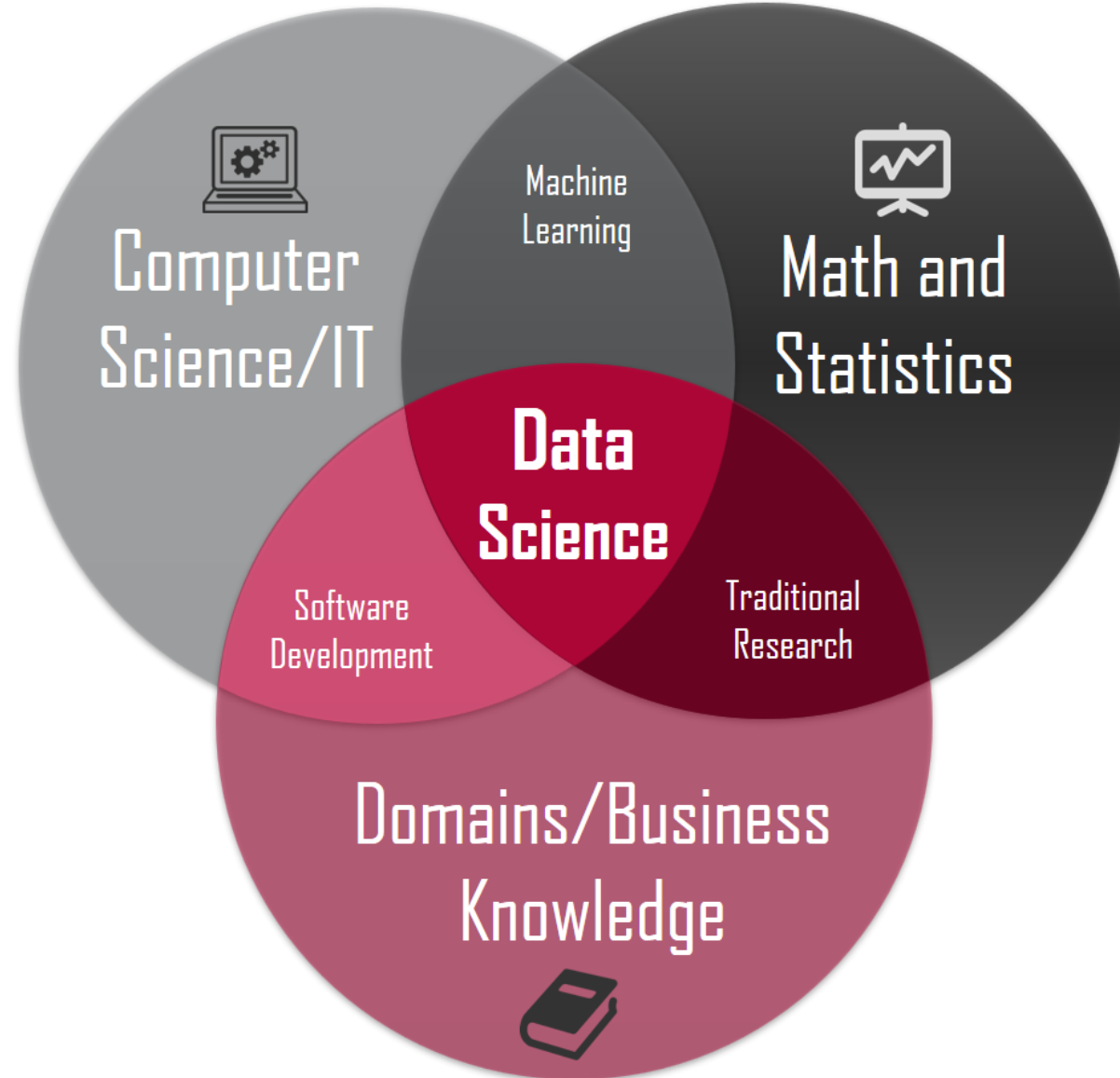
➤ تدريب الآلة

➤ تطبيق علم البيانات

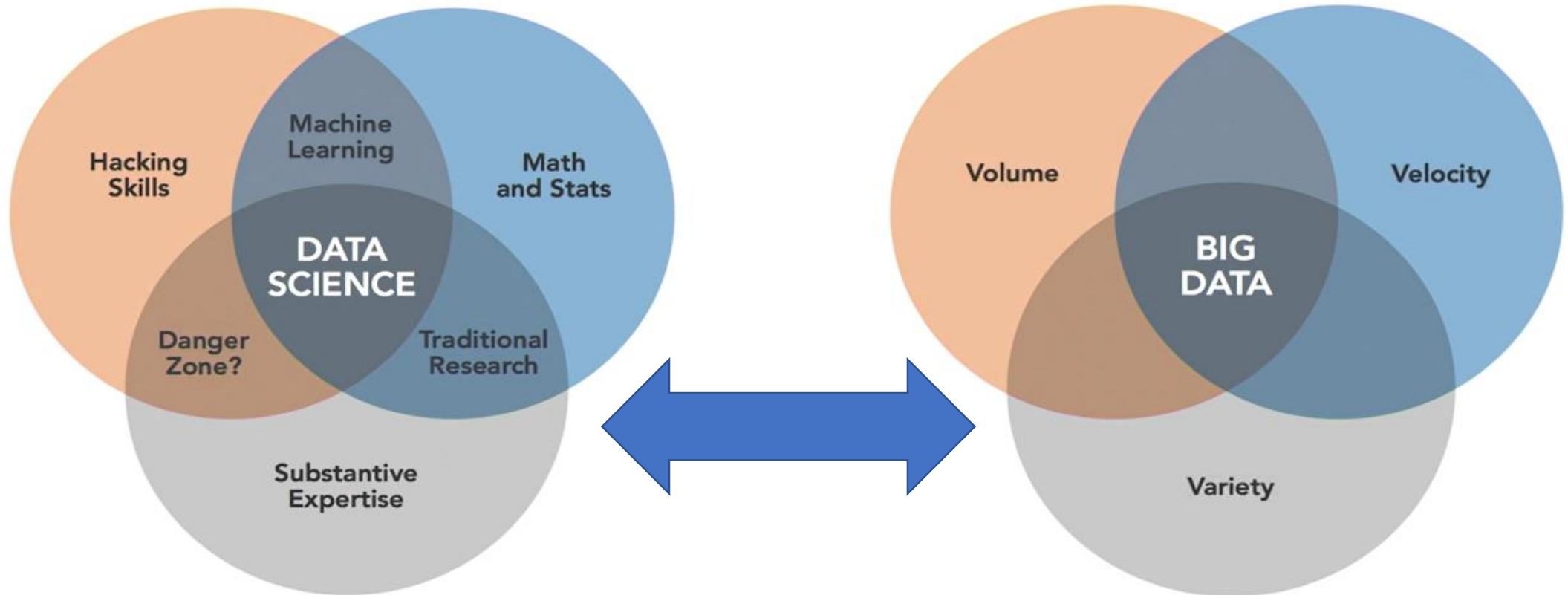
➤ شبكة الأعصاب الصناعية

➤ التعلم العميق في شبكة الأعصاب الصناعية

علم البيانات والذكاء الاصطناعي

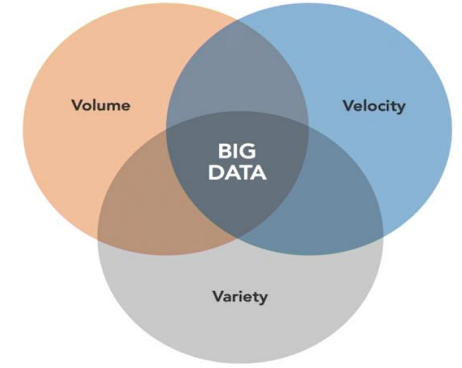
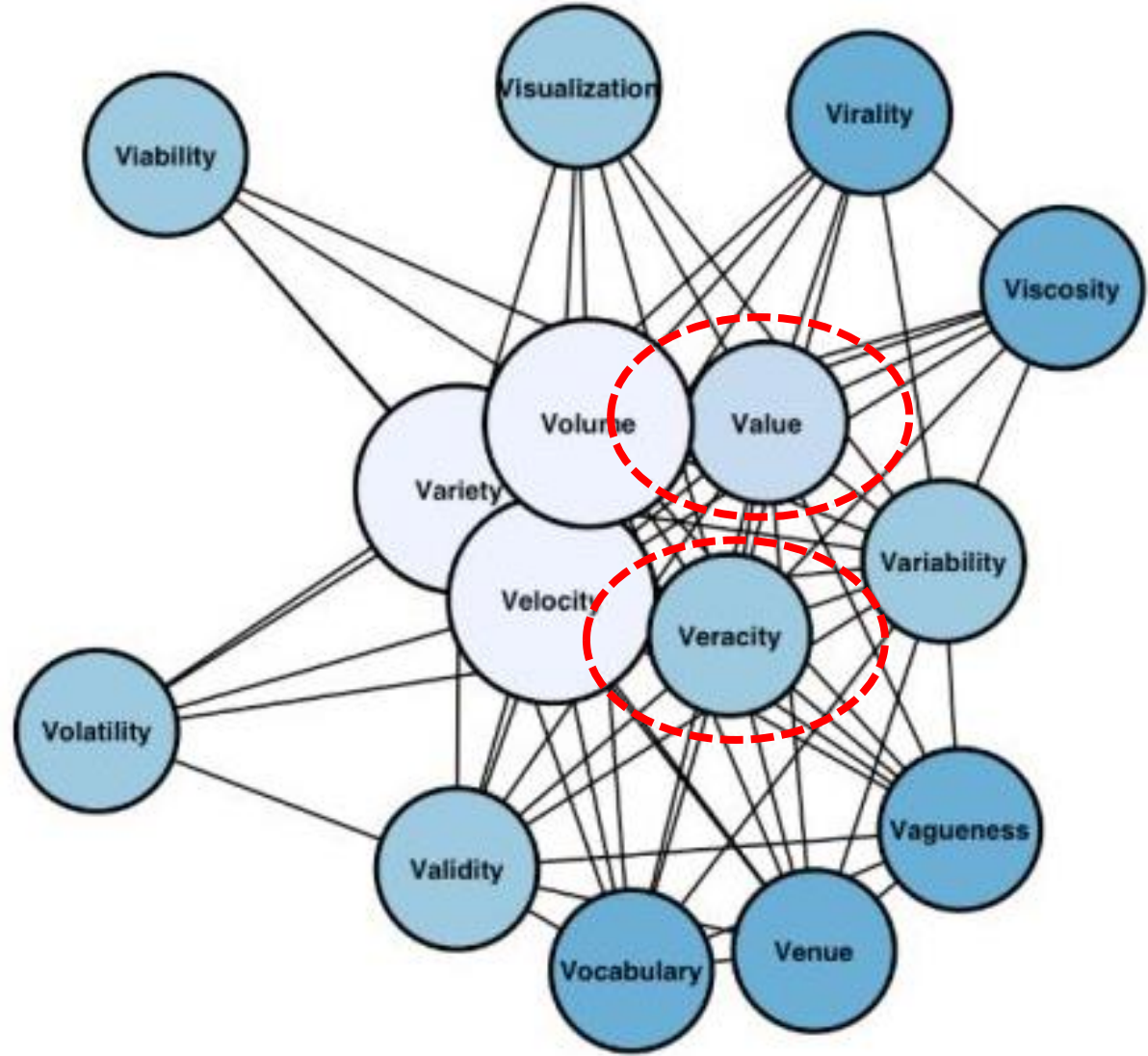


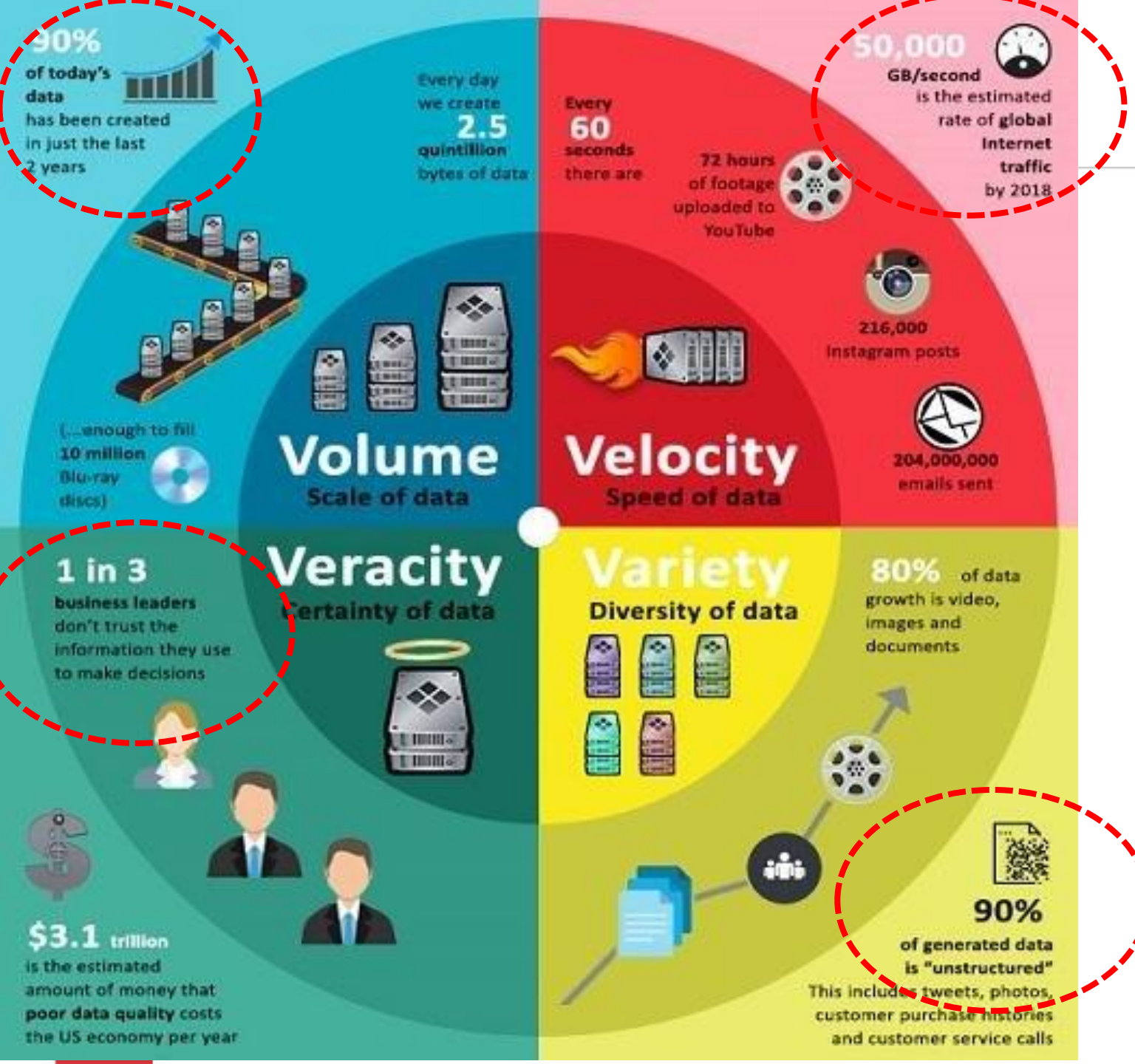
علم البيانات والذكاء الاصطناعي





علم البيانات والذكاء الاصطناعي





Every Minute



72 hours



510,000 comments
136,000 photos



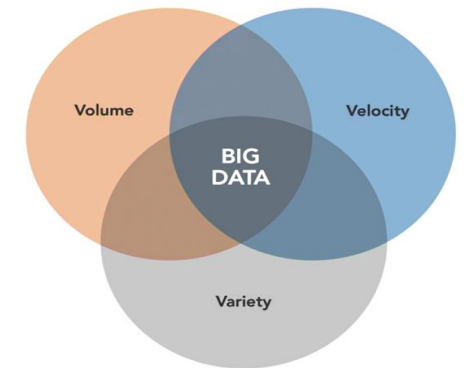
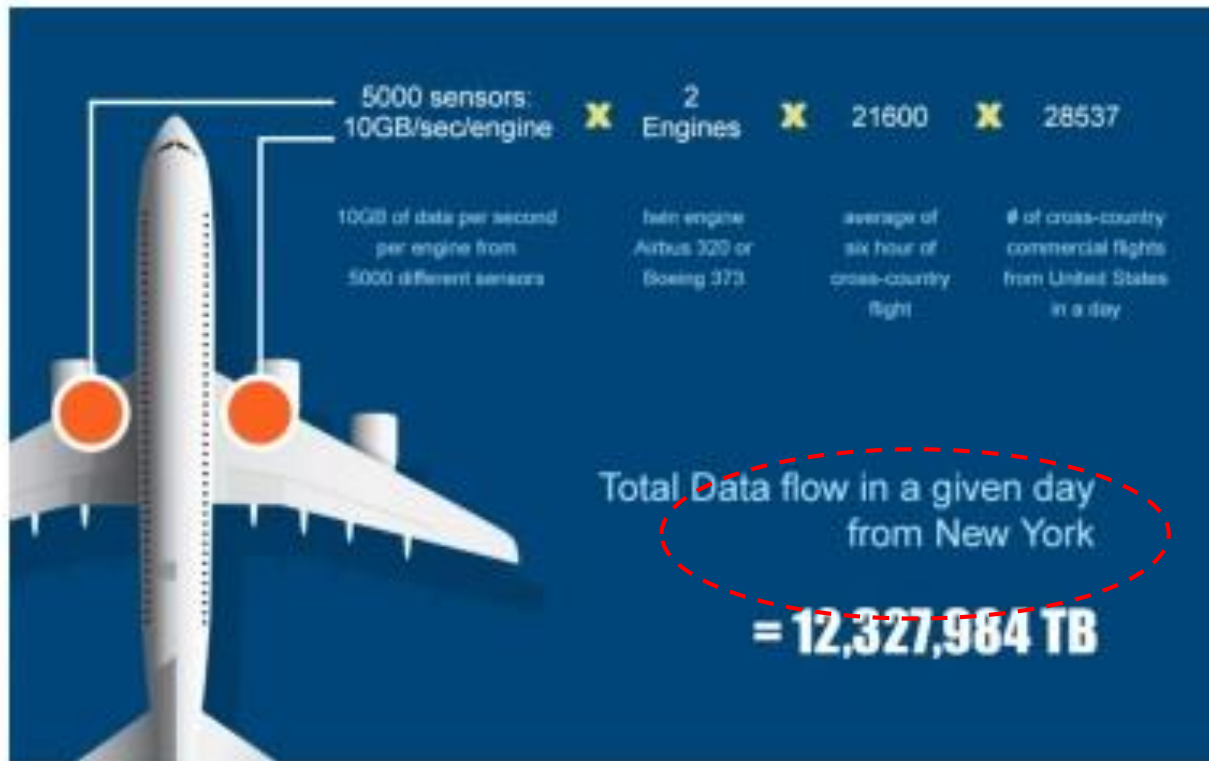
216,000 posts



350,000 tweets

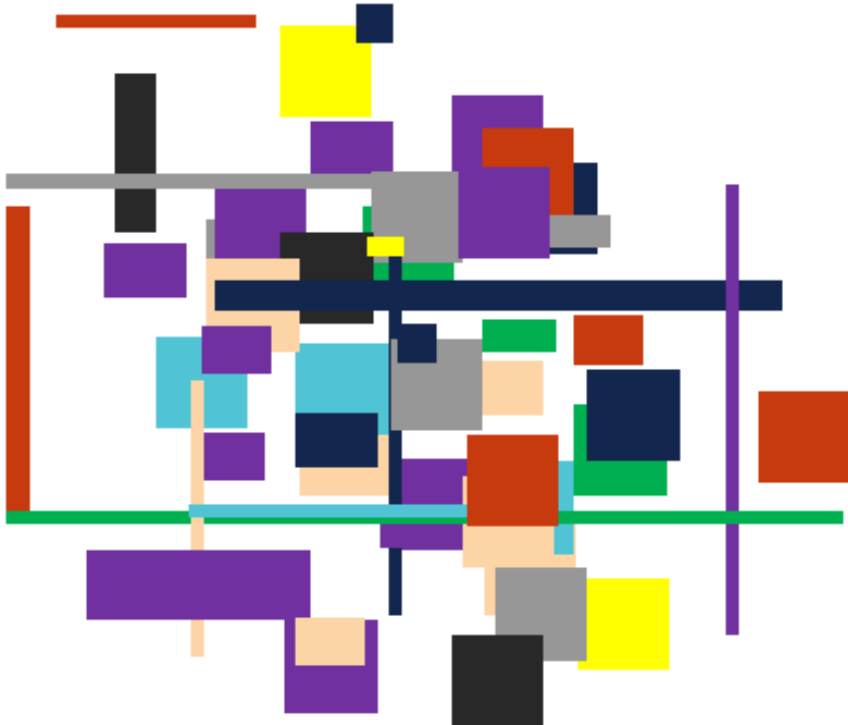


علم البيانات والذكاء الاصطناعي



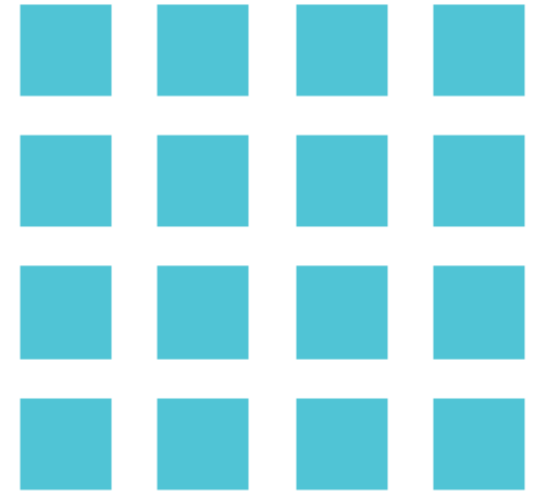


Unstructured Data

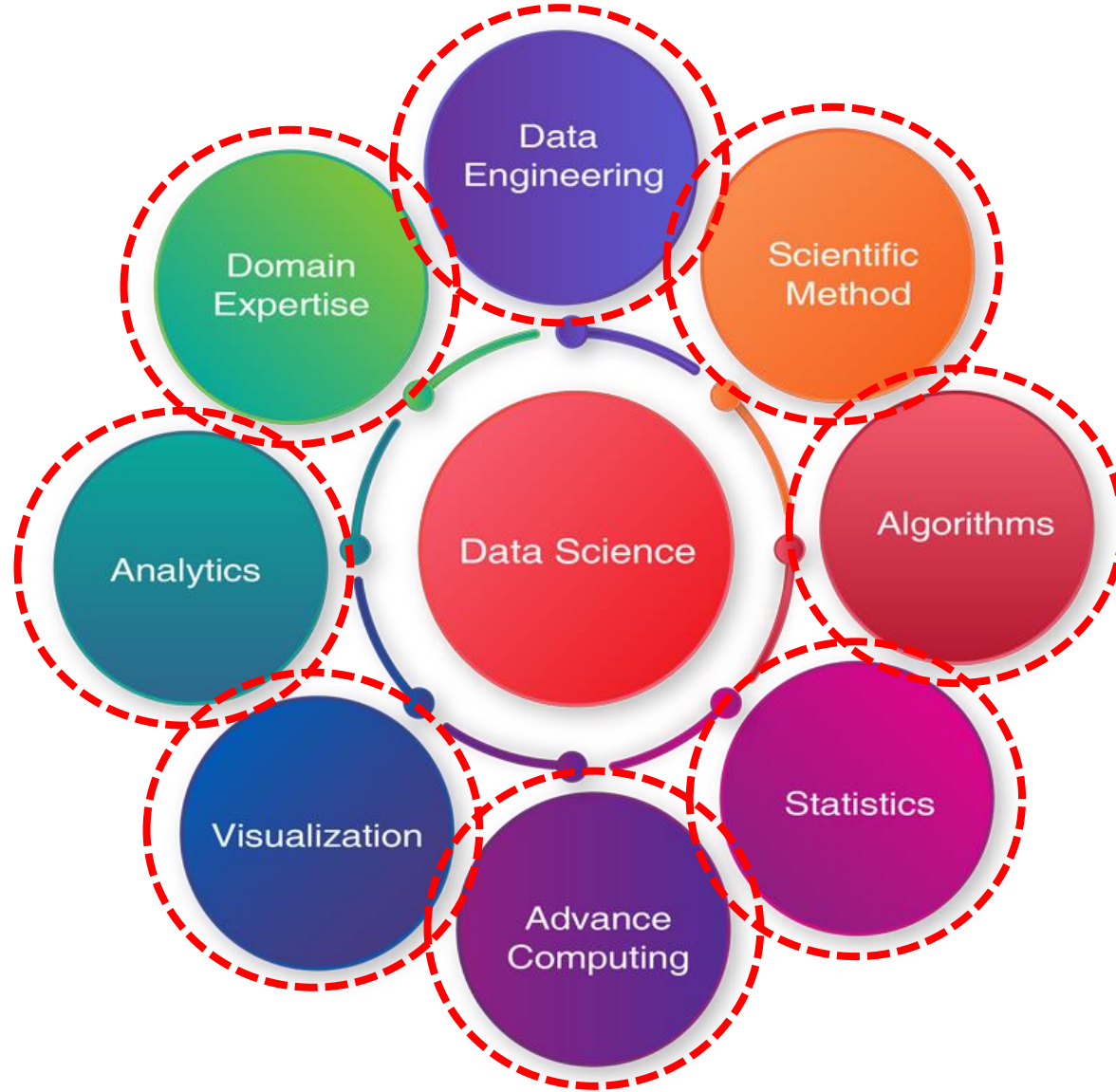


علم البيانات والذكاء الاصطناعي

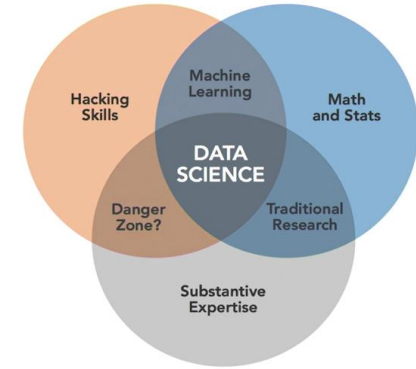
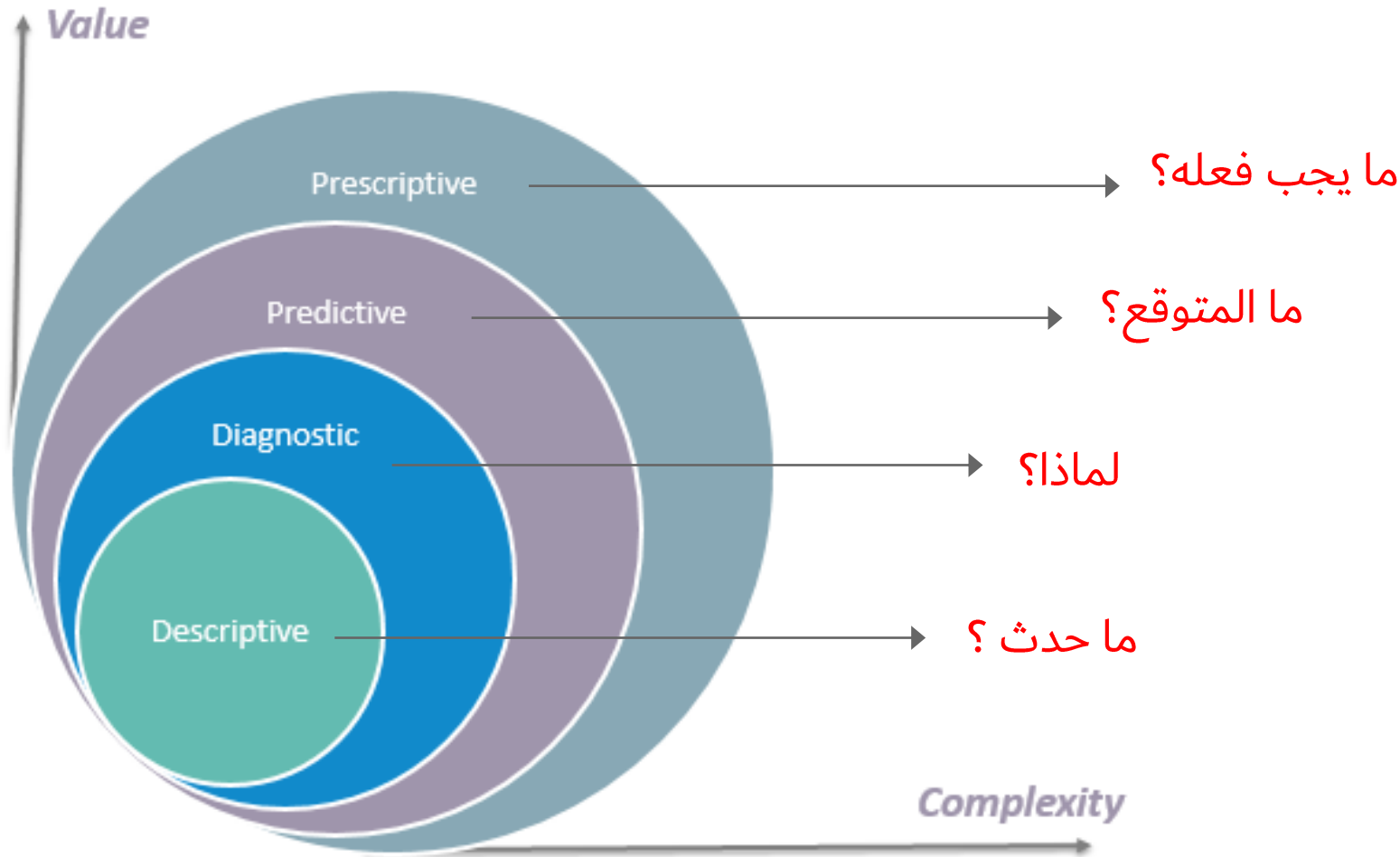
Structured Data



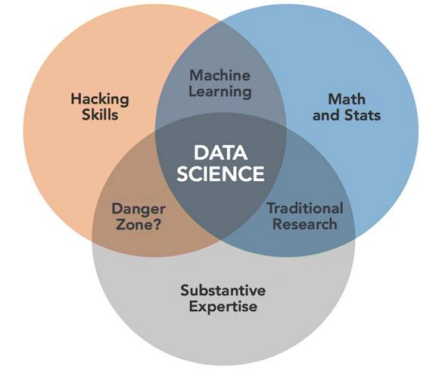
آليات تطبيق علم البيانات



علم البيانات والذكاء الاصطناعي

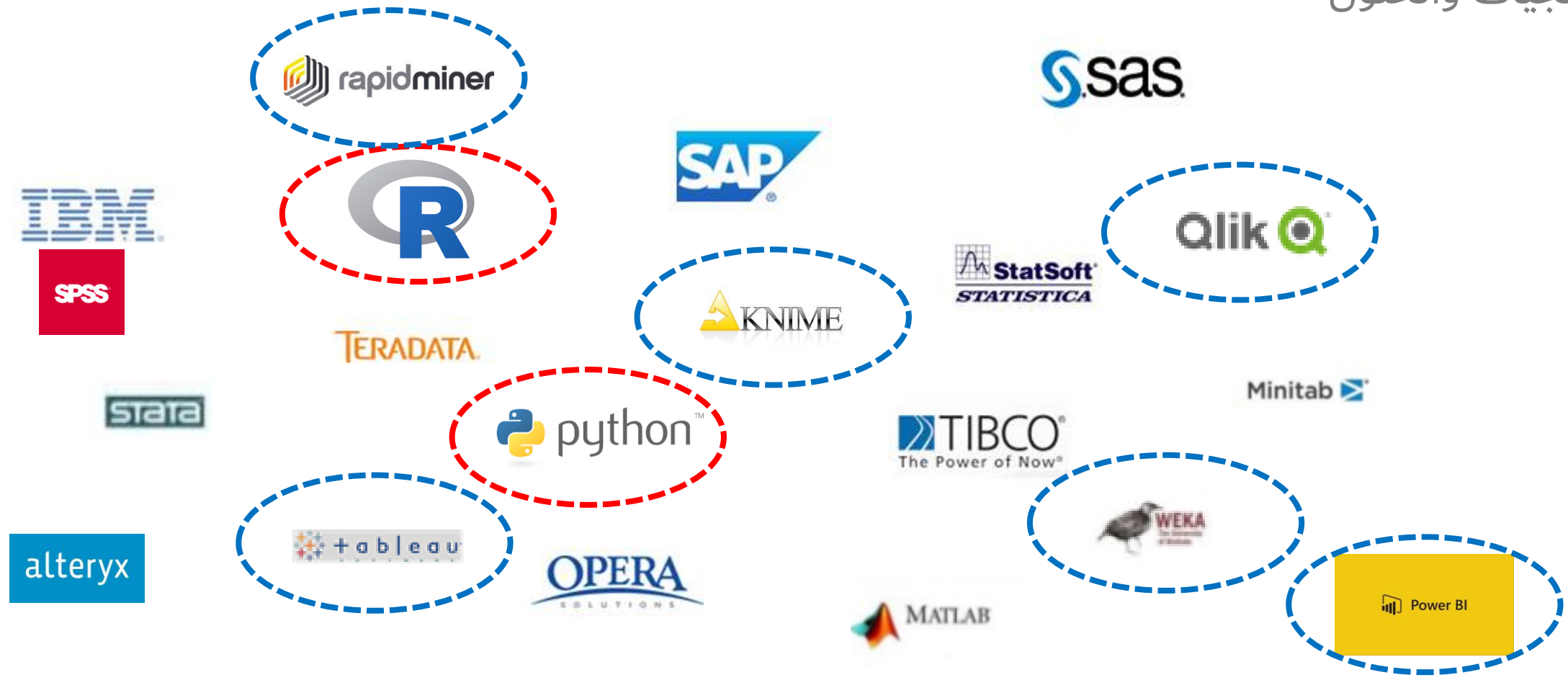


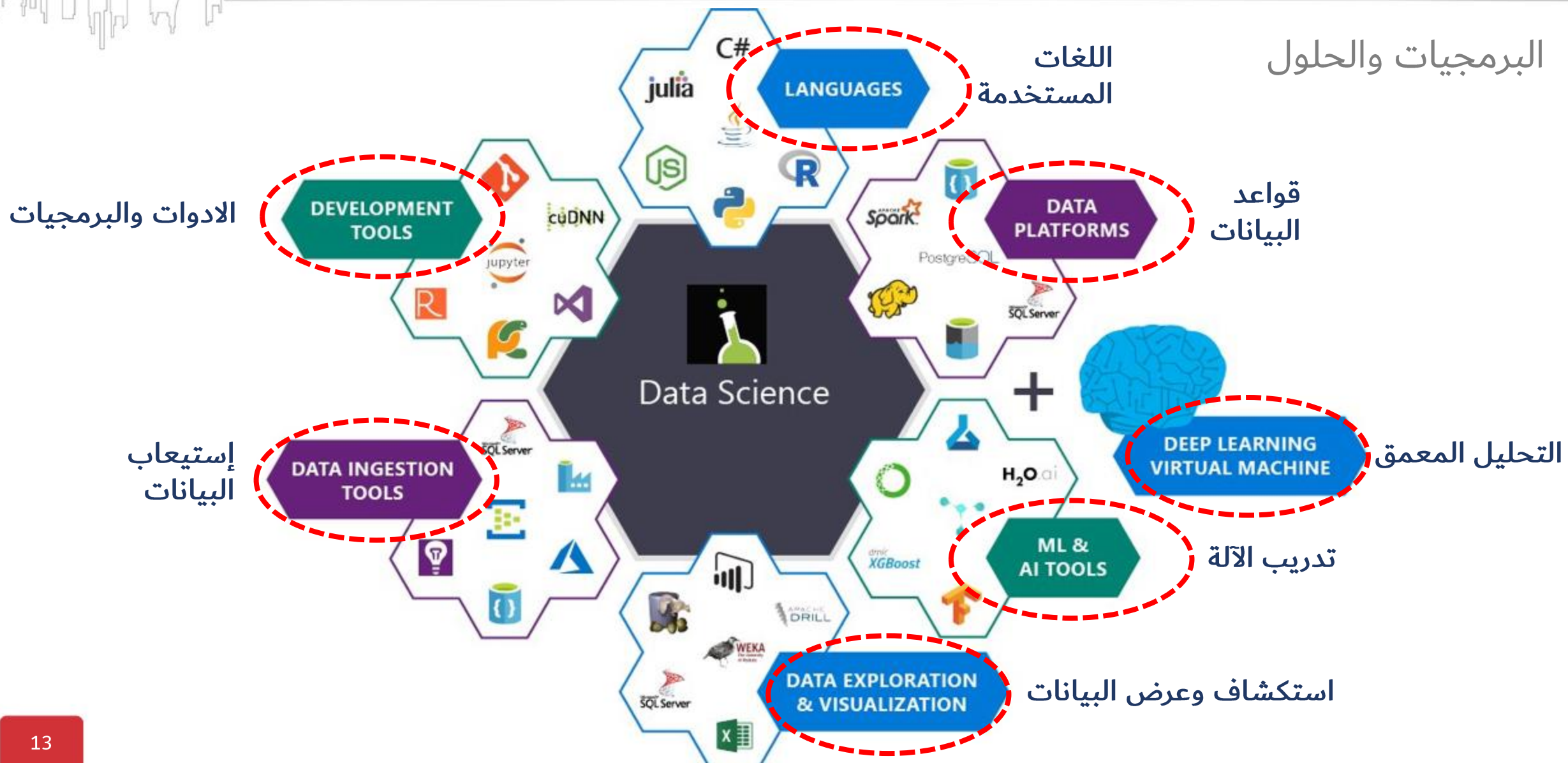
البرمجيات والحلول Tools & Solutions





البرمجيات والحلول





البرمجيات والحلول



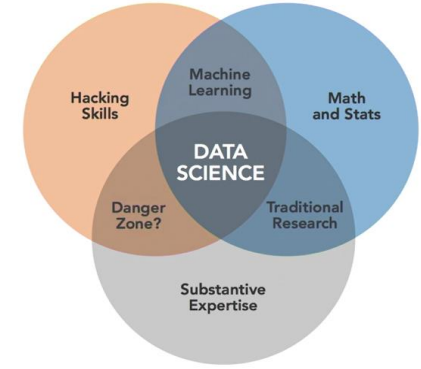
+10,000 Libraries

Examples [®]



+100,000 Libraries

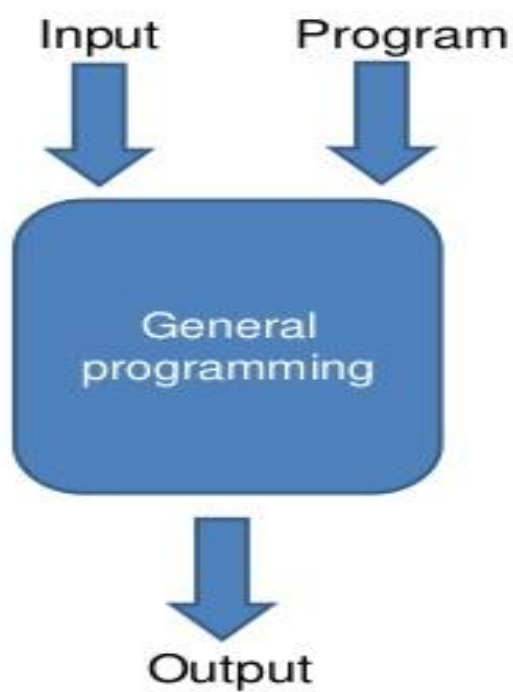
تدريب الآلة Machine Learning





تدريب الآلة

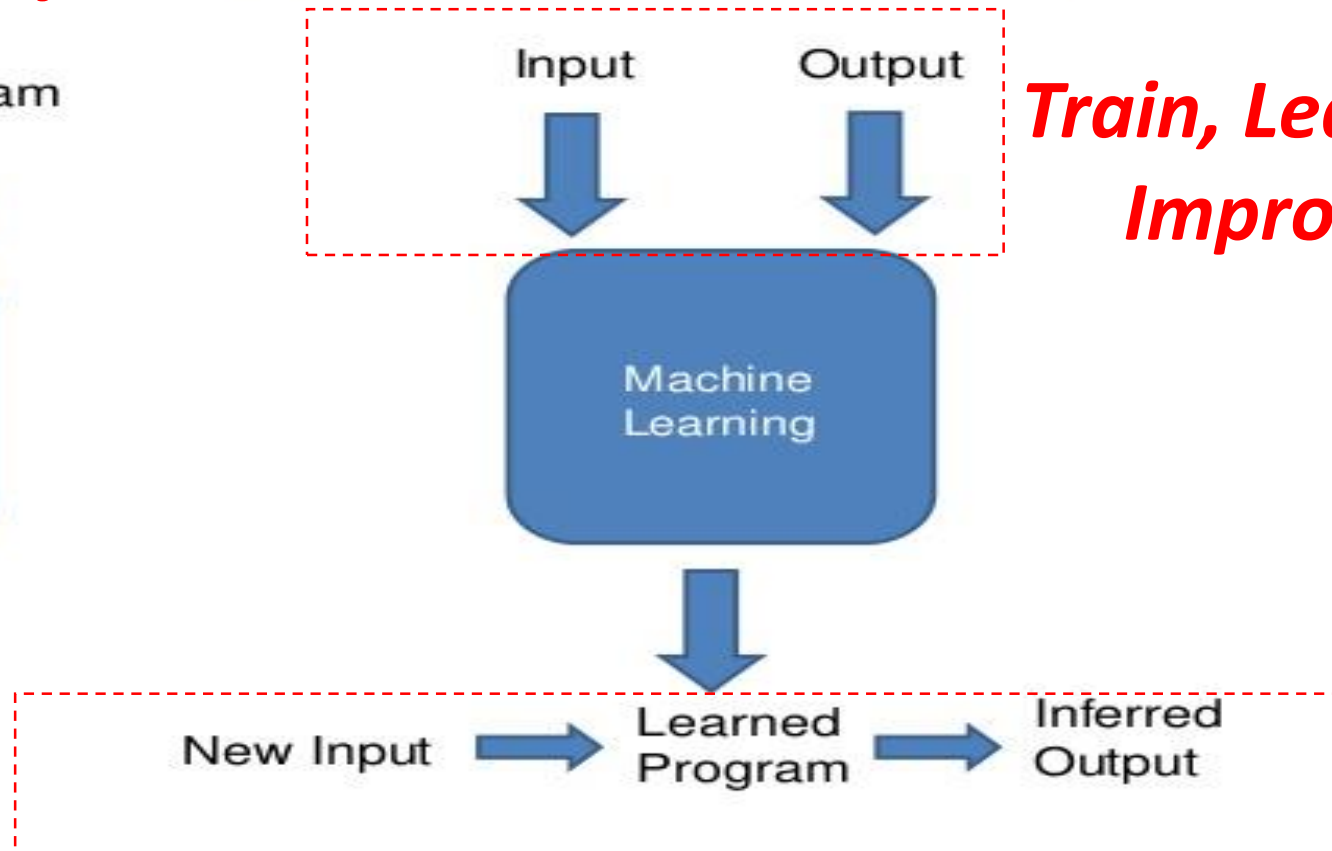
General Programming



Is Machine Learning an AI

تدريب الآلة

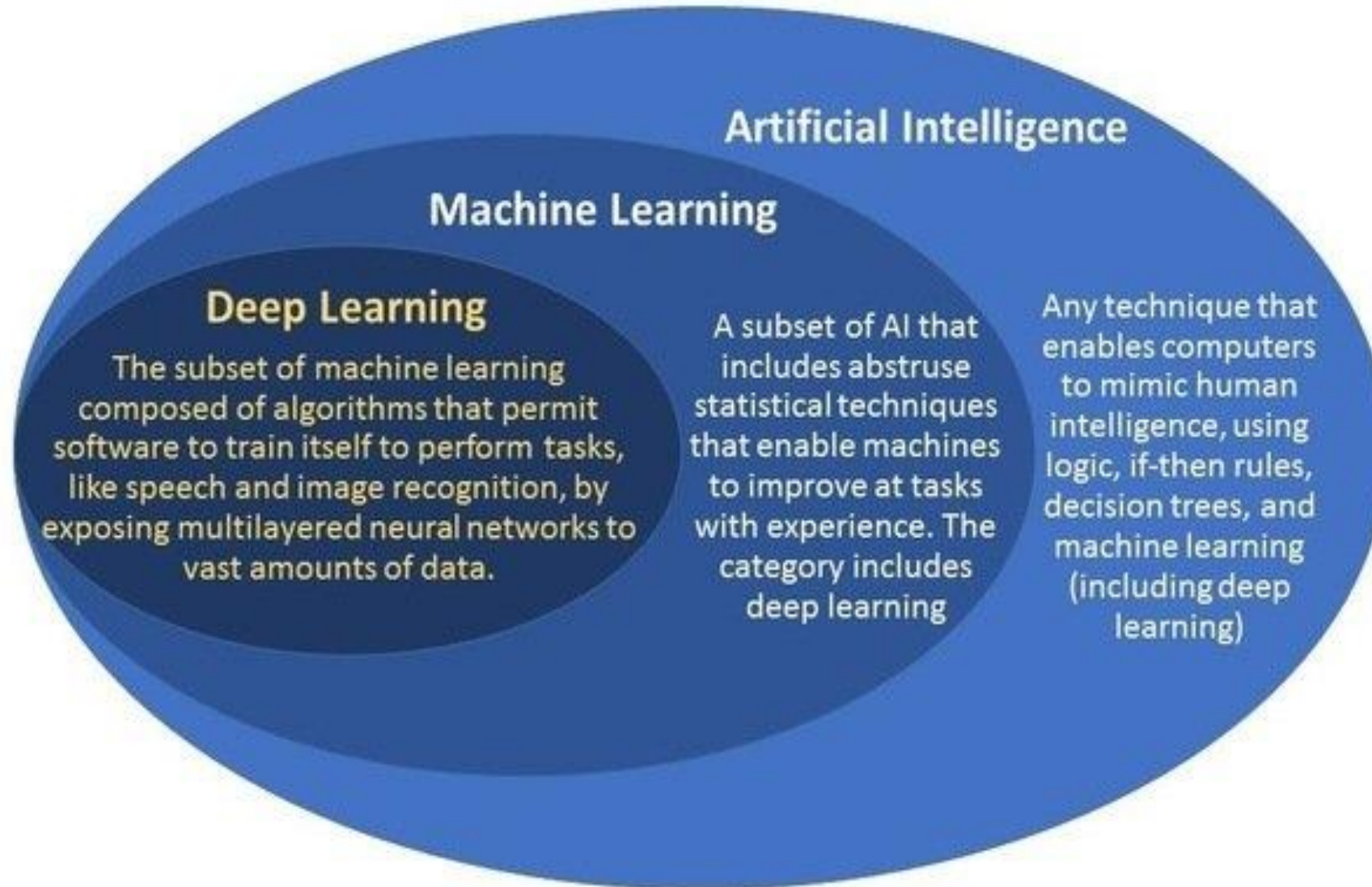
General Programming vs Machine Learning



Train, Learn & Improve

Re-train

تدريب الآلة



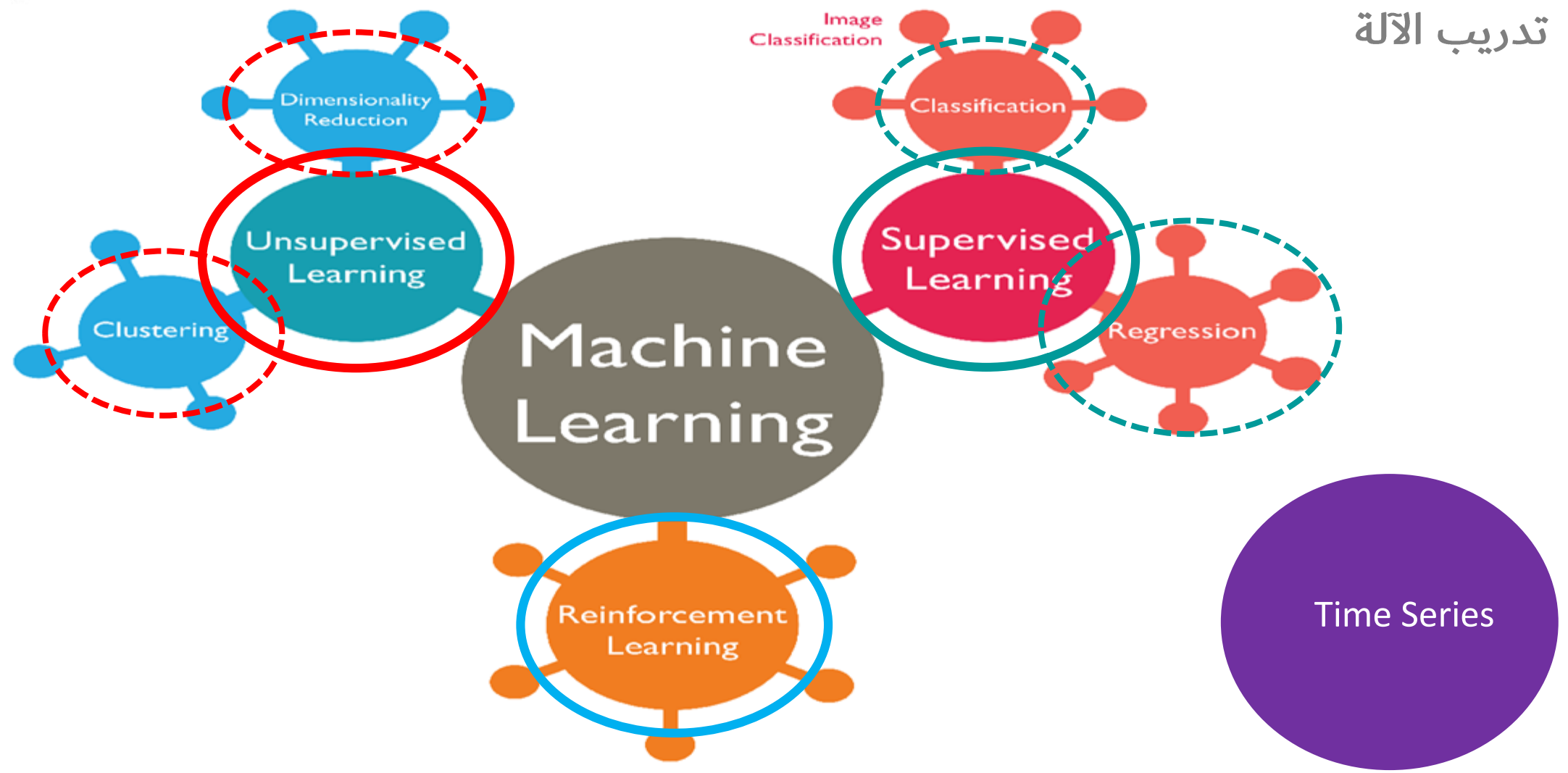
تدريب الآلة

These persons do not exist!!!!



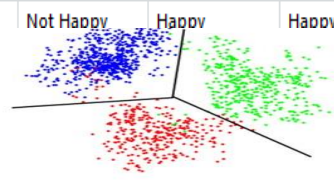
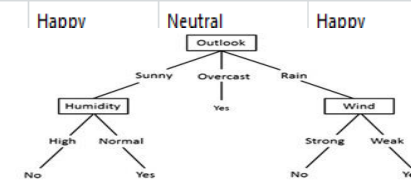
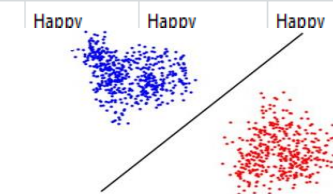
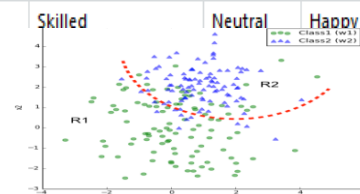
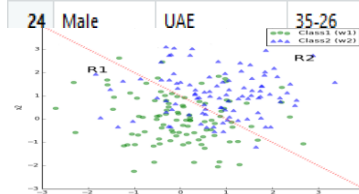


تدريب الآلة



Supervised Learning Classification

	Gender	Nationality	AgeGroup	Occupation	Values	Stability	Financial	Promotion	Appreciation	Innovation	Development	SocialFactors	Retirement	Reputation	OverAll
1	Male	UAE	45-36	Middle Management	Happy	Happy	Neutral	Neutral	Happy	Happy	Neutral	Happy	Happy	Happy	Happy
2	Female	UAE	45-36	Middle Management	Happy	Happy	Neutral	Happy	Happy	Happy	Happy	Neutral	Neutral	Happy	Happy
3	Female	UAE	25-18	Executives	Happy	Happy	Neutral	Happy	Happy	Happy	Happy	Neutral	Neutral	Happy	Happy
4	Female	UAE	25-18	Skilled	Happy	Happy	Not Happy	Not Happy	Happy	Happy	Happy	Happy	Happy	Happy	Happy
5	Female	Asia	45-36	Executives	Neutral	Happy	Neutral	Neutral	Neutral	Neutral	Neutral	Happy	Neutral	Happy	Happy
6	Male	Arab	45-36	Skilled	Neutral	Neutral	Not Happy	Neutral	Neutral	Not Happy	Not Happy	Happy	Happy	Happy	Neutral
7	Male	UAE	35-26	Middle Management	Not Happy	Not Happy	Not Happy	Not Happy	Not Happy	Not Happy	Not Happy	Neutral	Not Happy	Not Happy	Not Happy
8	Female	UAE	35-26	Skilled	Neutral	Not Happy	Not Happy	Happy	Happy	Happy	Happy	Not Happy	Not Happy	Happy	Happy
9	Male	Arab	55-46	Middle Management	Neutral	Happy	Neutral	Neutral	Neutral	Neutral	Neutral	Happy	Not Happy	Happy	Happy
10	Female	UAE	55-46	Skilled	Happy	Happy	Not Happy	Not Happy	Neutral	Happy	Happy	Neutral	Not Happy	Happy	Happy
11	Female	UAE	45-36	Skilled	Not Happy	Happy	Not Happy	Not Happy	Not Happy	Not Happy	Happy	Happy	Not Happy	Not Happy	Neutral
12	Male	UAE	55-46	Middle Management	Happy	Happy	Not Happy	Neutral	Happy	Neutral	Happy	Neutral	Not Happy	Neutral	Happy
13	Female	UAE	35-26	Middle Management	Neutral	Neutral	Happy	Happy	Happy	Happy	Not Happy	Neutral	Not Happy	Happy	Happy
14	Female	Asia	35-26	Skilled	Happy	Neutral	Neutral	Neutral	Happy	Happy	Happy	Happy	Happy	Happy	Happy
15	Male	UAE	45-36	Executives	Not Happy	Not Happy	Not Happy	Not Happy	Neutral	Not Happy	Neutral	Neutral	Not Happy	Not Happy	Not Happy
16	Male	UAE	55-46	Others	Not Happy	Neutral	Neutral	Not Happy	Not Happy	Not Happy	Neutral	Neutral	Happy	Happy	Neutral
17	Male	UAE	55-46	Executives	Happy	Happy	Happy	Happy	Happy	Happy	Happy	Happy	Neutral	Happy	Happy
18	Male	Arab	56 +	Skilled	Happy	Not Happy	Happy	Happy	Happy	Happy	Happy	Happy	Happy	Happy	Happy
19	Female	UAE	35-26	Executives	Happy	Happy	Not Happy	Happy	Happy	Happy	Happy	Happy	Not Happy	Happy	Happy
20	Male	UAE	35-26	Skilled	Happy	Not Happy	Not Happy	Not Happy	Not Happy	Neutral	Not Happy	Not Happy	Not Happy	Neutral	Neutral
21	Male	UAE	45-36	Skilled	Neutral	Not Happy	Not Happy	Not Happy	Neutral	Neutral	Neutral	Happy	Not Happy	Neutral	Neutral
22	Male	UAE	55-46	Middle Management	Not Happy	Not Happy	Not Happy	Neutral	Not Happy	Neutral	Neutral	Neutral	Not Happy	Happy	Neutral
23	Male	Arab	56 +	Skilled	Neutral	Neutral	Happy	Not Happy	Happy	Happy	Neutral	Happy	Neutral	Happy	Happy
24	Male	UAE	35-26	Skilled	Neutral	Happy	Happy	Happy	Happy	Happy	Neutral	Happy	Not Happy	Happy	Happy



**Supervised
Learning
Classification**

	Gender	Nationality	AgeGroup	Occupation	Values	Stability	Financial	Promotion	Appreciation	Innovation	Development	SocialFactors	Retirement	Reputation
1	Male	UAE	45-36	Middle Management	Happy	Happy	Neutral	Neutral	Happy	Happy	Neutral	Happy	Happy	Happy
2	Female	UAE	45-36	Middle Management	Happy	Happy	Neutral	Happy	Happy	Happy	Happy	Neutral	Neutral	Happy
3	Female	UAE	25-18	Executives	Happy	Happy	Neutral	Happy	Happy	Happy	Happy	Neutral	Neutral	Happy
4	Female	UAE	25-18	Skilled	Happy	Happy	Not Happy	Not Happy	Happy	Happy	Happy	Happy	Happy	Happy
5	Female	Asia	45-36	Executives	Neutral	Happy	Neutral	Neutral	Neutral	Neutral	Neutral	Happy	Neutral	Happy
6	Male	Arab	45-36	Skilled	Neutral	Neutral	Not Happy	Neutral	Neutral	Not Happy	Not Happy	Happy	Happy	Happy
7	Male	UAE	35-26	Middle Management	Not Happy	Not Happy	Not Happy	Not Happy	Not Happy	Not Happy	Not Happy	Neutral	Not Happy	Not Happy
8	Female	UAE	35-26	Skilled	Neutral	Not Happy	Not Happy	Happy	Happy	Happy	Happy	Not Happy	Not Happy	Happy
9	Male	Arab	55-46	Middle Management	Neutral	Happy	Neutral	Neutral	Neutral	Neutral	Neutral	Happy	Not Happy	Happy
10	Female	UAE	55-46	Skilled	Happy	Happy	Not Happy	Not Happy	Neutral	Happy	Happy	Neutral	Not Happy	Happy
11	Female	UAE	45-36	Skilled	Not Happy	Happy	Not Happy	Not Happy	Not Happy	Not Happy	Happy	Happy	Not Happy	Not Happy
12	Male	UAE	55-46	Middle Management	Happy	Happy	Not Happy	Neutral	Happy	Neutral	Happy	Neutral	Not Happy	Neutral
13	Female	UAE	35-26	Middle Management	Neutral	Neutral	Happy	Happy	Happy	Happy	Not Happy	Neutral	Not Happy	Happy
14	Female	Asia	35-26	Skilled	Happy	Neutral	Neutral	Neutral	Happy	Happy	Happy	Happy	Happy	Happy
15	Male	UAE	45-36	Executives	Not Happy	Not Happy	Not Happy	Not Happy	Neutral	Not Happy	Neutral	Neutral	Not Happy	Not Happy
16	Male	UAE	55-46	Others	Not Happy	Neutral	Neutral	Not Happy	Not Happy	Not Happy	Neutral	Neutral	Happy	Happy
17	Male	UAE	55-46	Executives	Happy	Happy	Happy	Happy	Happy	Happy	Happy	Happy	Neutral	Happy
18	Male	Arab	56 +	Skilled	Happy	Not Happy	Happy	Happy	Happy	Happy	Happy	Happy	Happy	Happy
19	Female	UAE	35-26	Executives	Happy	Happy	Not Happy	Happy	Happy	Happy	Happy	Happy	Not Happy	Happy
20	Male	UAE	35-26	Skilled	Happy	Not Happy	Not Happy	Not Happy	Not Happy	Neutral	Not Happy	Not Happy	Not Happy	Neutral
21	Male	UAE	45-36	Skilled	Neutral	Not Happy	Not Happy	Not Happy	Neutral	Neutral	Neutral	Happy	Not Happy	Neutral
22	Male	UAE	55-46	Middle Management	Not Happy	Not Happy	Not Happy	Neutral	Not Happy	Neutral	Neutral	Neutral	Not Happy	Happy
23	Male	Arab	56 +	Skilled	Neutral	Neutral	Happy	Not Happy	Happy	Happy	Neutral	Happy	Neutral	Happy

70%

30%

Supervised – Association Rules



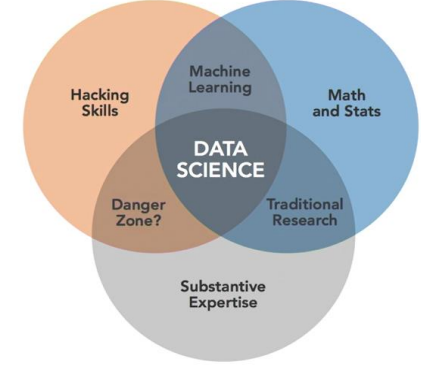
NETFLIX

amazon



LinkedIn

آليات تطبيق علم البيانات Applying Data Science



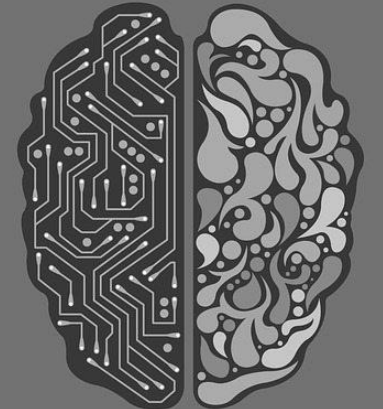
10 mins Break

آليات تطبيق علم البيانات



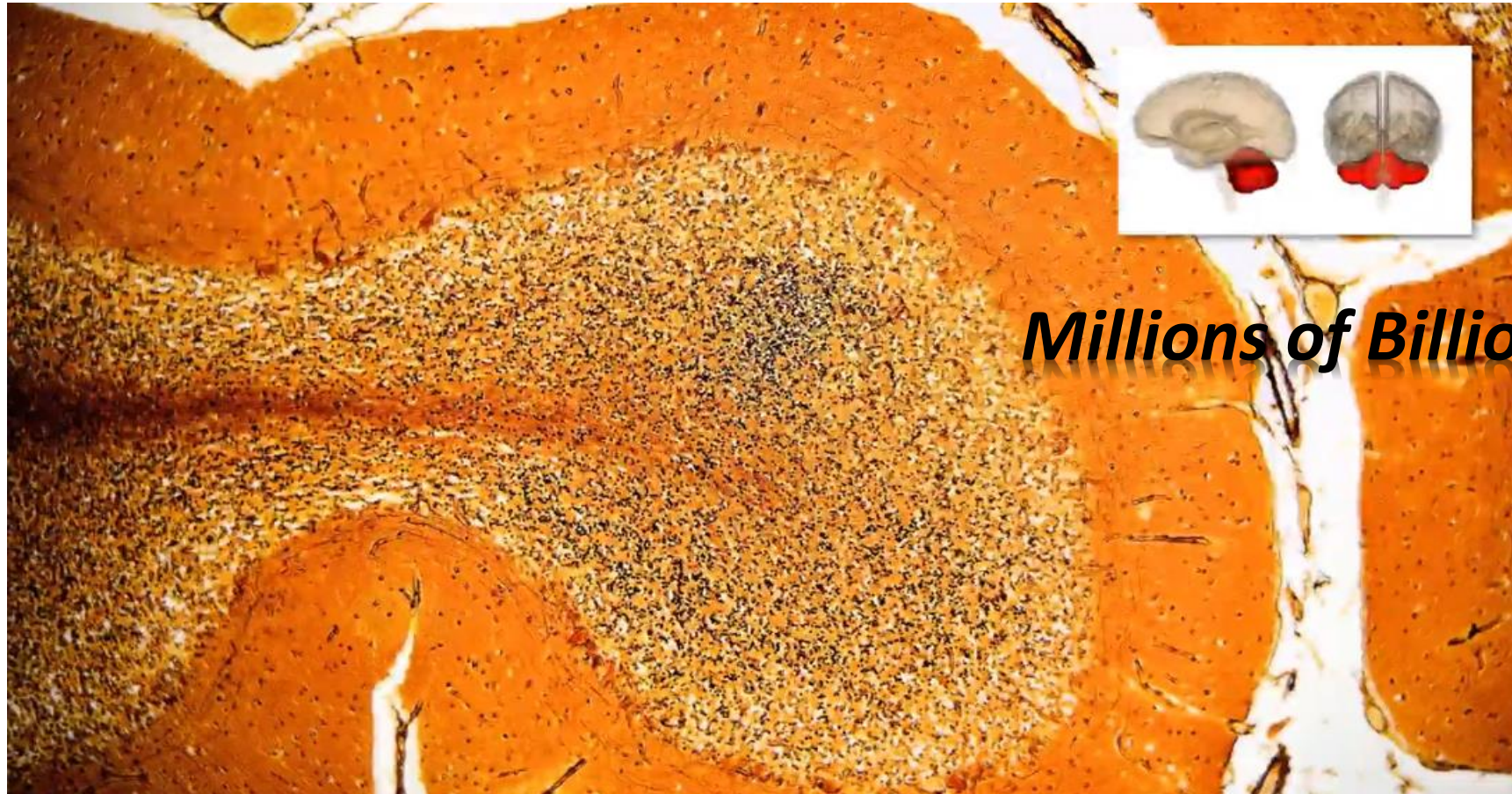


شبكة الأعصاب الصناعية Artificial Neural Network



Artificial Neural Network

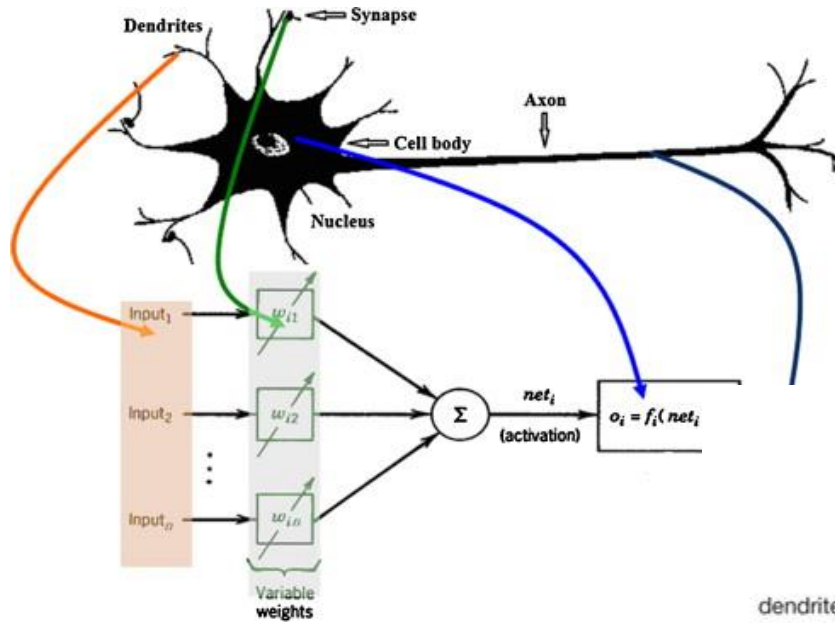
شبكة الأعصاب الصناعية



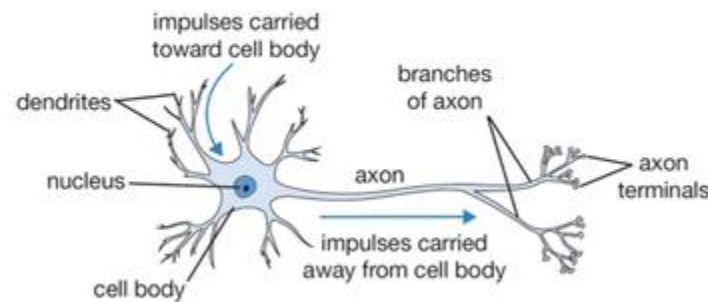
Millions of Billions Neurons

Artificial Neural Network

شبكة الأعصاب الصناعية



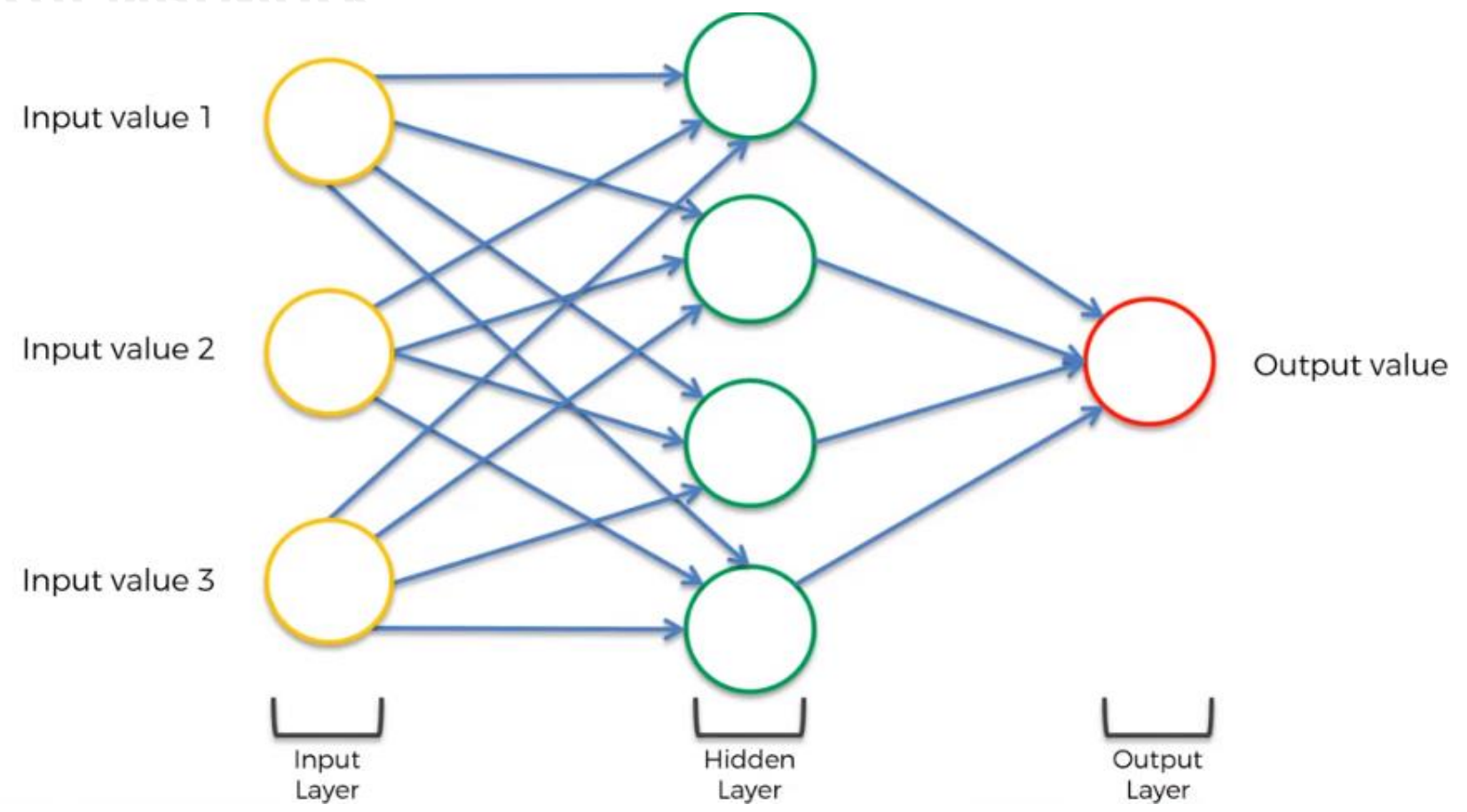
Biological Neuron versus Artificial Neural Network





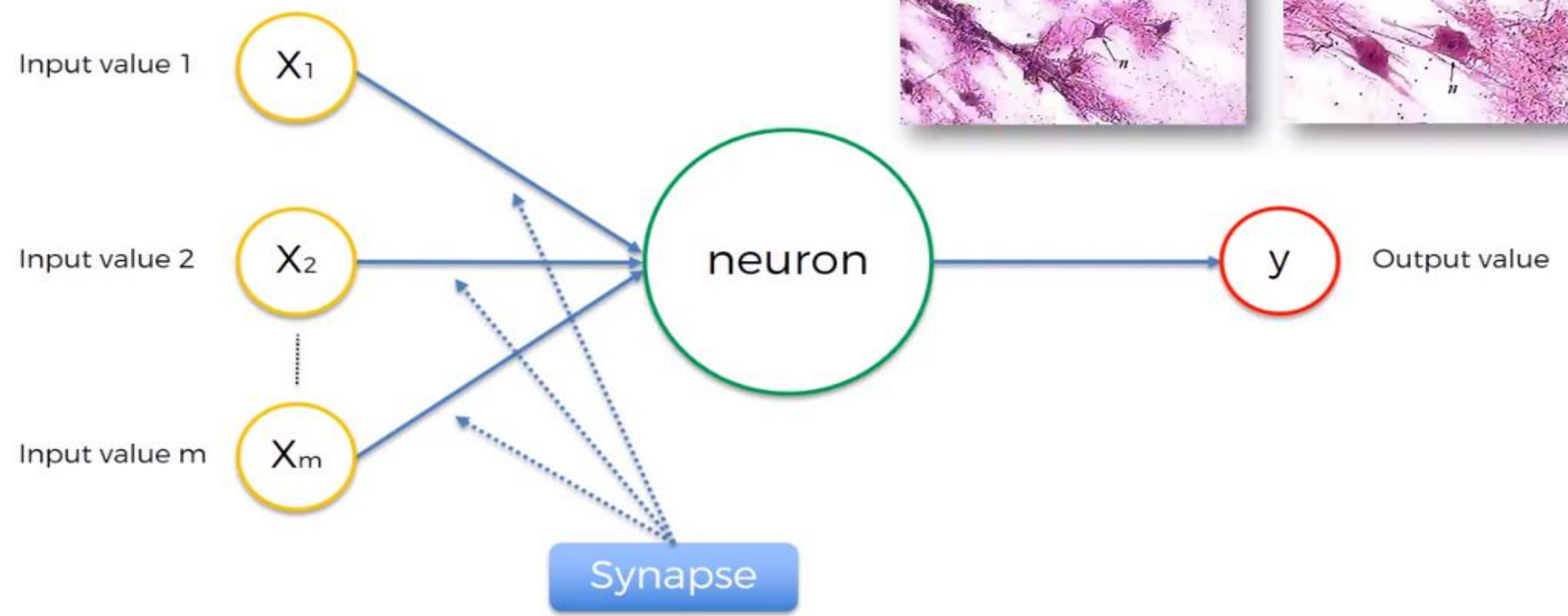
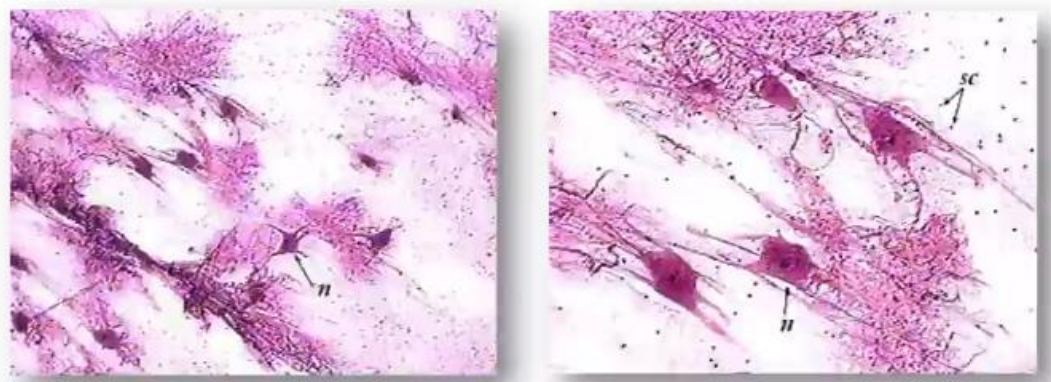
Artificial Neural Network

شبكة الأعصاب الصناعية

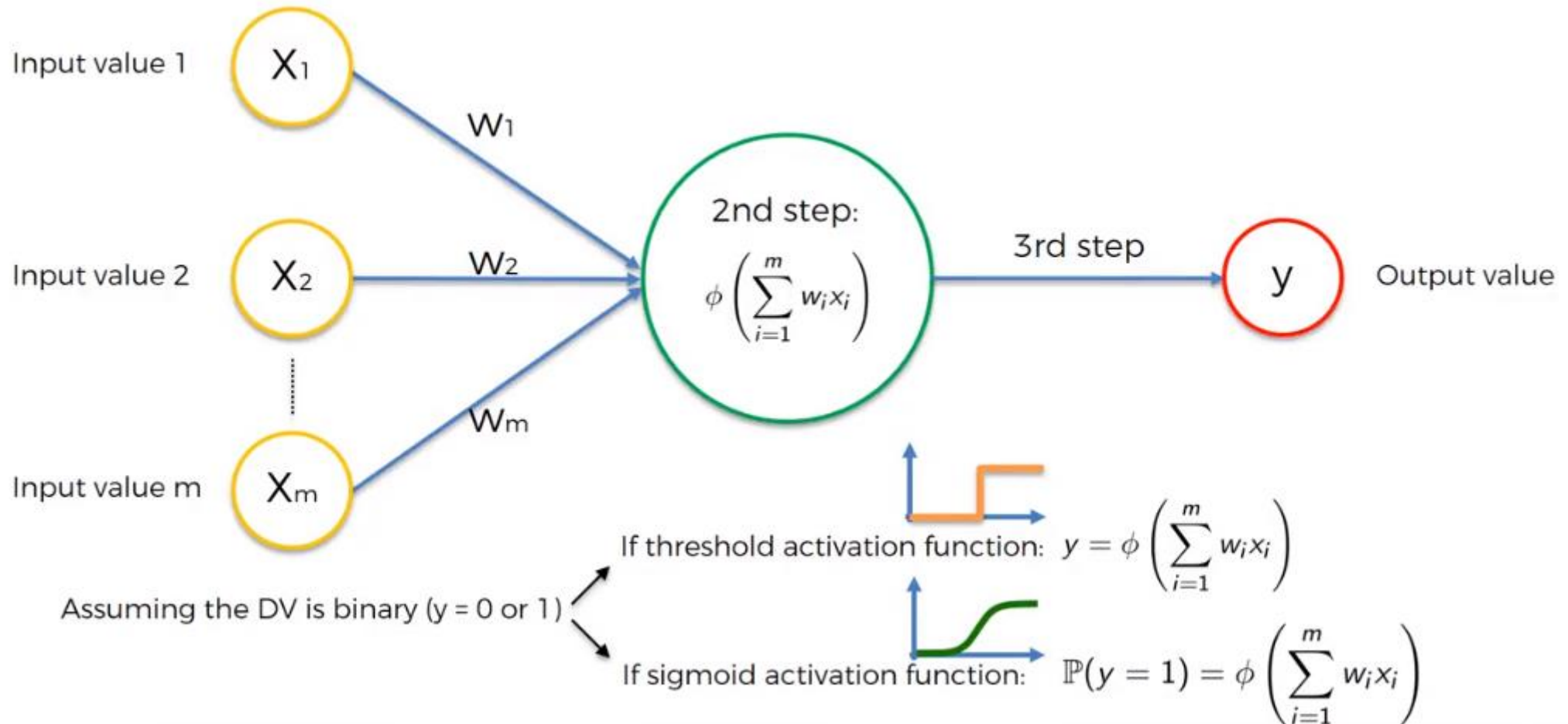




Artificial Neural Network

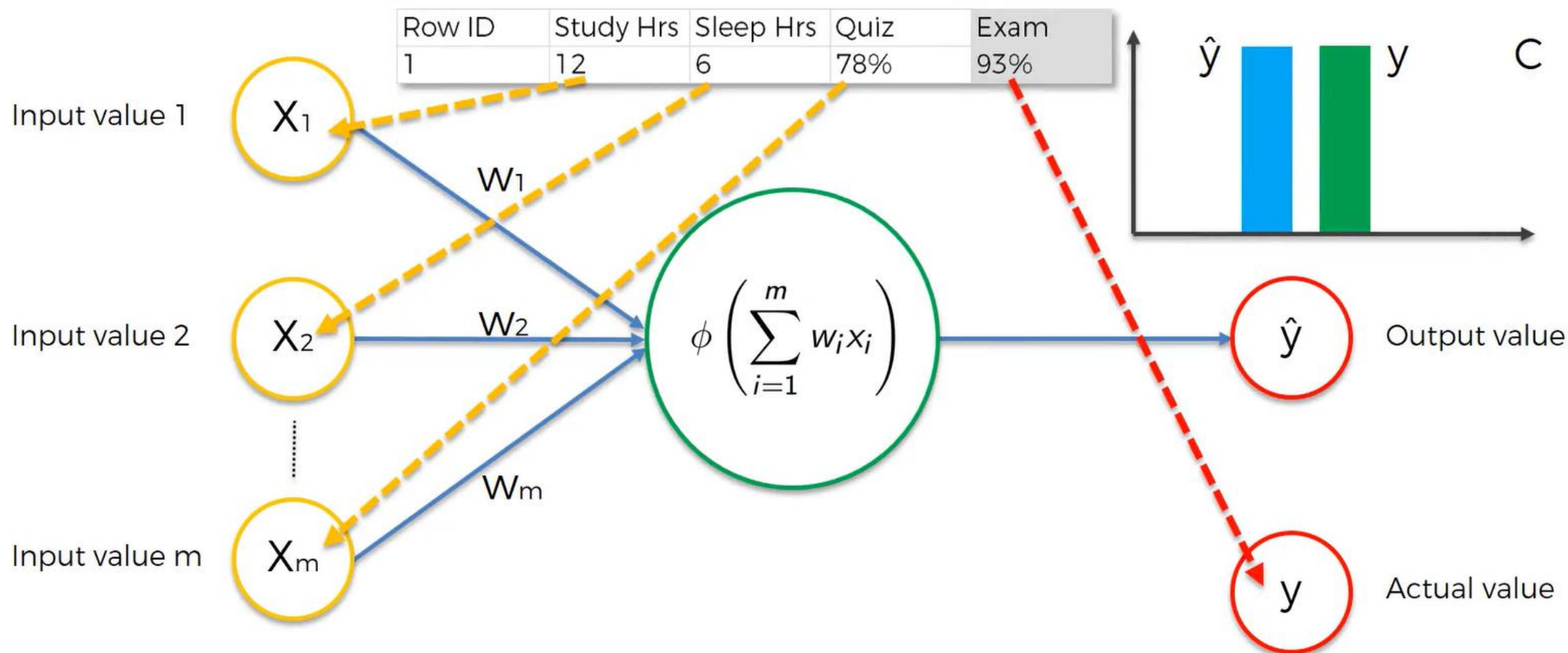


Artificial Neural Network

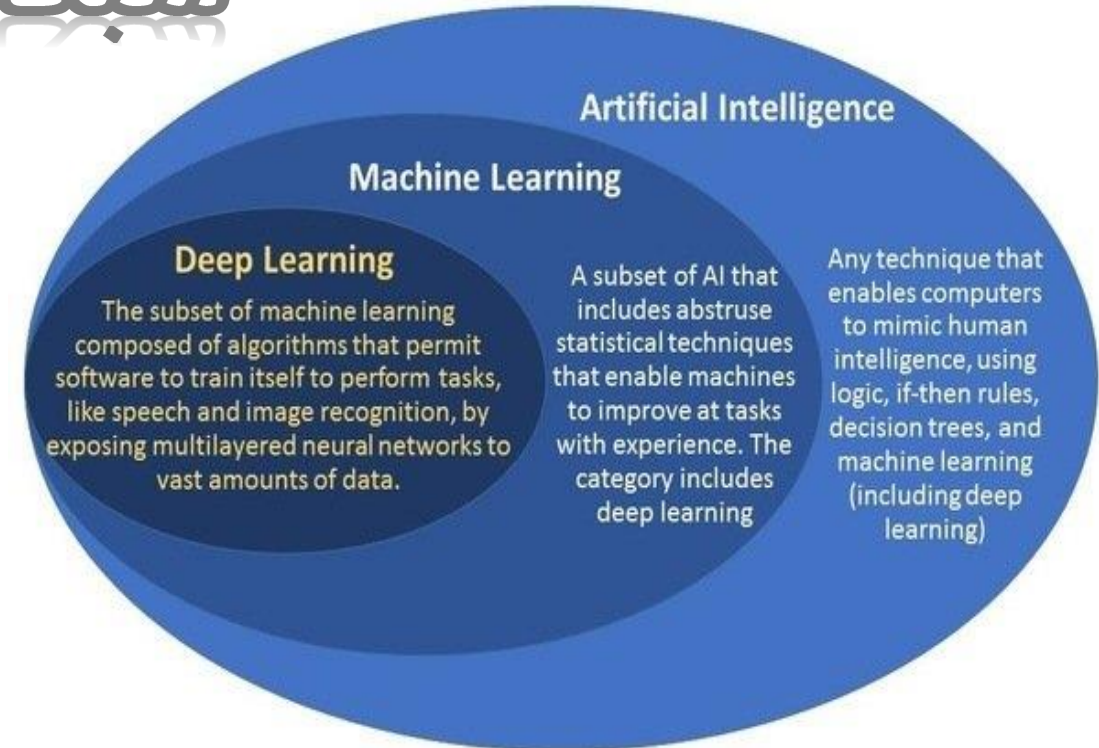


شبكة الأعصاب الصناعية

Artificial Neural Network



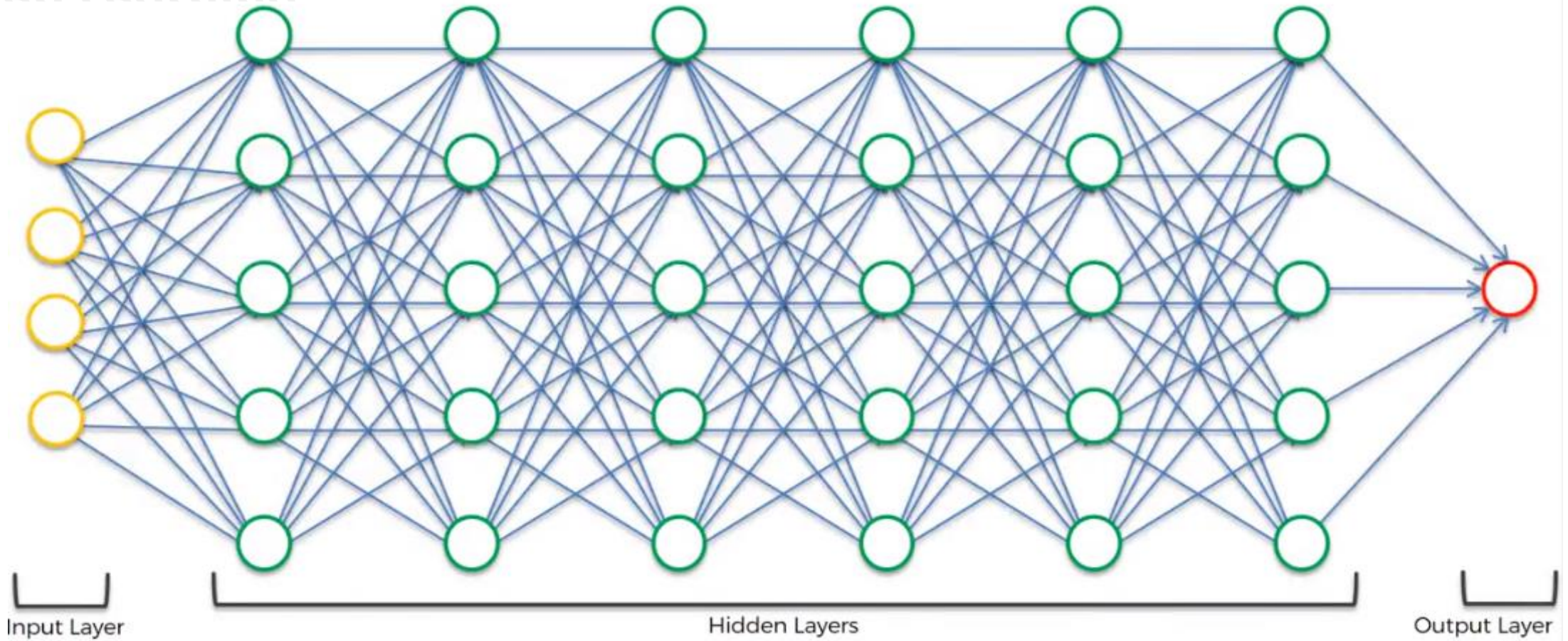
التعلم العميق في شبكة الأعصاب الصناعية Deep Learning





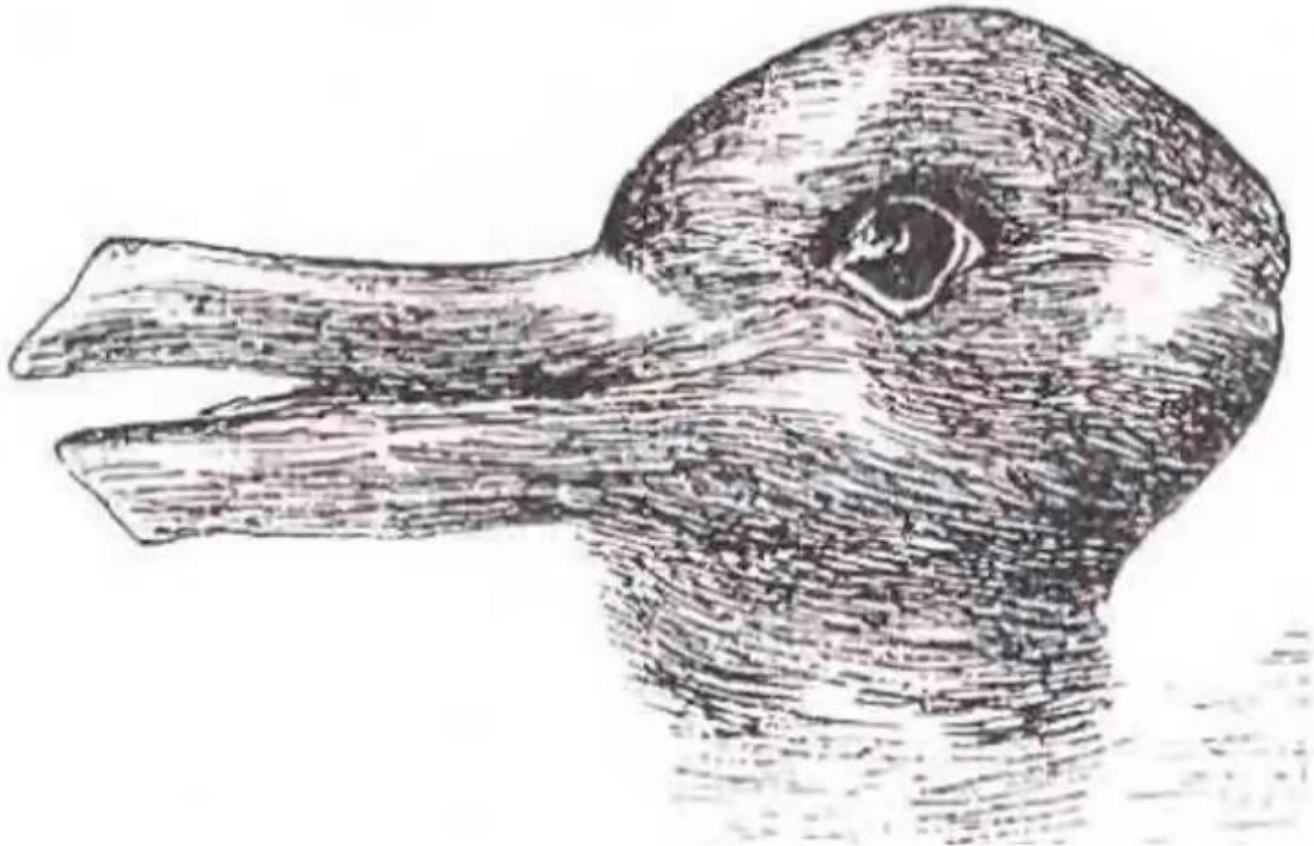
Deep Learning

التعلم العميق





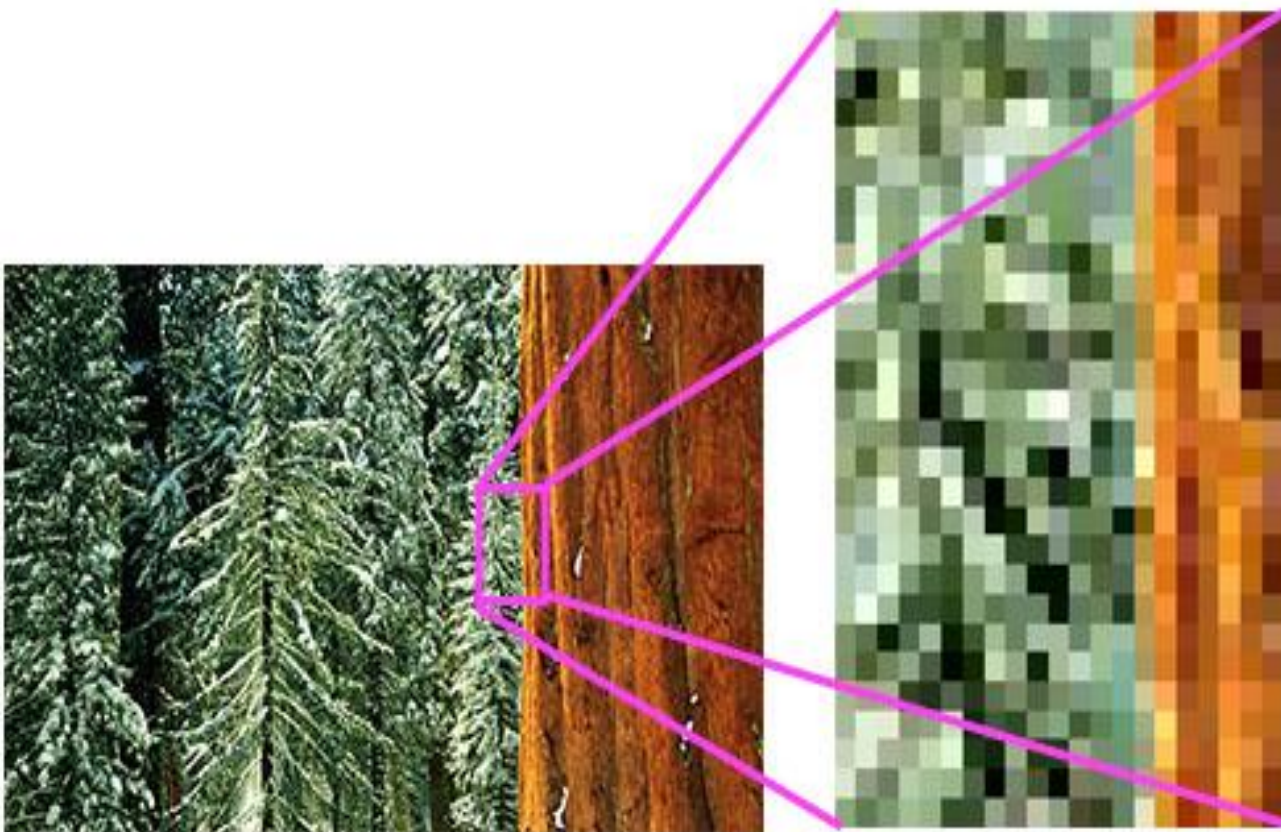
التعلم العميق







التعلم العميق



How the pixels look:

0	1	2	3	4
5	6	7	8	9
10	11	12	13	14
15	16	17	18	19
20	21	22	23	24

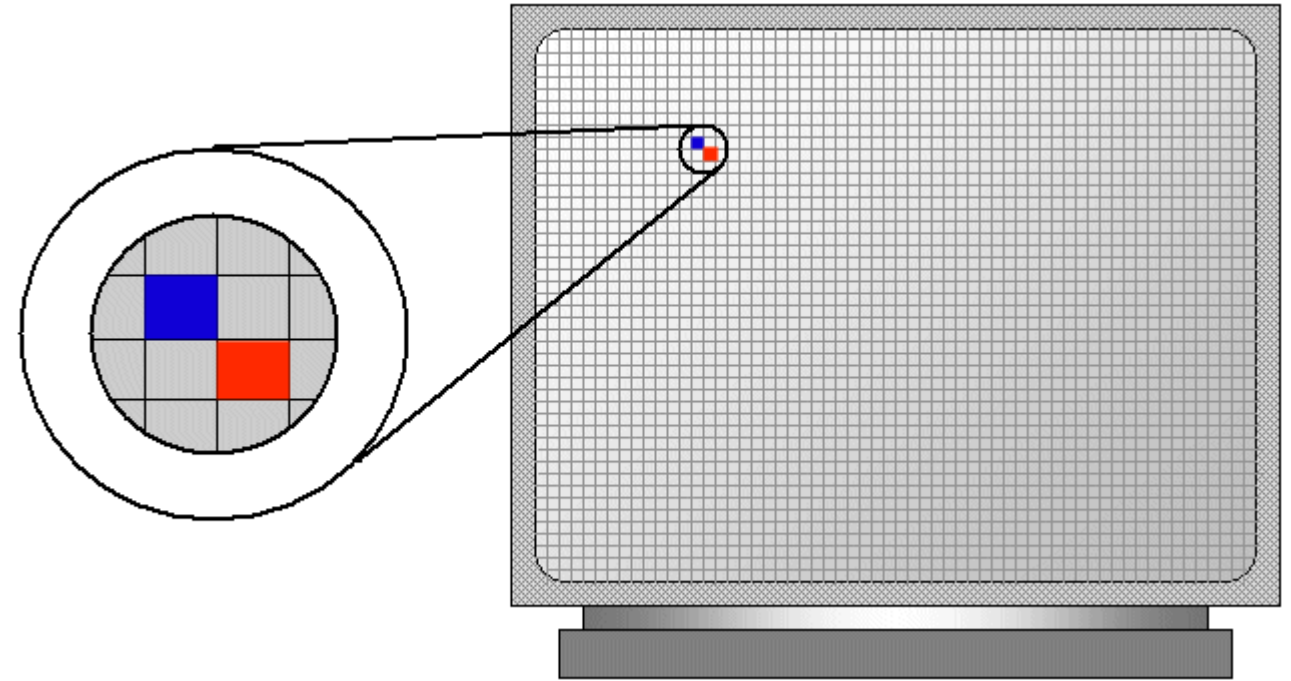
How the pixels are stored:

0	1	2	3	4	5	6	7	8	9	.	.	.		
---	---	---	---	---	---	---	---	---	---	---	---	---	--	--



التعلم العميق

Free computer help and information



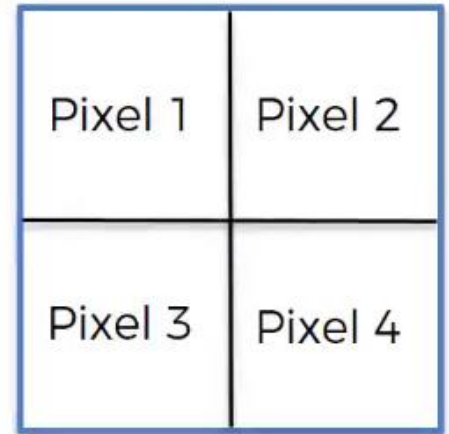
1024 x 768 pixels.

A Full HD TV (1080P) has 1920x1080 pixels,

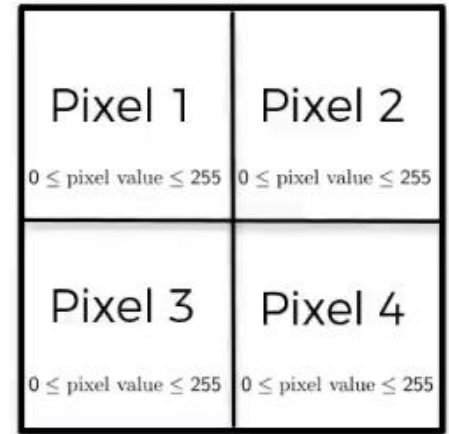


التعلم العميق

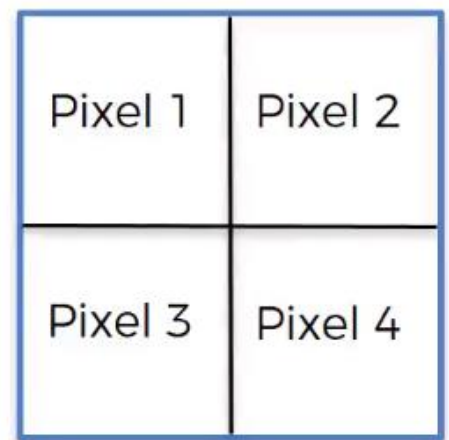
B / W Image 2x2px



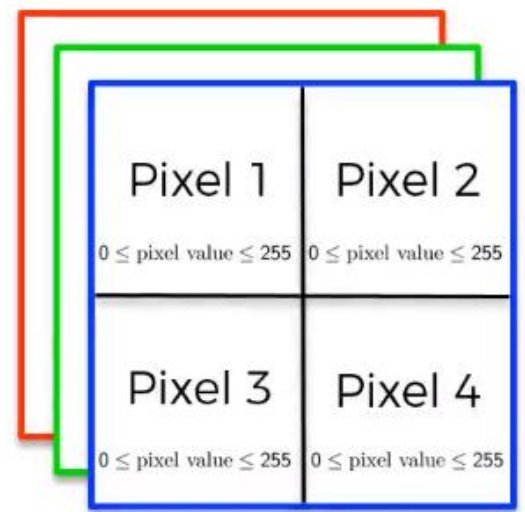
2d array



Colored Image 2x2px

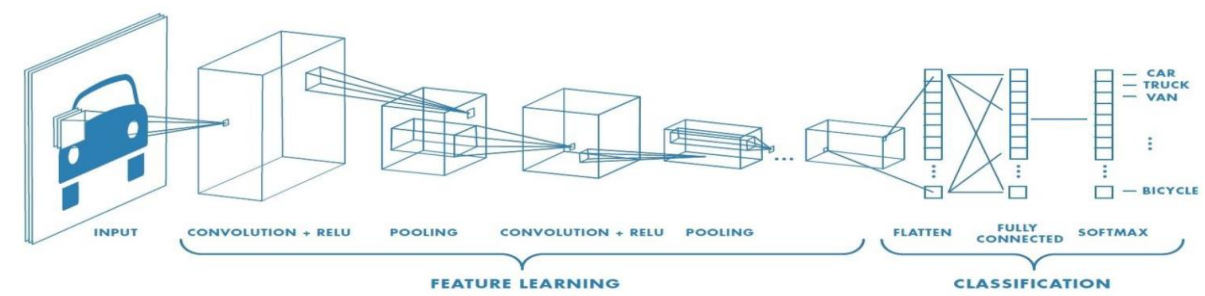
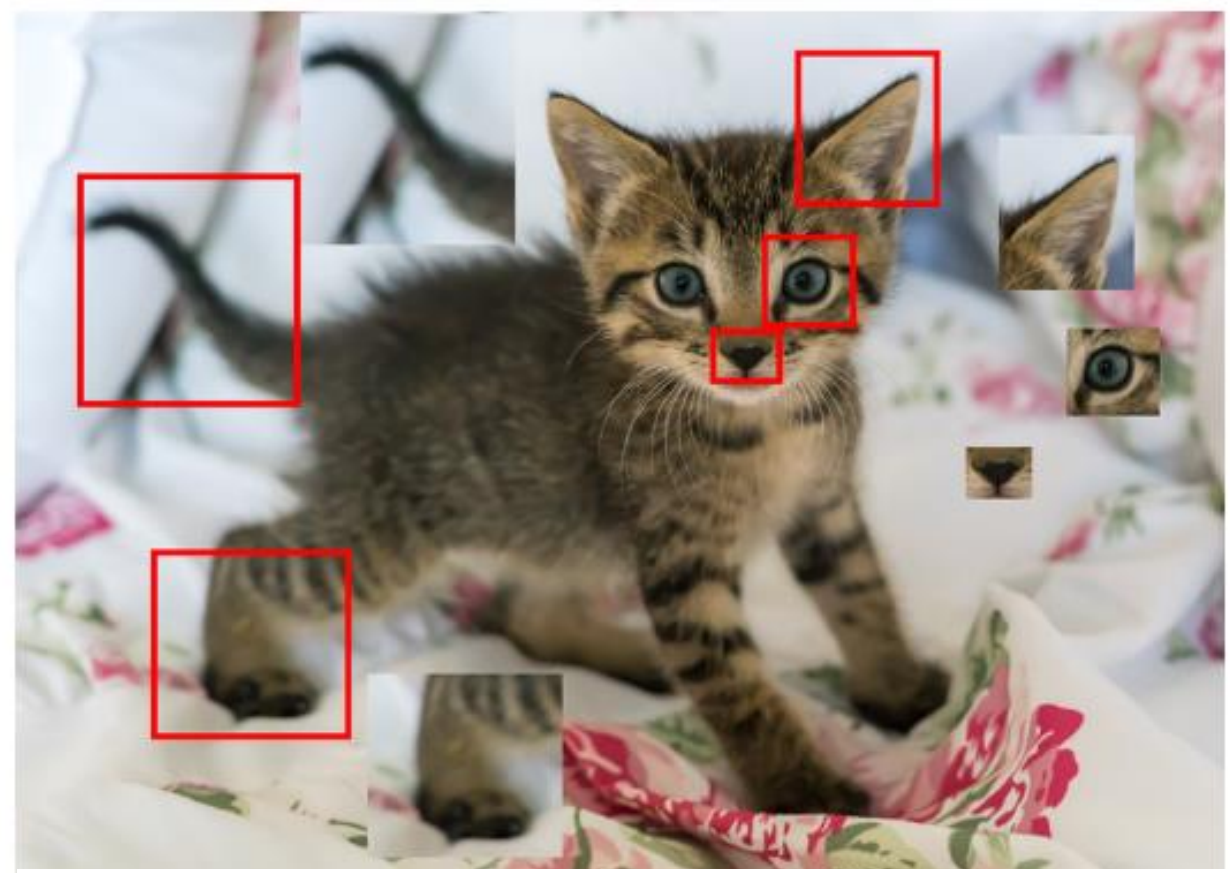


3d array



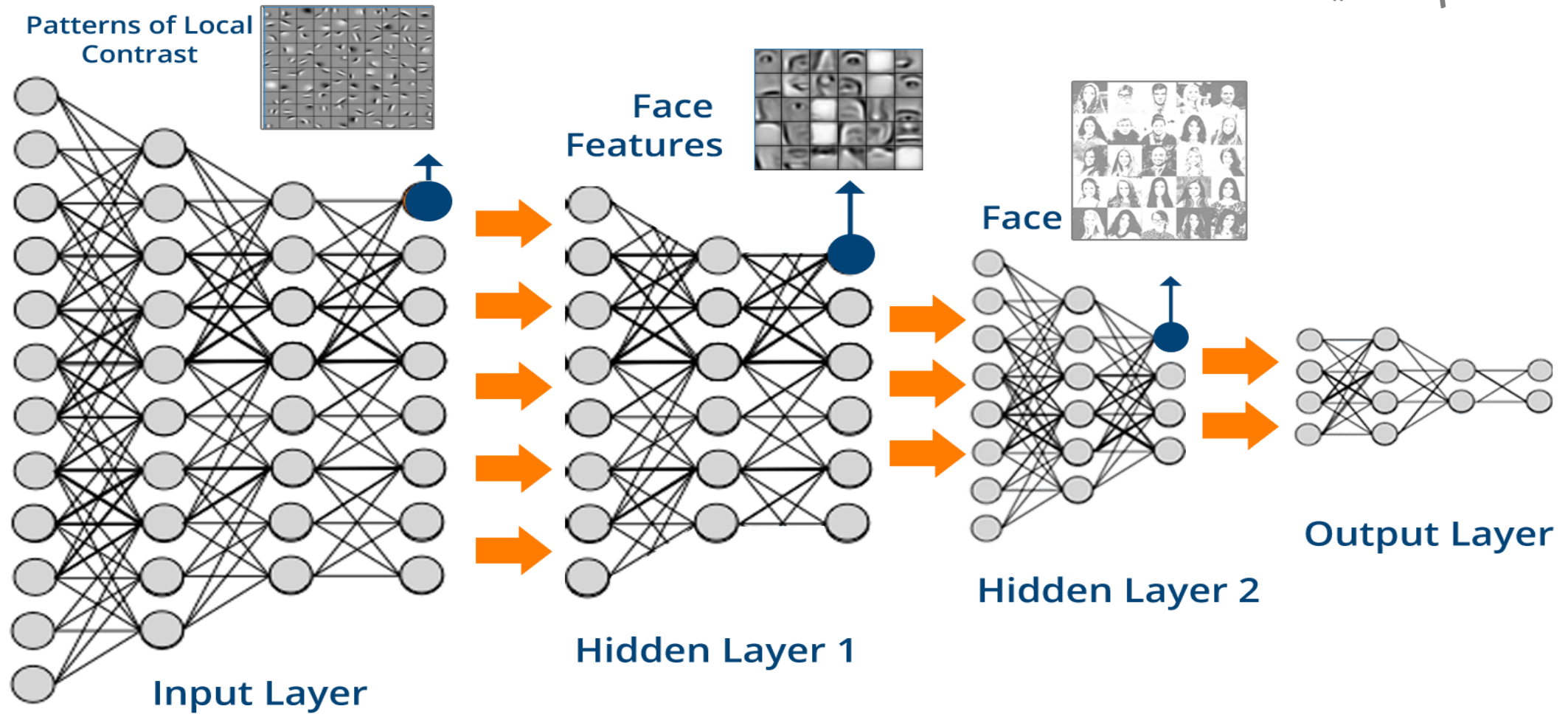


التعلم العميق





التعلم العميق



Recurrent Neural Network - RNN

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
9 9 9 9 9 9 9 9 9 9 9 9 9 9 9



أسئلة شكراً

