APRENDIZAJE AUTOMÁTICO CON R

Modelos de Segmentación

Eugenio Grant

Agenda

01

AI & Machine Learning

02

Modelos de Clustering

03

Código R

Artificial Intelligence

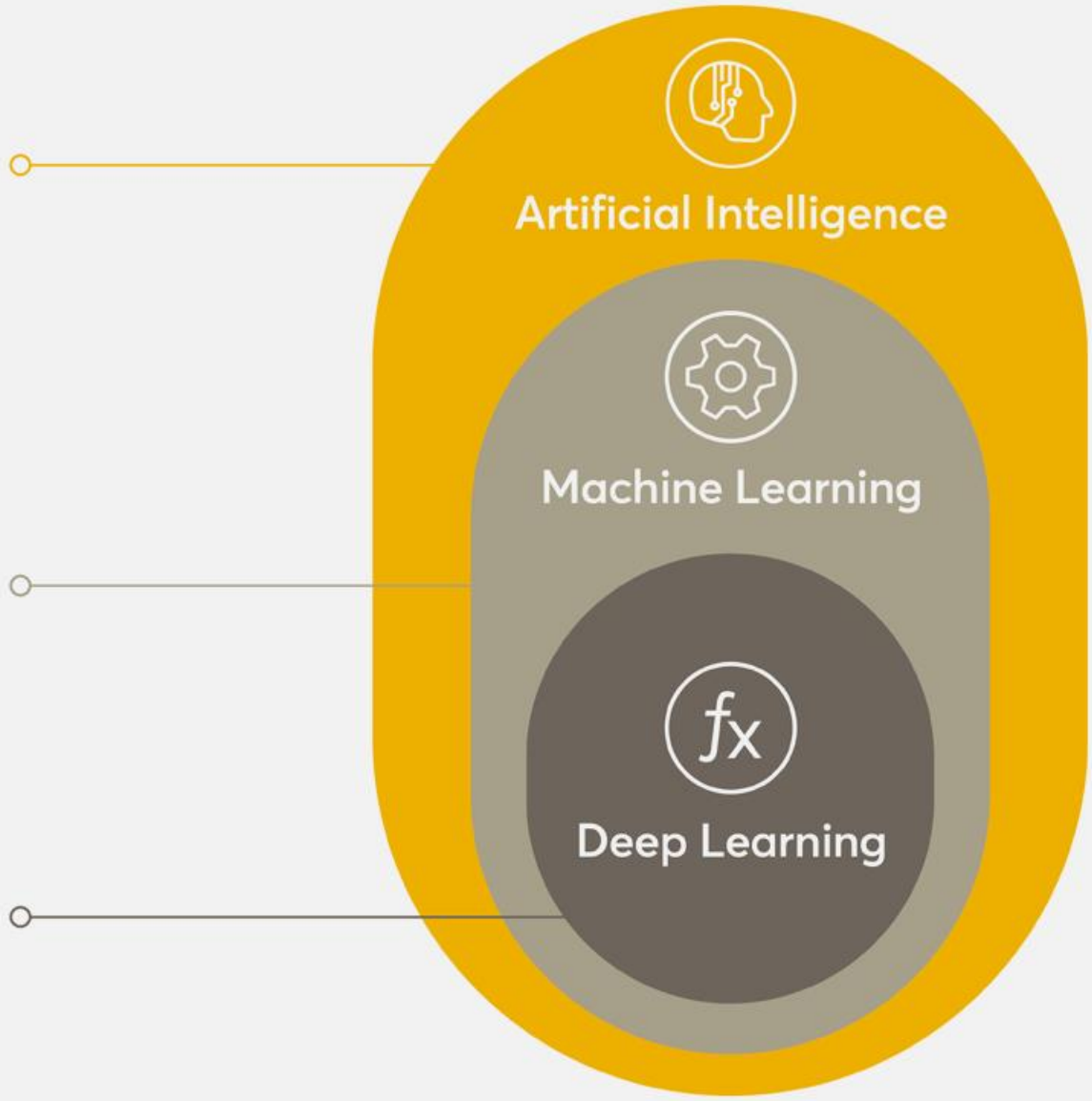
Any technique which enables computers to mimic human behaviour.

Machine Learning

Subset of AI techniques which use statistical methods to enable machines to improve with experiences.

Deep Learning

Subset of ML which makes the computation of multi-layer neural networks feasible.

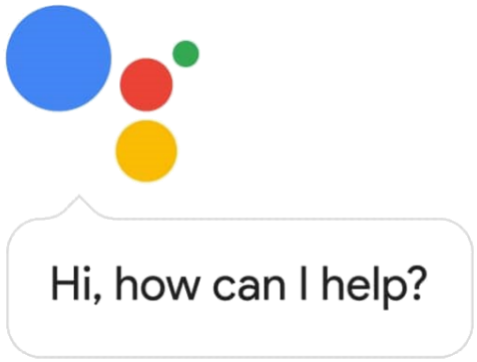


¿Qué es Aprendizaje Automático?

"Campo de estudio que le da a las computadoras la habilidad de 'aprender' sin ser explícitamente programadas para ello" – Arthur Samuel

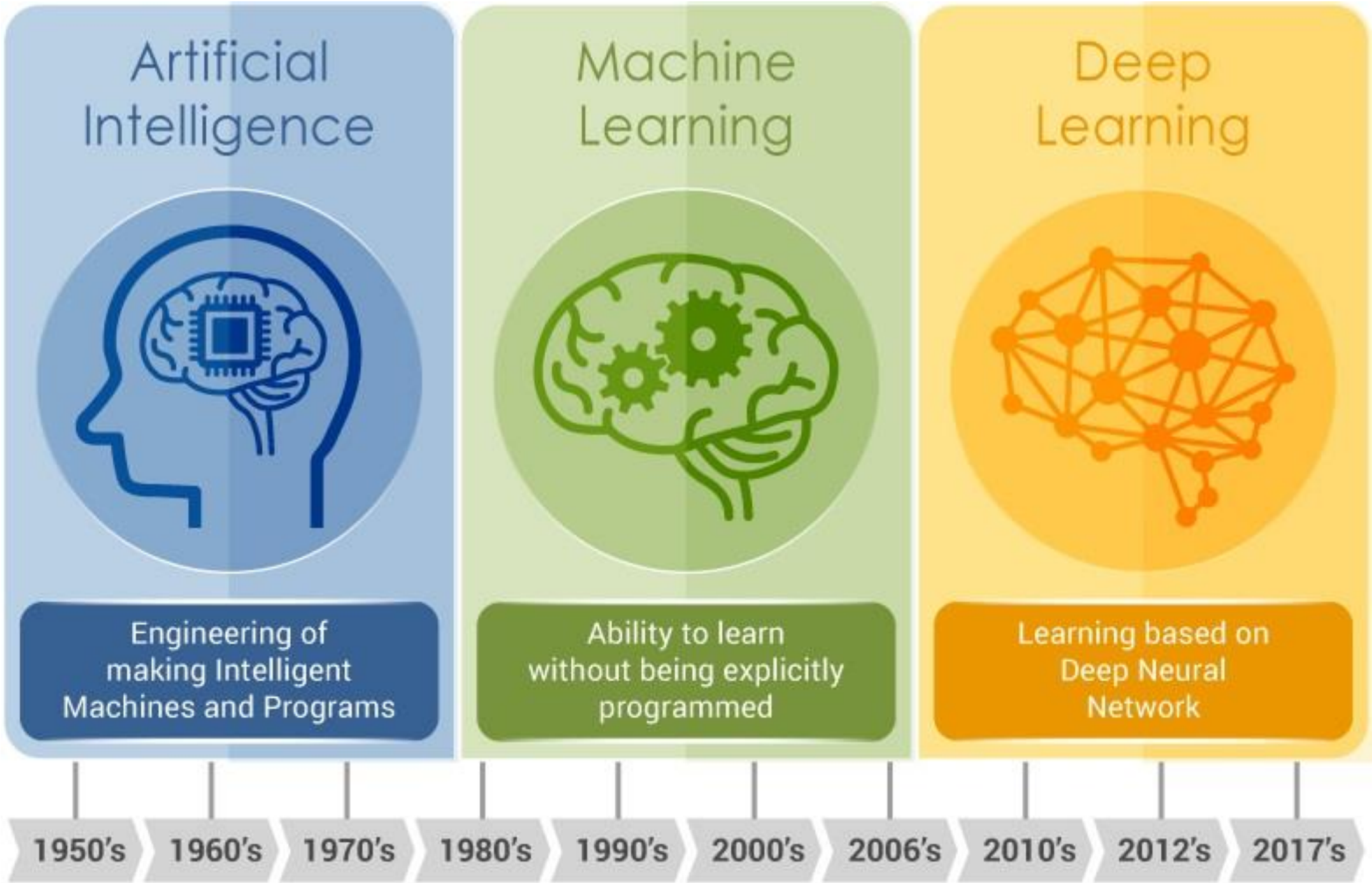
¿Qué es Inteligencia Artificial?

La Inteligencia Artificial es la simulación de procesos de inteligencia humana por parte de máquinas, especialmente sistemas informáticos.



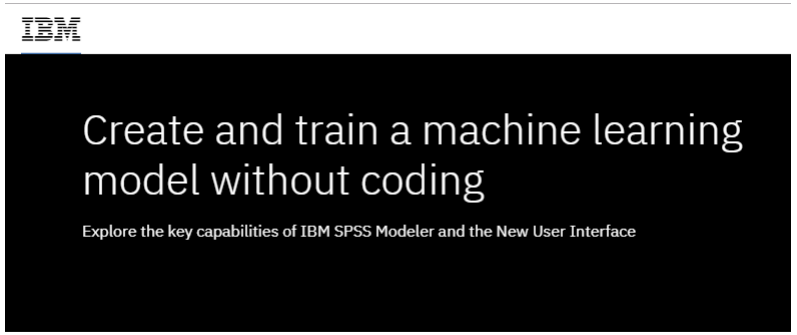
Uber

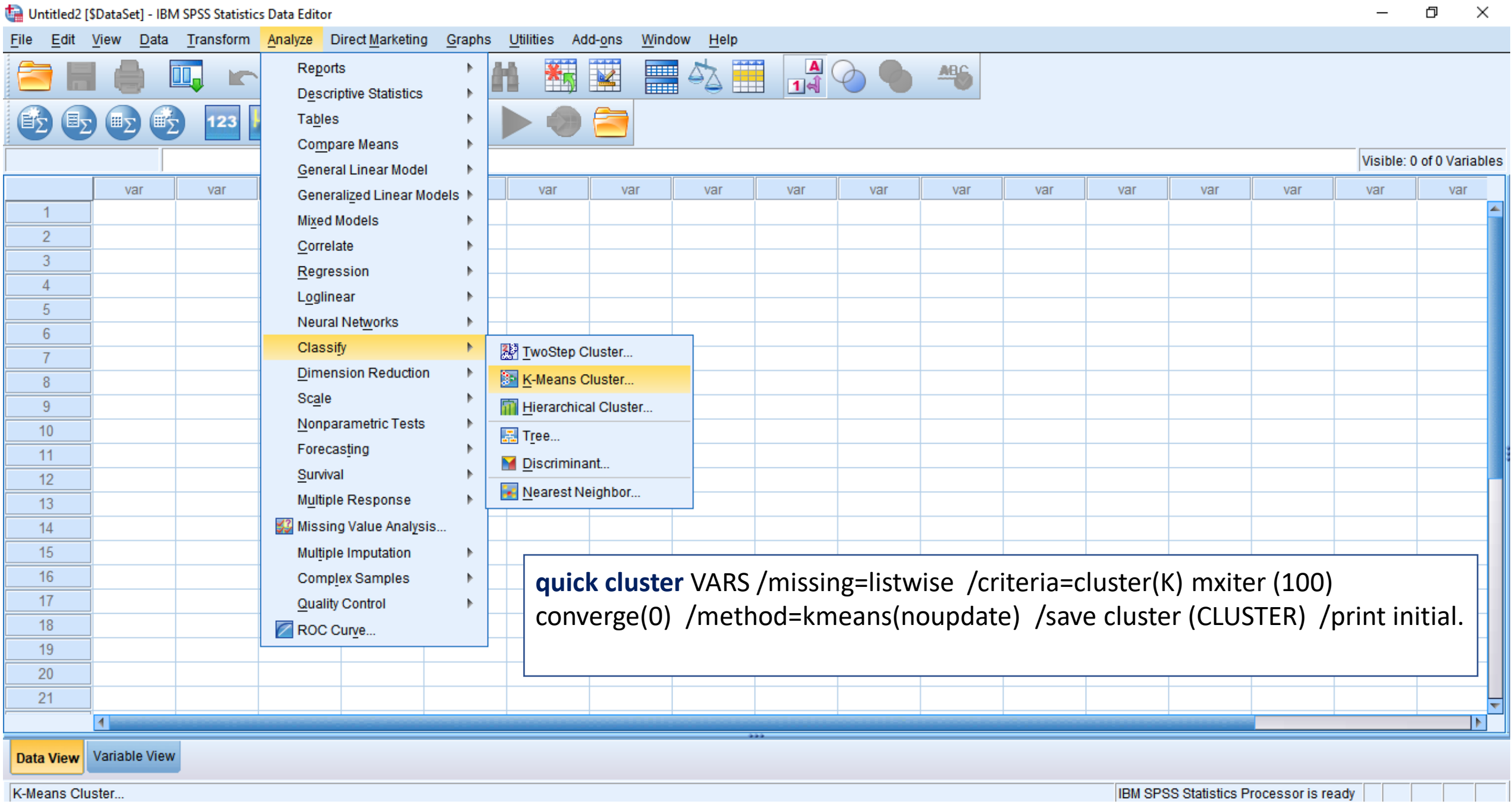
amazon


Artificial Intelligence
Machine Learning
Deep Learning
Engineering of making Intelligent Machines and Programs
Ability to learn without being explicitly programmed
Learning based on Deep Neural Network
1950's
1960's
1970's
1980's
1990's
2000's
2006's
2010's
2012's
2017's


SPAROV VS
DEEP BLU
the rematch

Herramientas… de muchas





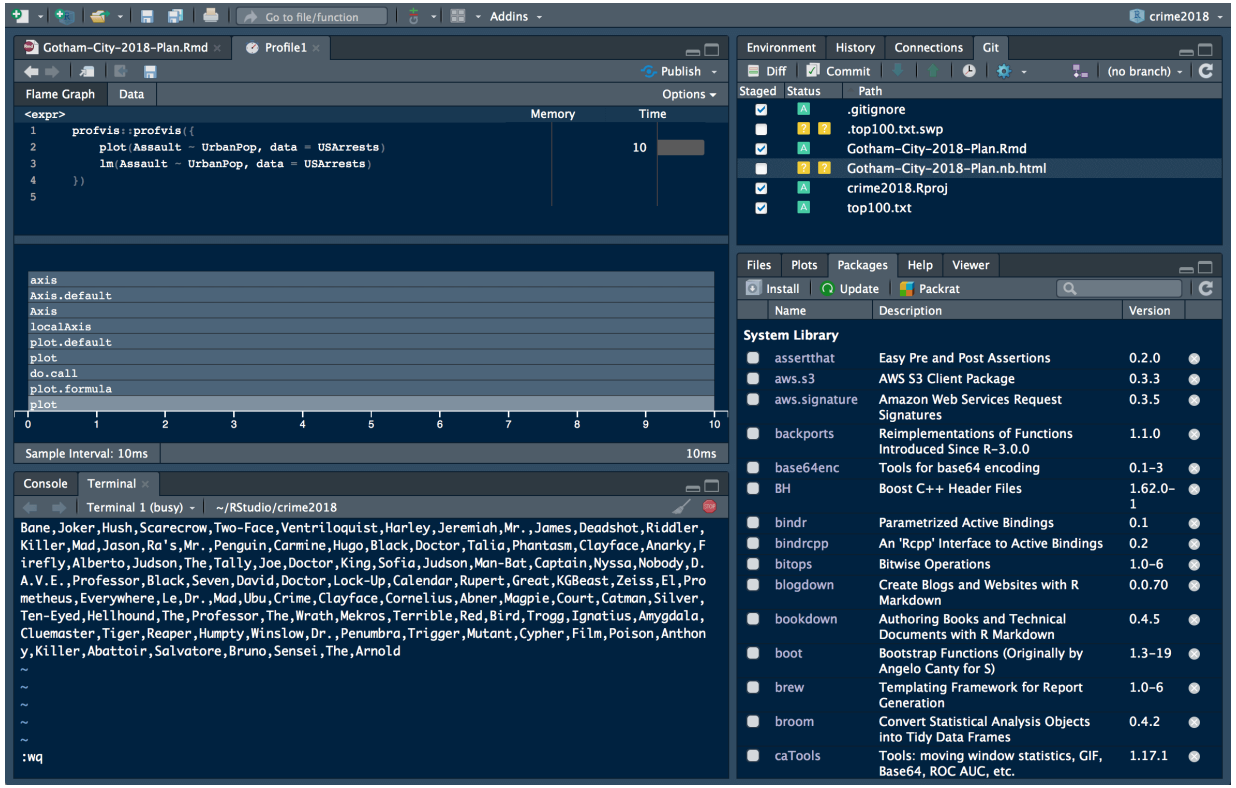
quick cluster VARS /missing=listwise /criteria=cluster(K) mxiter (100) converge(0) /method=kmeans(noupdate) /save cluster (CLUSTER) /print initial.

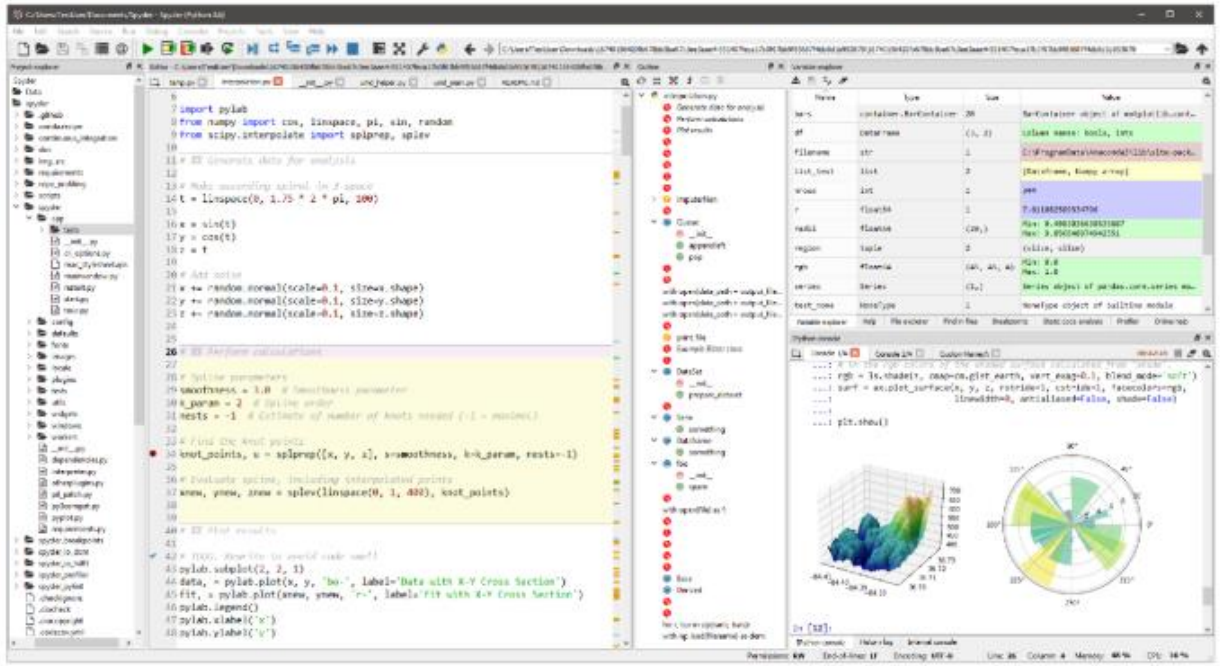
Hadley Wickham – "You can't do data science in a GUI"

Up next

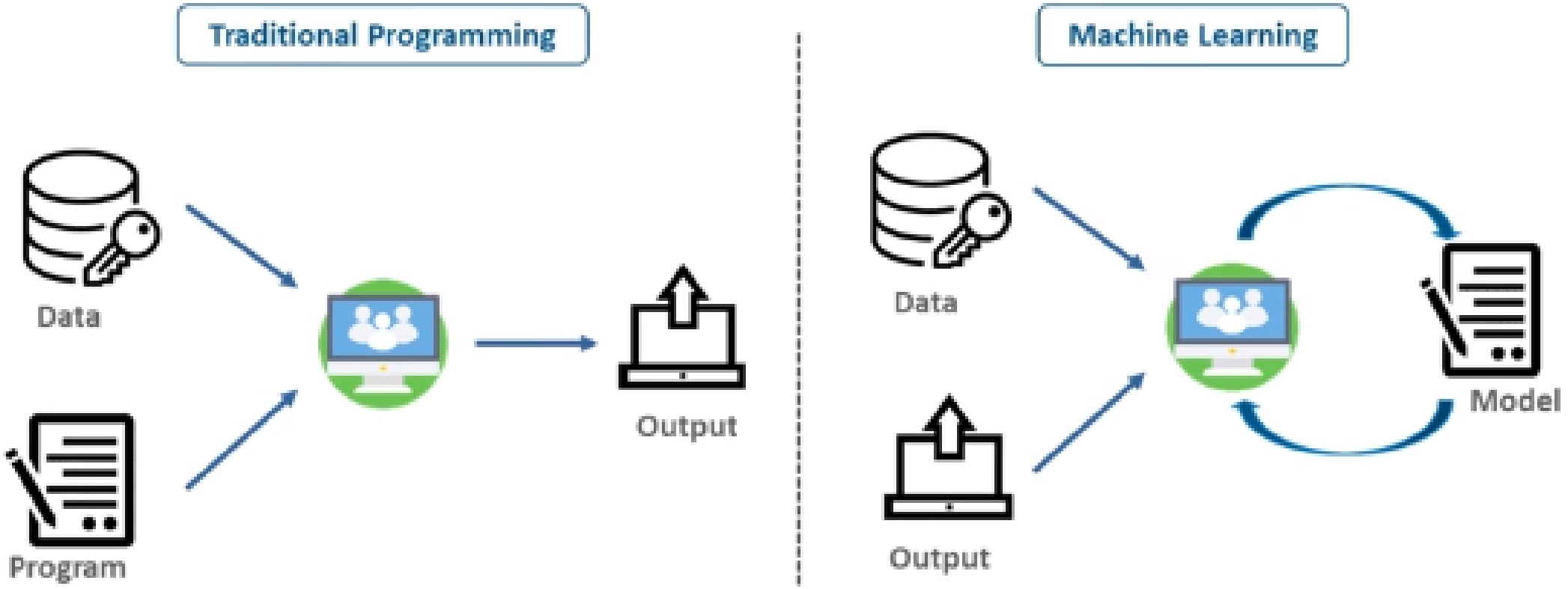
AU

Diferencias entre R y Python

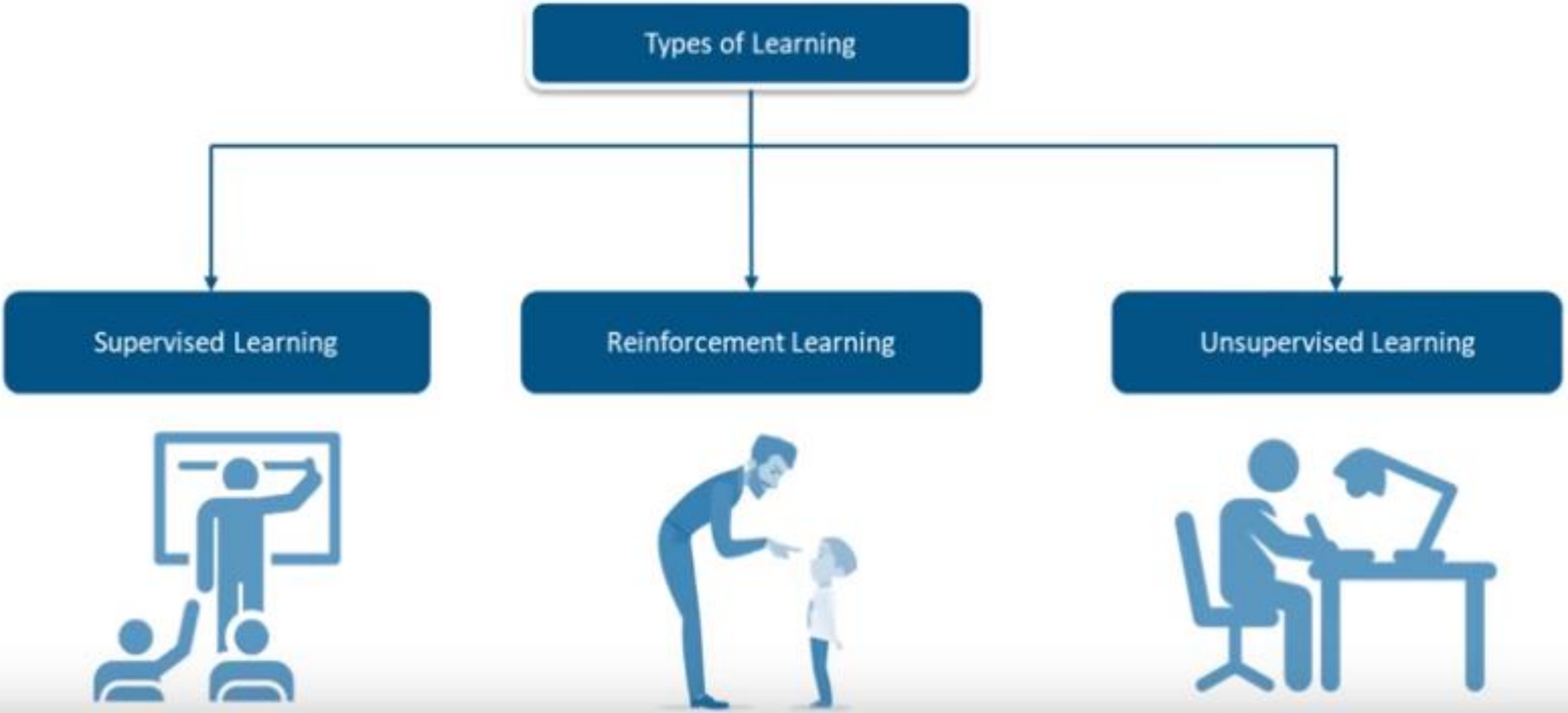




Paradigma Aprendizaje Automático



Tipos de Aprendizaje

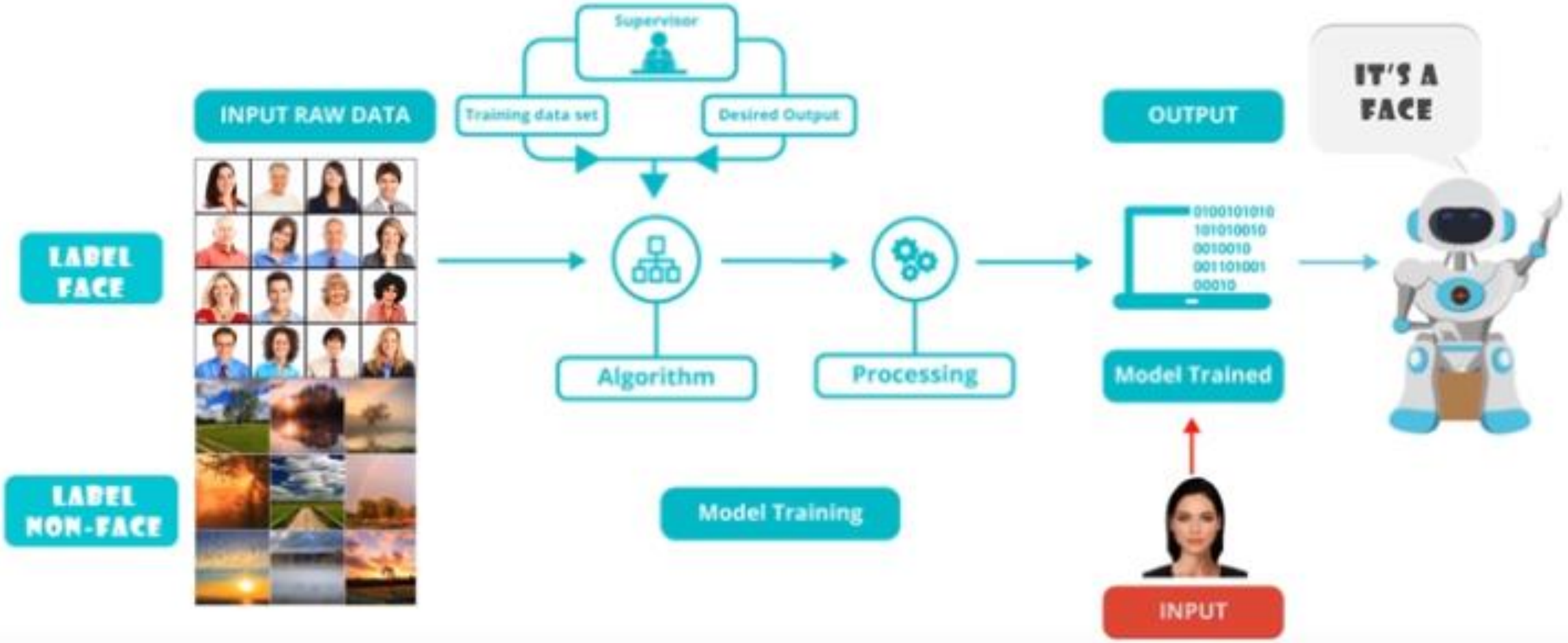


Aprendizaje Supervisado

En el aprendizaje supervisado se tiene una variable de entrada (x) y una variable de salida (Y) y se utiliza un algoritmo para aprender la función que asocia la variable de entrada con la de salida.

Se le llama Supervisado porque el proceso de un algoritmo aprendiendo de la data de entrenamiento se asocia con el de un profesor supervisando el proceso del aprendizaje.

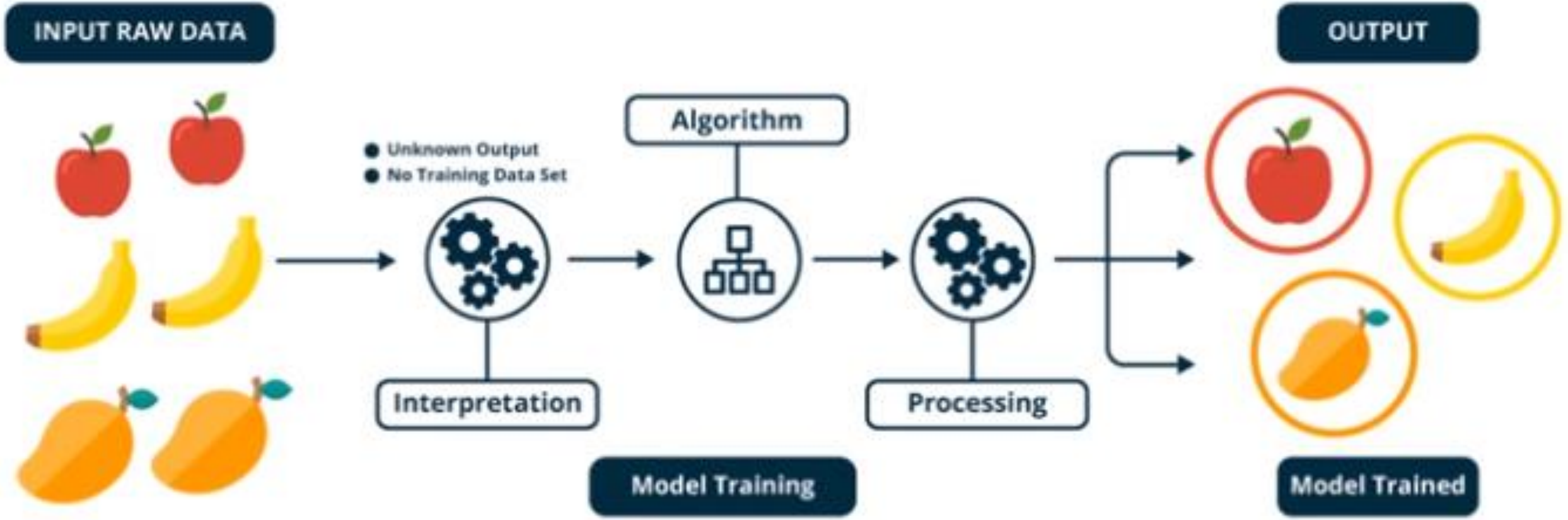
Aprendizaje Supervisado



Algoritmos Aprendizaje Supervisado

- Regresión Lineal
- Regresión Logística
- Arboles de Decisión
- Random Forest
- Clasificador Naive Bayes

Aprendizaje NO Supervisado



Aprendizaje NO Supervisado

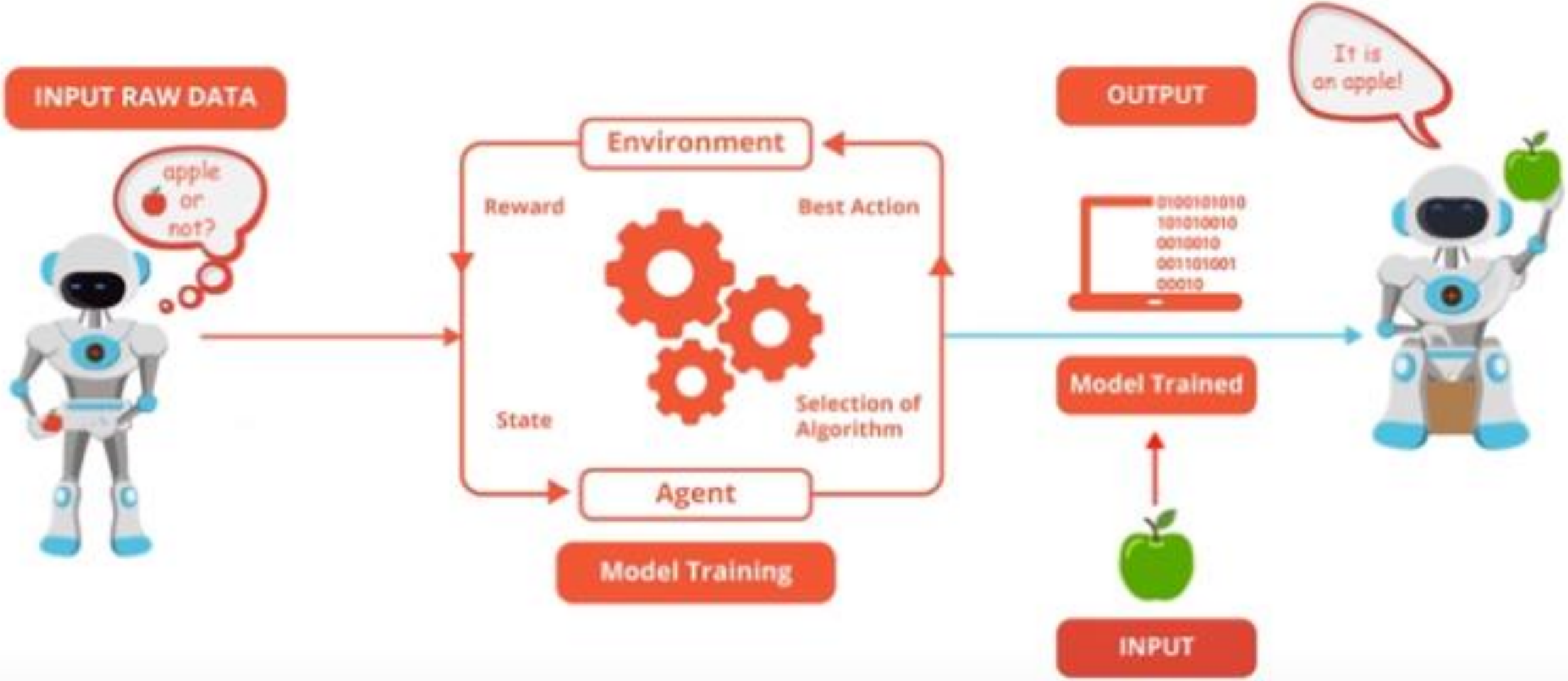
En el aprendizaje NO supervisado se tienen datos no etiquetados y el algoritmo busca extraer inferencias por medio de análisis exploratorio.

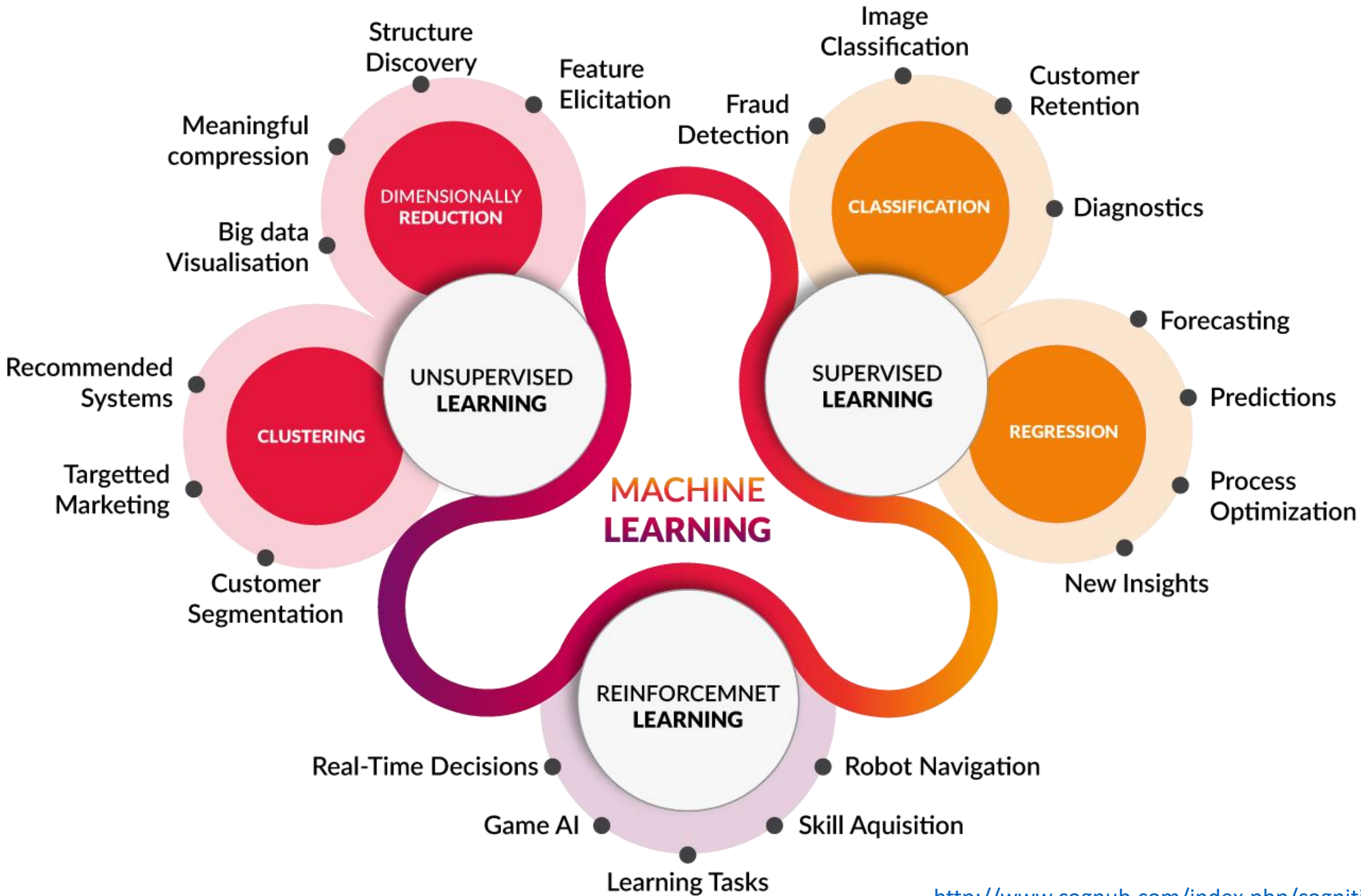
Se le llama NO Supervisado porque es el equivalente de aprender sin un profesor que guíe el aprendizaje.

Algoritmos Aprendizaje NO Supervisado

- Clasificación
- Reducción de Dimensiones

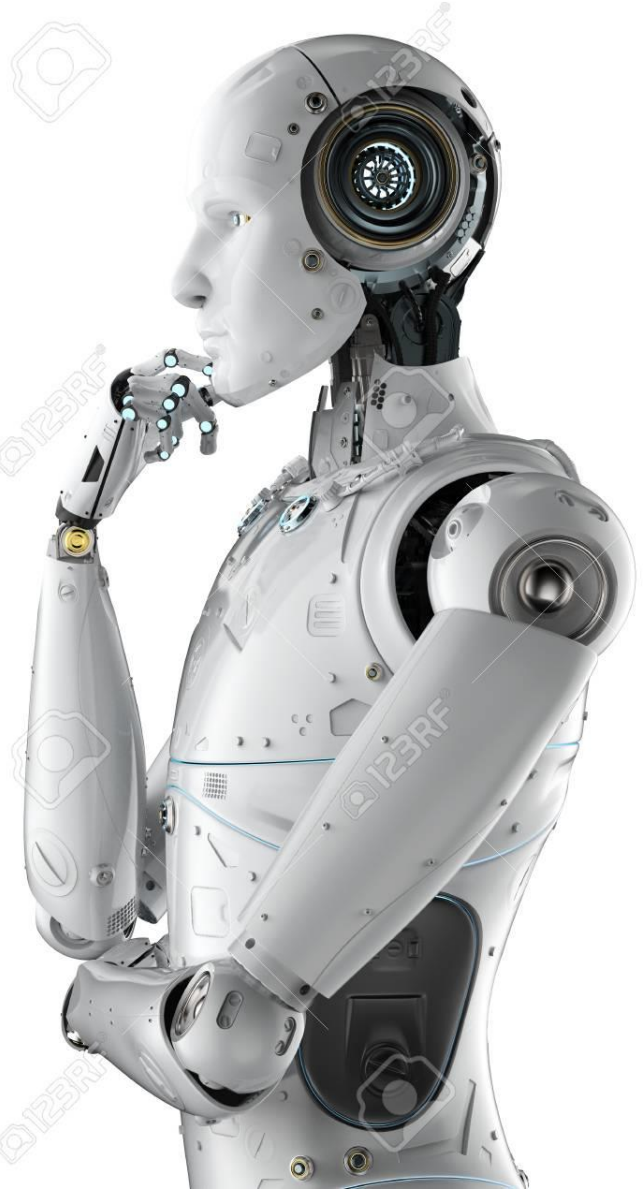
Reinforcement Learning



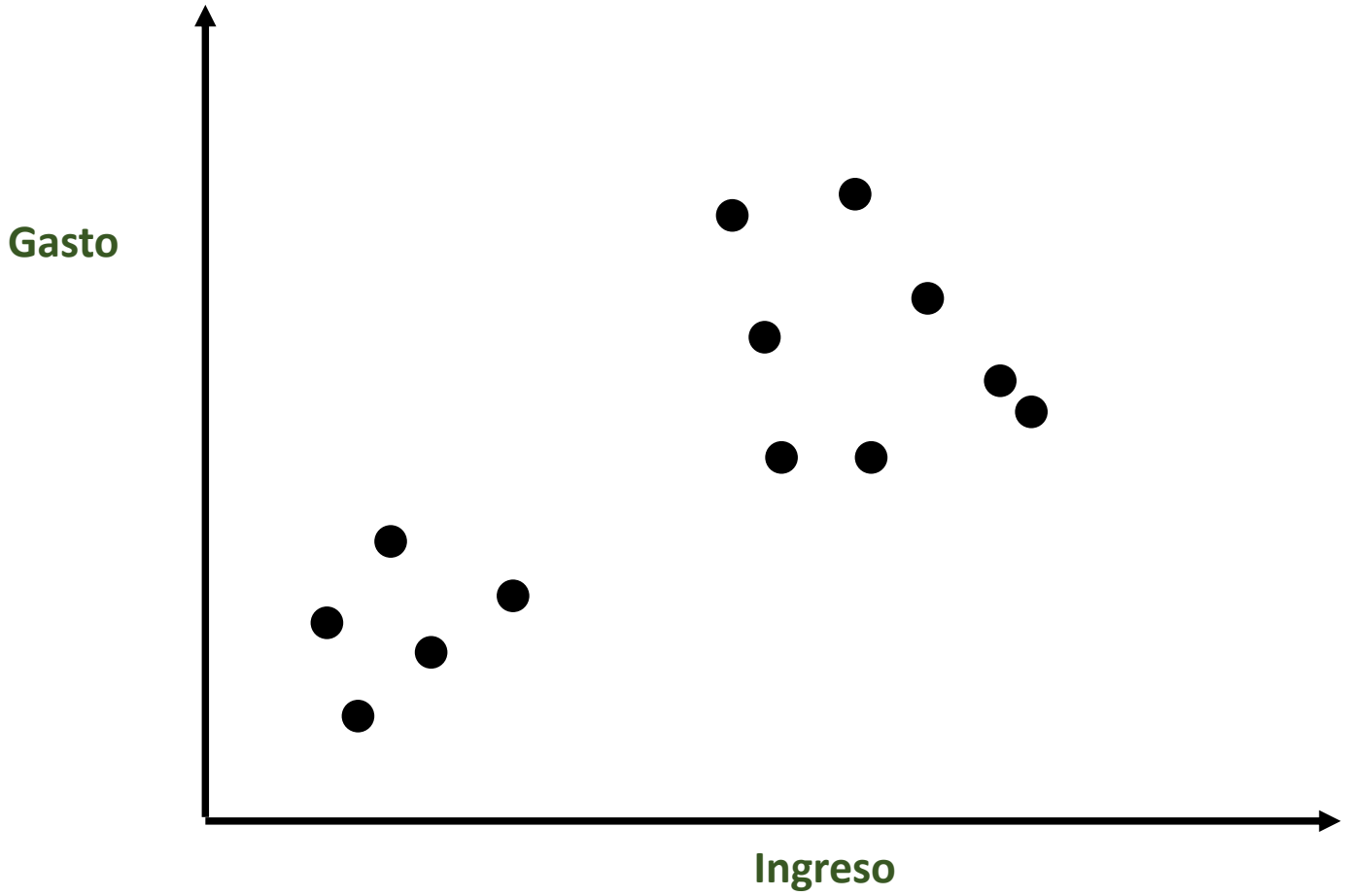


http://www.cognub.com/index.php/cognitive-platform/

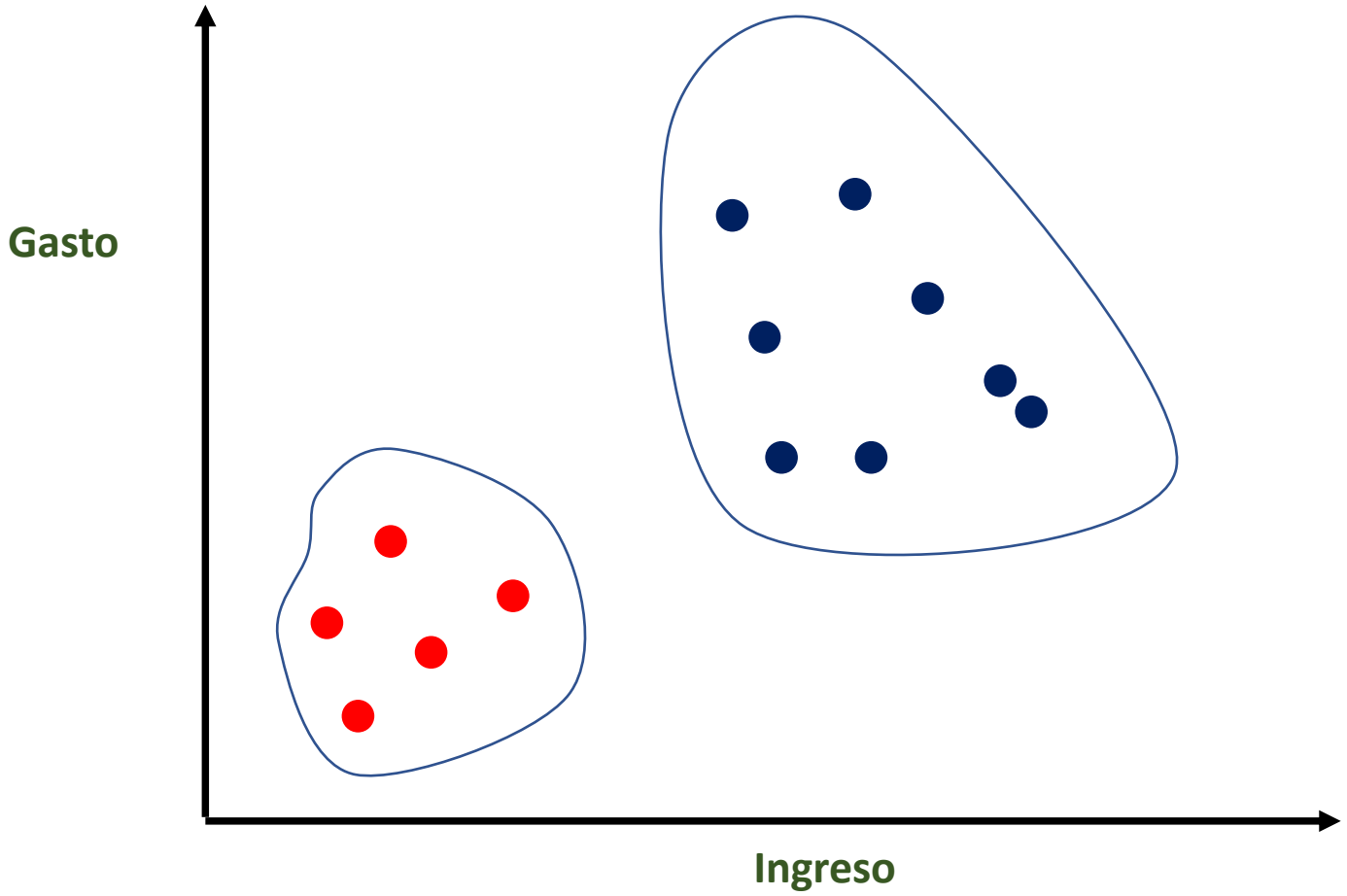
¿Puede pensar una máquina?



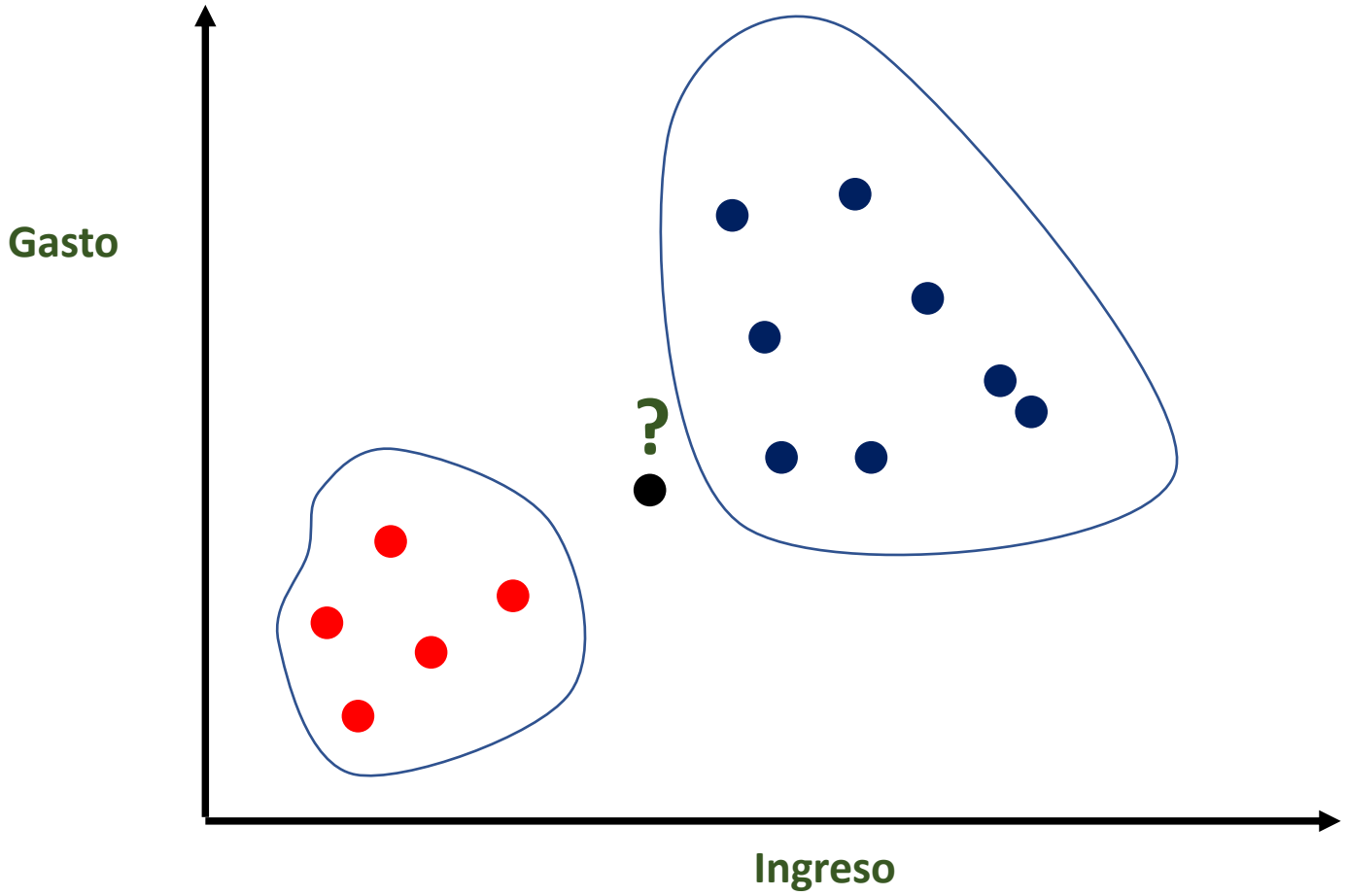
Ejemplo Centros Comerciales



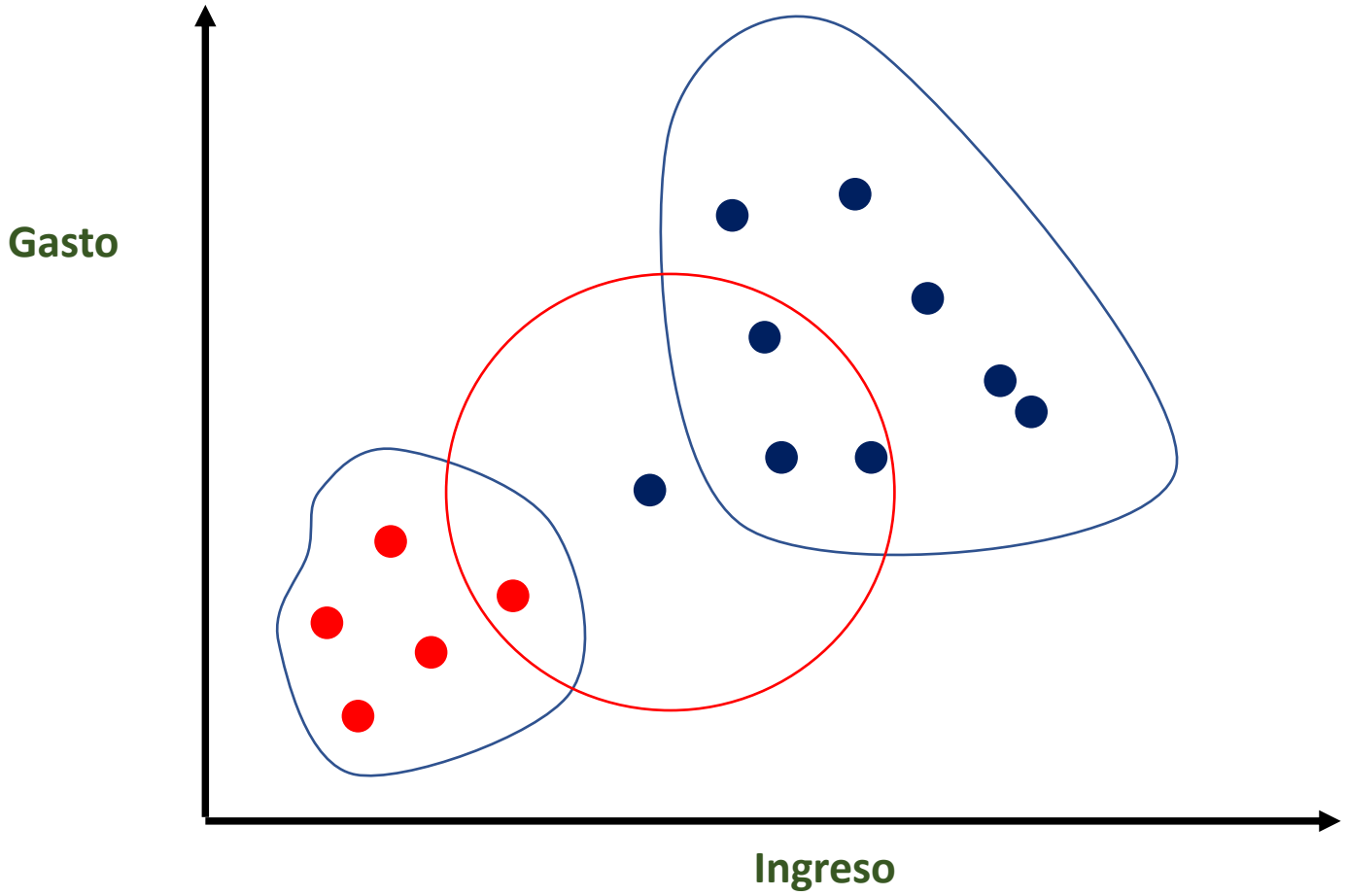
Ejemplo Centros Comerciales



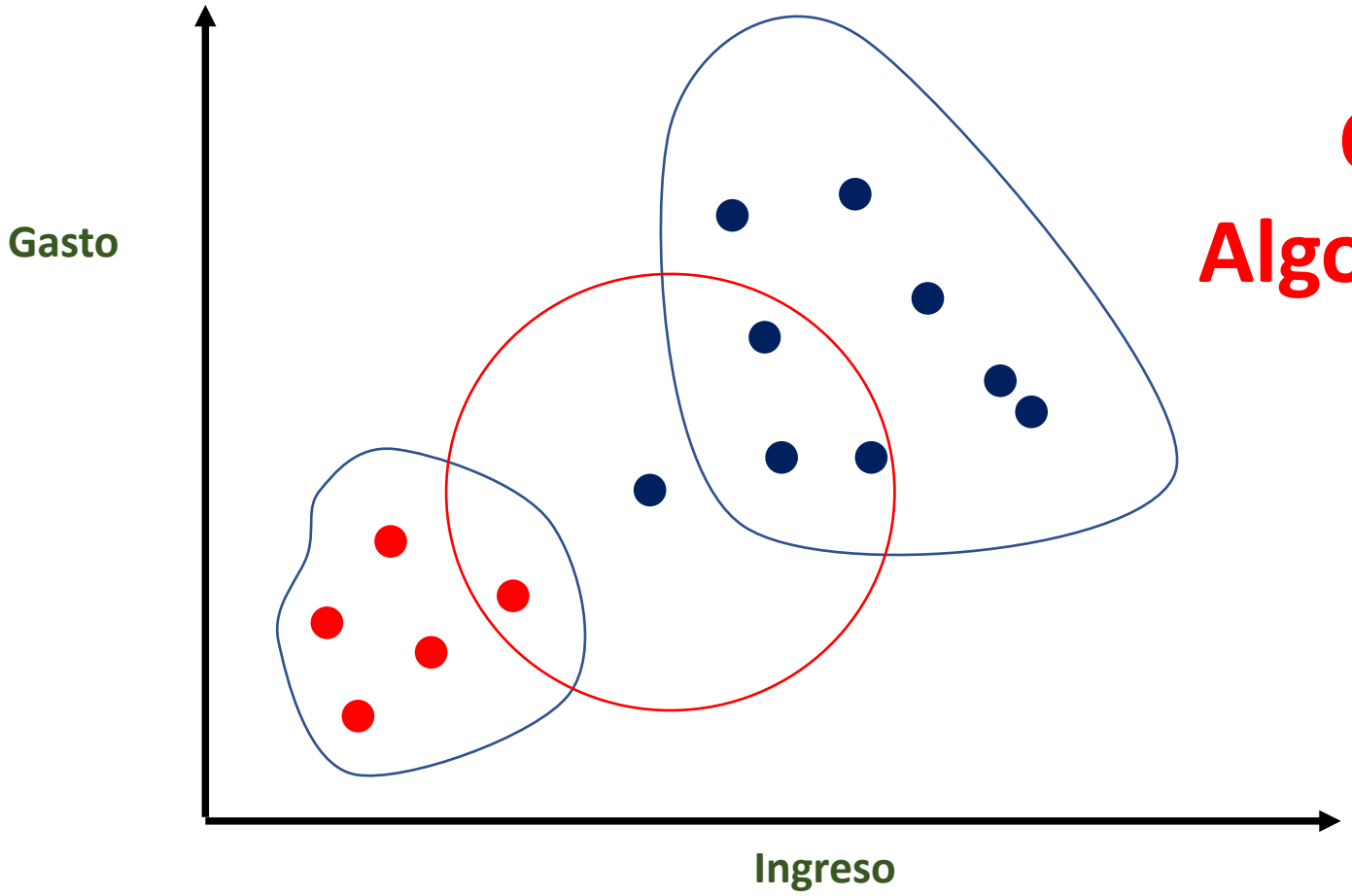
Ejemplo Centros Comerciales



Ejemplo Centros Comerciales

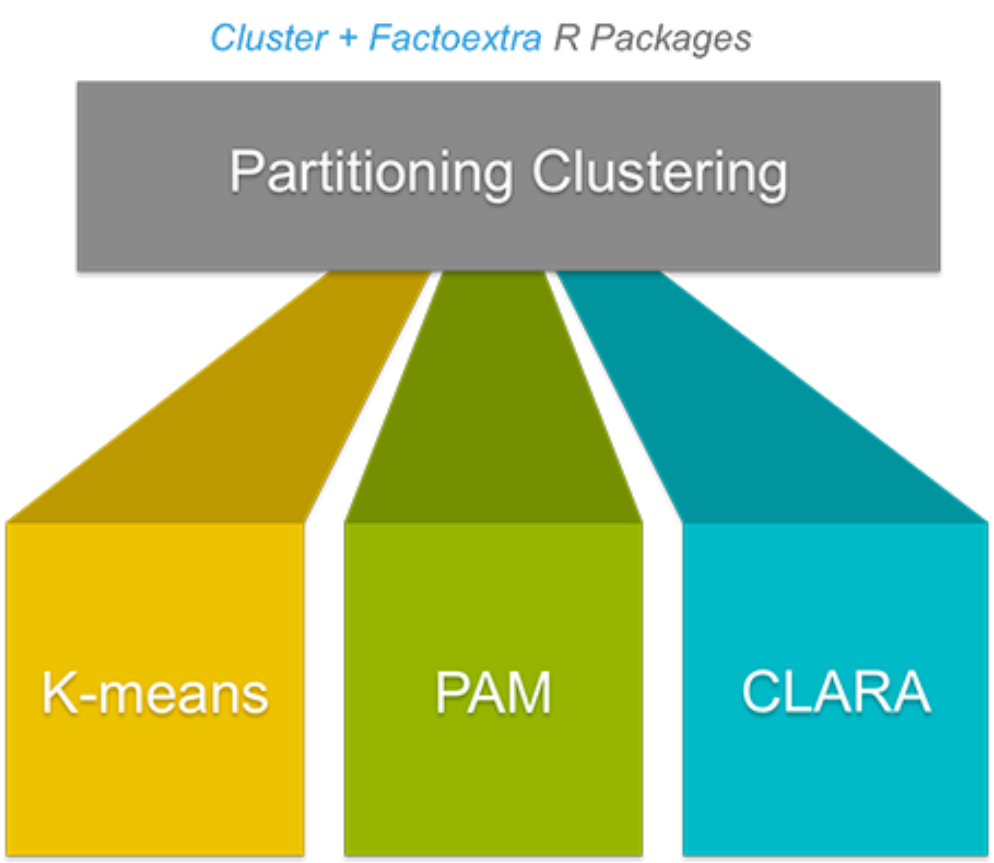


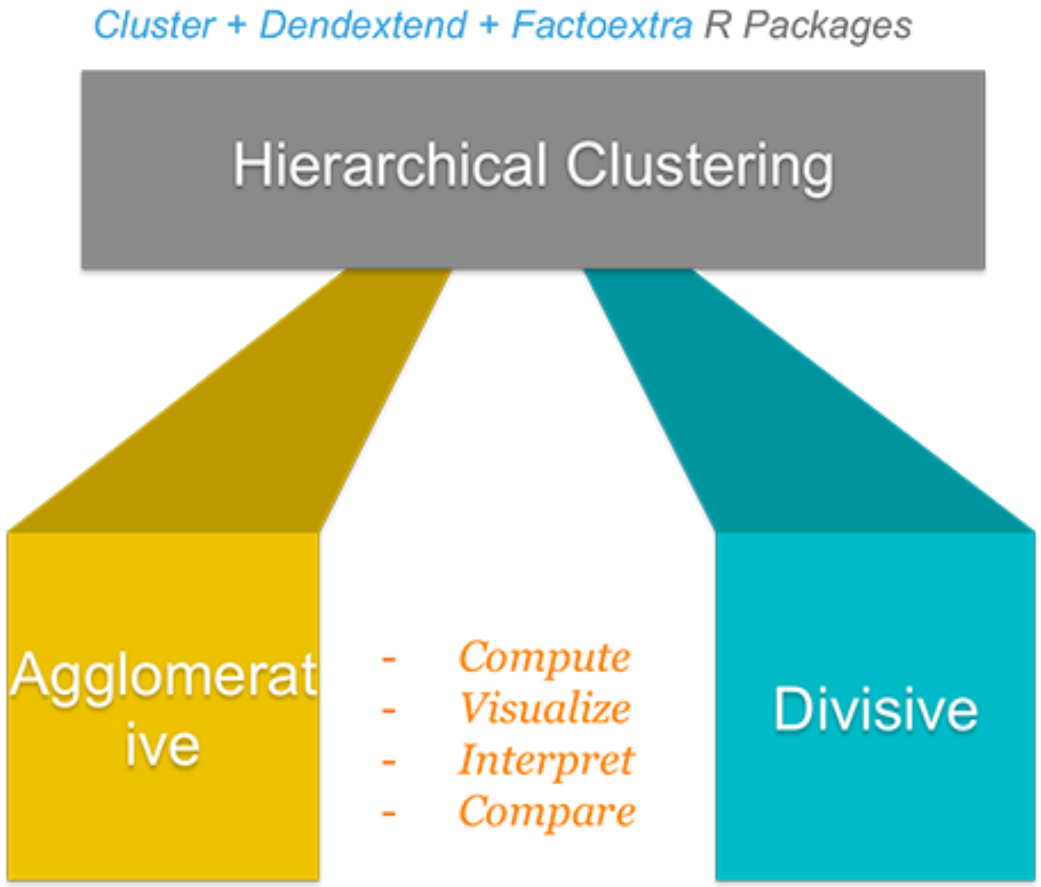
Ejemplo Centros Comerciales



Clasificación:
Algoritmo k-Nearest

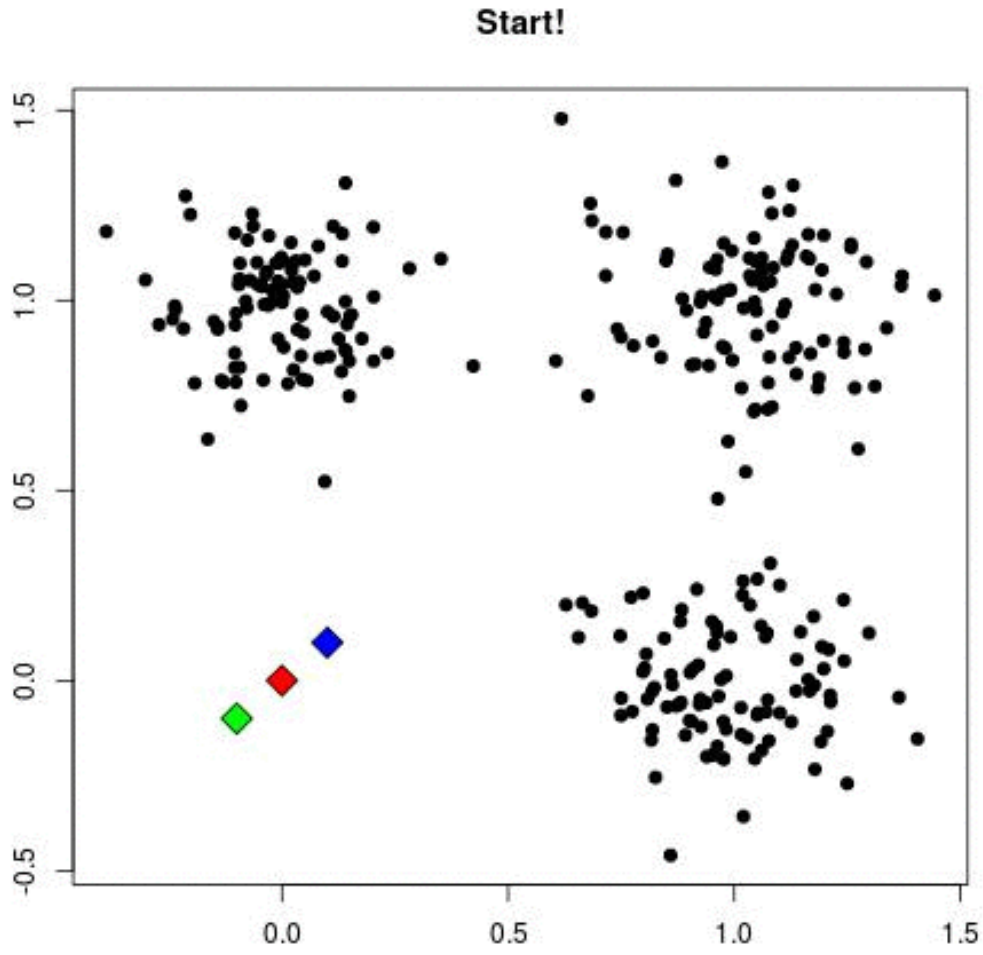
Modelos de Clustering



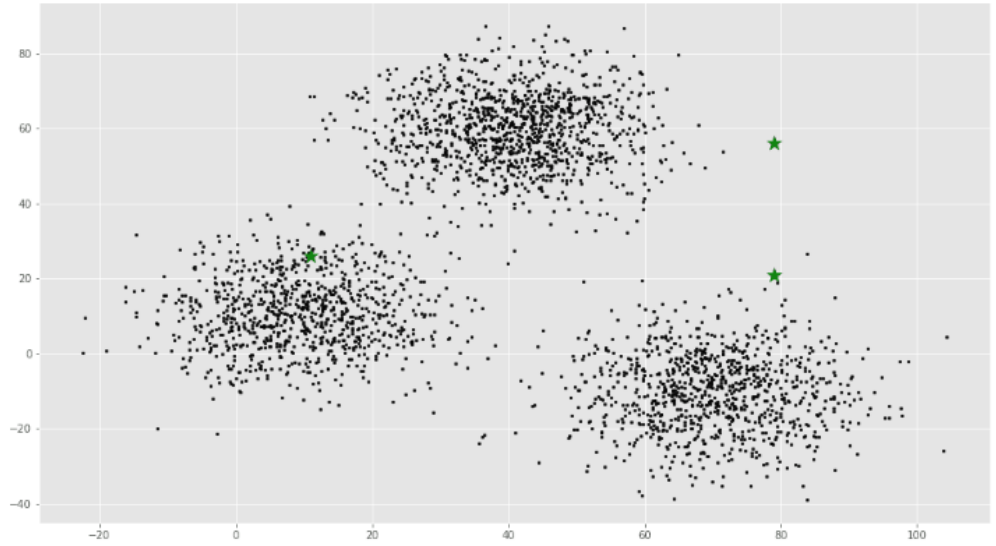


Algoritmo k-Medias

- **Paso 1** - Seleccione K puntos aleatorios de inicio llamados centroides
- **Paso 2** - Asigne cada elemento al cluster más cercano basado en la distancia a cada centroide.
- **Step 3** - Genere un centroide nuevo tomando el promedio de los puntos asignados a cada cluster.
- **Step 4** - Repita los pasos 2 y 3 hasta que ninguna de las asignaciones a los clusters cambie.



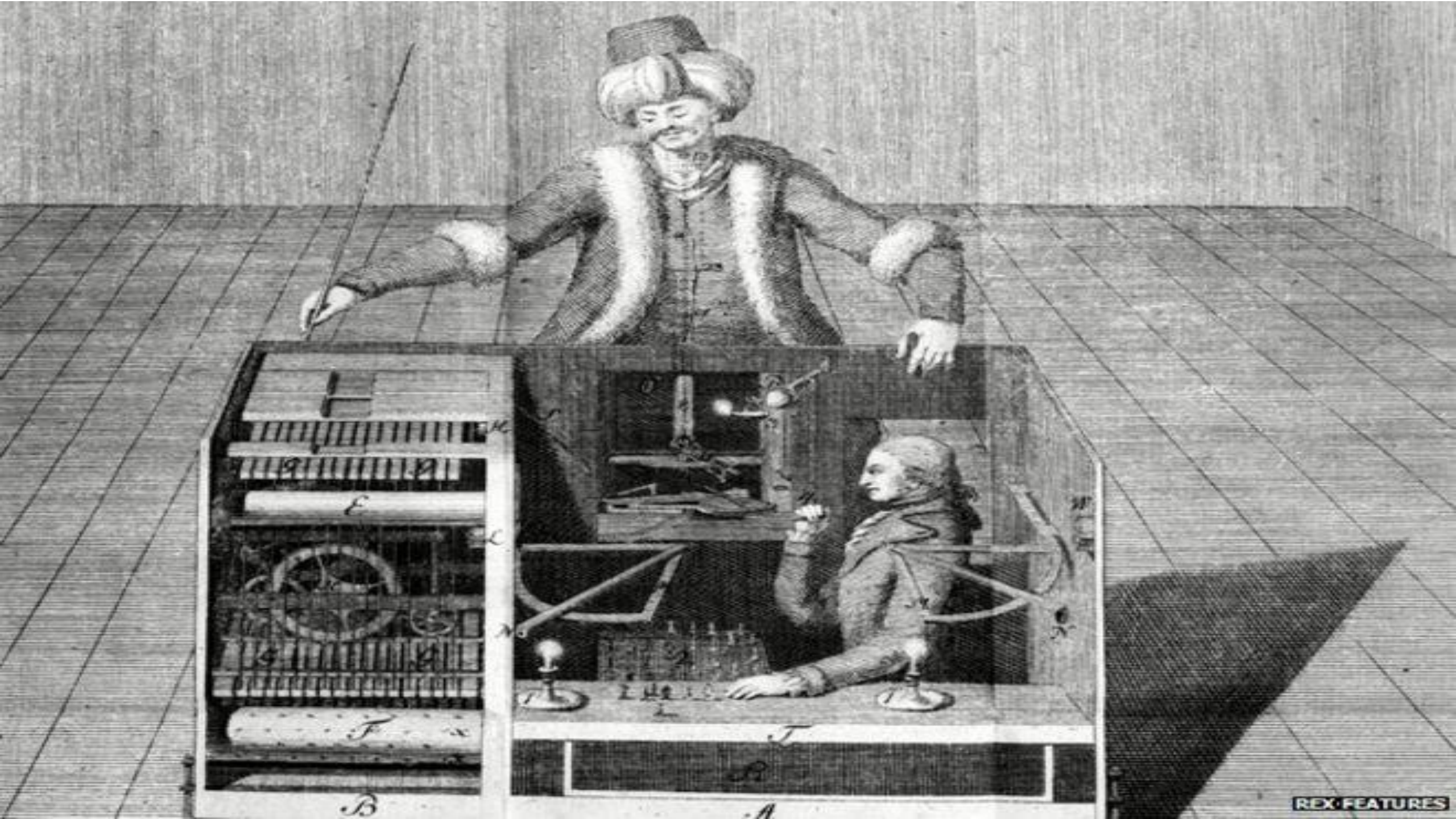
Ejemplo K-Medias



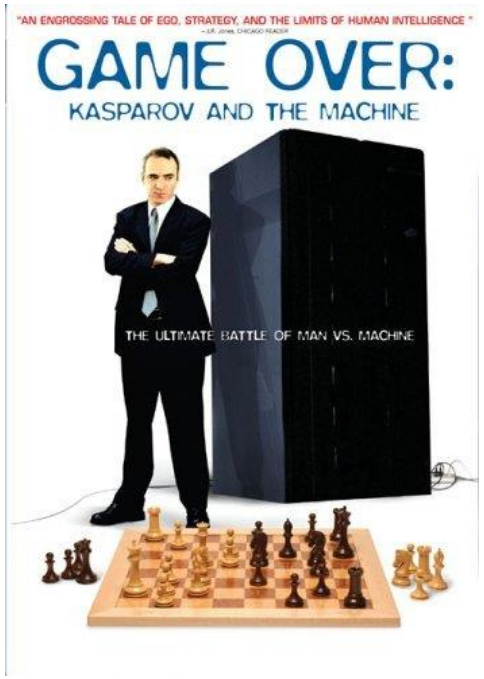

R Studio®

Tabulación de Resultados

		Total	Segmento 1	Segmento 2	Segmento 3	Segmento 4
		%	%	%	%	%
Sexo	Total	100.0	100.0	100.0	100.0	100.0
	Hombre	47.3	43.0	48.9	46.9	41.5
	Mujer	52.7	57.0	51.1	53.1	58.5
Edad	Total	100.0	100.0	100.0	100.0	100.0
	21-29	29.5	16.6	19.0	30.7	31.5
	30-39	22.7	16.8	24.1	23.2	25.1
	40-49	13.9	37.2	21.4	9.0	8.2
NSE	Total	100.0	100.0	100.0	100.0	100.0
	Alto	8.0	1.7	4.6	9.7	4.2
	Medio	46.3	24.5	42.3	49.2	48.0
	Bajo	45.6	73.8	53.0	41.1	47.8


B
A
REX FEATURES

Material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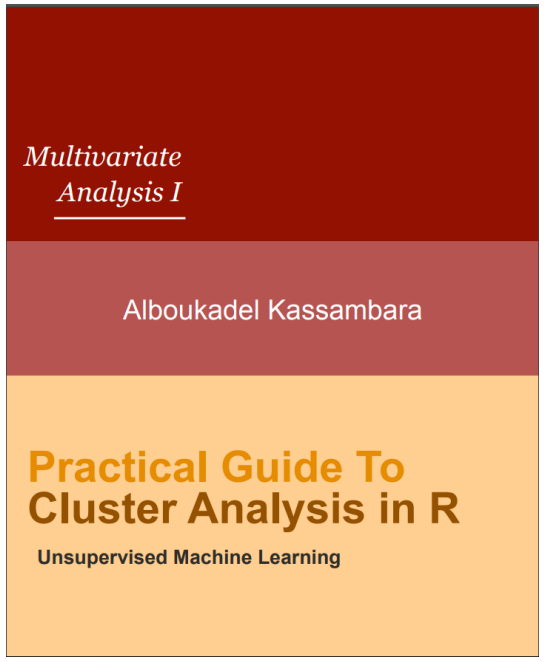
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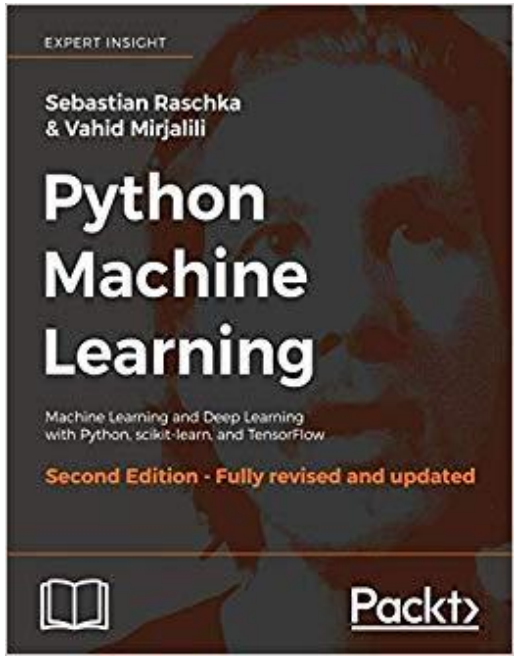
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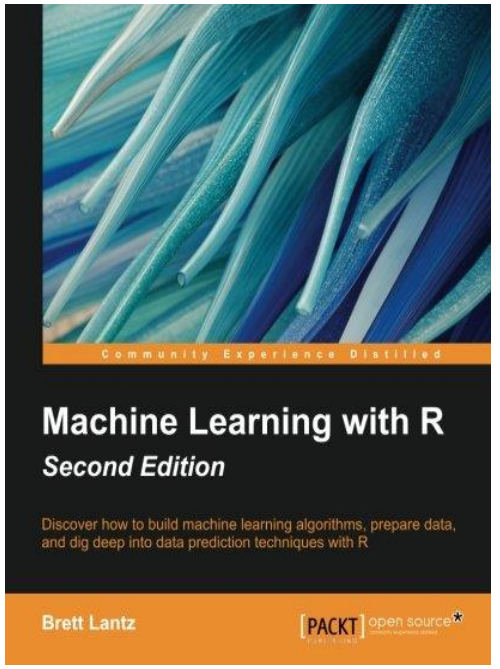
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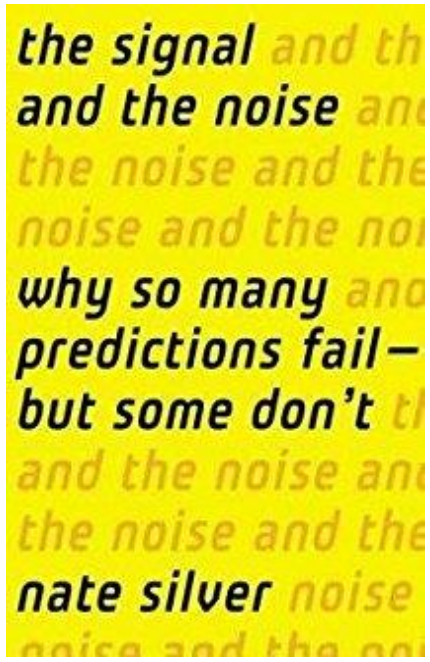
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why so many an
predictions fail—
but some don't t
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¿Preguntas?

APRENDIZAJE AUTOMÁTICO CON R

Modelos de Segmentación

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