



# FORMAÇÃO INTELIGÊNCIA ARTIFICIAL E MACHINE LEARNING

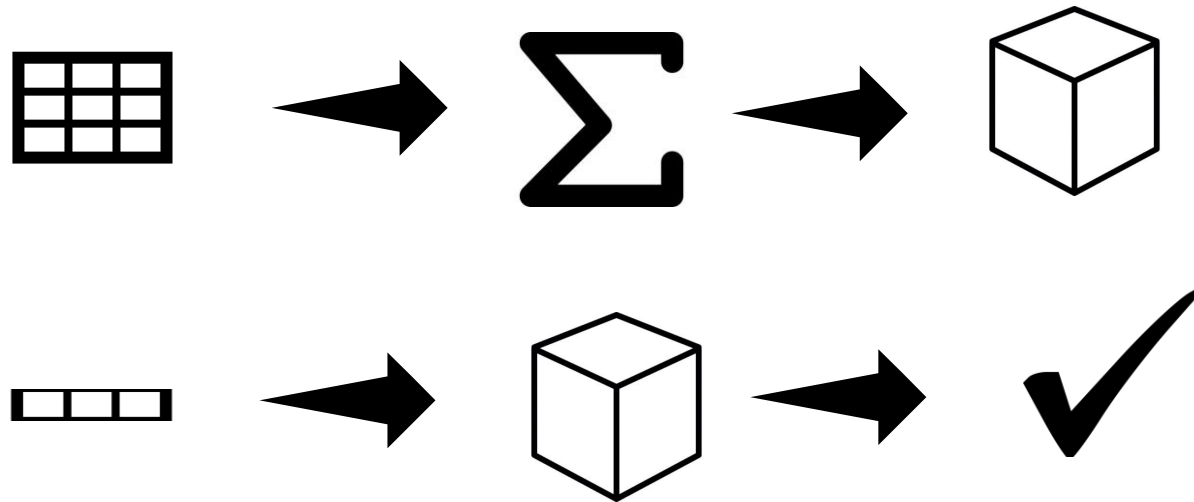
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MACHINE LEARNING – ESTUDANDO ALGORITMOS  
APRENDIZADO BASEADO EM INSTÂNCIA

Prof. Fernando Amaral – Todos os Direitos Reservados

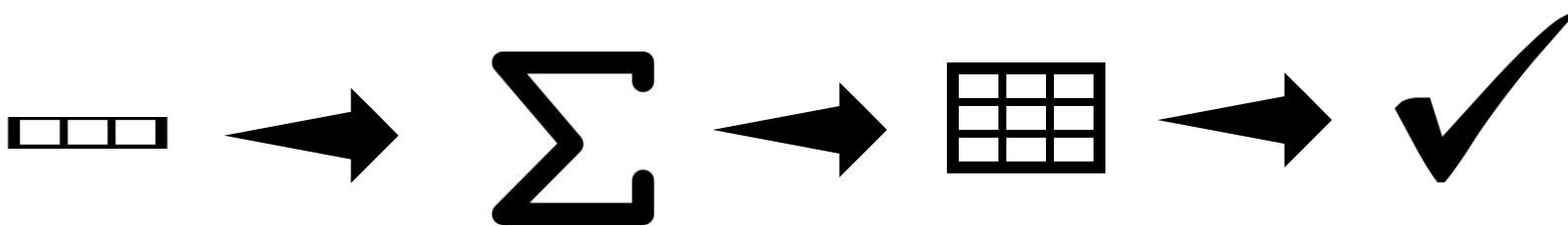
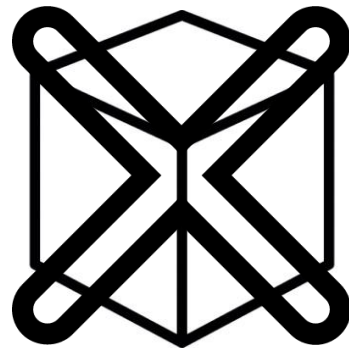
# Classificação Baseada em Modelos

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# Classificação Baseada em Instância

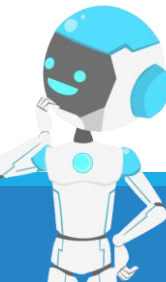
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# Comparação

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- Modelo – Maior custo no pré-processamento
- Baseado em Instância – Maior custo na classificação



# Distância Binária

outlook	temperature	humidity	windy
sunny	cool	high	False

No.	1: outlook	2: temperature	3: humidity	4: windy	5: play
	Nominal	Nominal	Nominal	Nominal	Nominal
1	sunny	hot	high	FALSE	no
2	sunny	hot	high	TRUE	no
3	overcast	hot	high	FALSE	yes
4	rainy	mild	high	FALSE	yes
5	rainy	cool	normal	FALSE	yes
6	rainy	cool	normal	TRUE	no
7	overcast	cool	normal	TRUE	yes
8	sunny	mild	high	FALSE	no
9	sunny	cool	normal	FALSE	yes
10	rainy	mild	normal	FALSE	yes
11	sunny	mild	normal	TRUE	yes
12	overcast	mild	high	TRUE	yes
13	overcast	hot	normal	FALSE	yes
14	rainy	mild	high	TRUE	no

outlook	temperature	humidity	windy	Score	play
1	0	1	1	3	no
1	0	1	0	2	no
0	0	1	1	2	yes
0	0	1	1	2	yes
0	1	0	1	2	yes
0	1	0	0	1	no
0	1	0	0	1	yes
1	0	1	1	3	no
1	1	0	1	3	yes
0	0	0	1	1	yes
0	0	0	0	0	yes
0	0	1	0	1	yes
0	0	0	1	1	yes
0	0	1	0	1	no

No	2
Yes	1



# Distância com Pesos

Outlook	3
Humidity	2
Temperature	1
Windy	1

outlook	temperature	humidity	windy
sunny	cool	high	False

No.	1: outlook	2: temperature	3: humidity	4: windy	5: play
	Nominal	Nominal	Nominal	Nominal	Nominal
1	sunny	hot	high	FALSE	no
2	sunny	hot	high	TRUE	no
3	overcast	hot	high	FALSE	yes
4	rainy	mild	high	FALSE	yes
5	rainy	cool	normal	FALSE	yes
6	rainy	cool	normal	TRUE	no
7	overcast	cool	normal	TRUE	yes
8	sunny	mild	high	FALSE	no
9	sunny	cool	normal	FALSE	yes
10	rainy	mild	normal	FALSE	yes
11	sunny	mild	normal	TRUE	yes
12	overcast	mild	high	TRUE	yes
13	overcast	hot	normal	FALSE	yes
14	rainy	mild	high	TRUE	no

outlook	temperature	humidity	windy	Score	play
3	0	2	1	6	no
3	0	2	0	5	no
0	0	2	1	3	yes
0	0	2	1	3	yes
0	1	0	1	2	yes
0	1	0	0	1	no
0	1	0	0	1	yes
3	0	2	1	6	no
3	1	0	1	5	yes
0	0	0	1	1	yes
0	0	0	0	0	yes
0	0	2	0	2	yes
0	0	0	1	1	yes
0	0	2	0	2	no

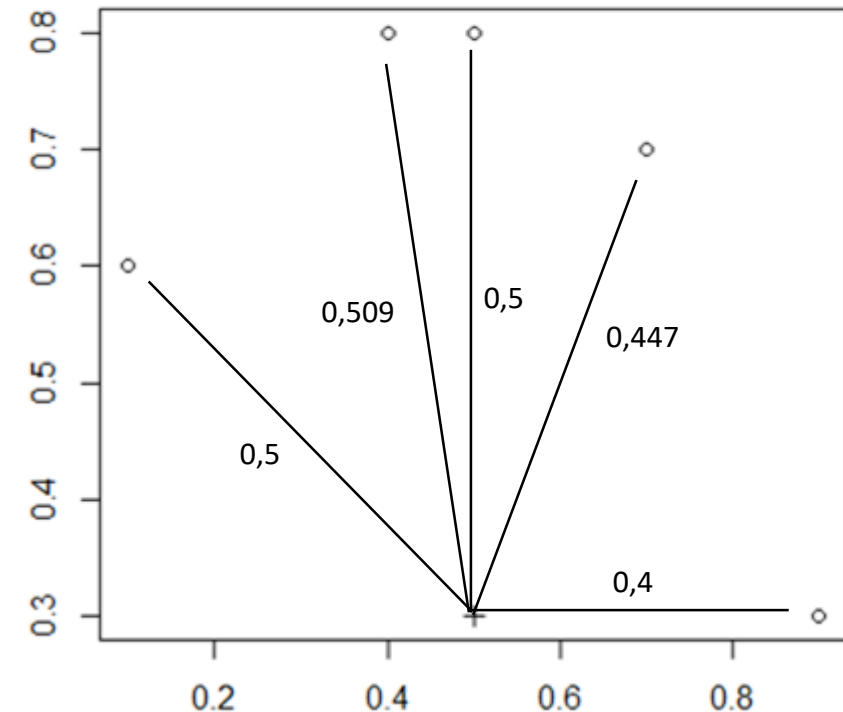
No	2
Yes	0



# Vizinho mais próximo

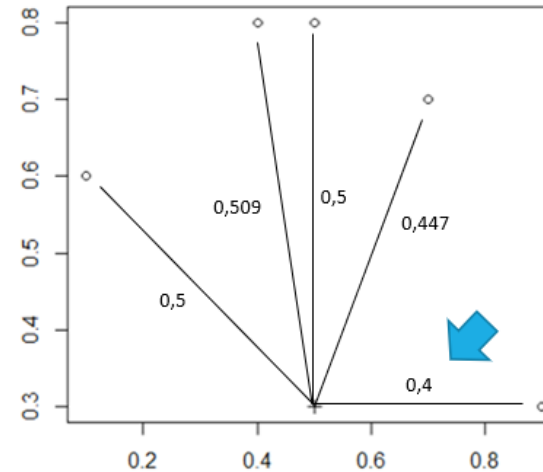
AtrbA	AtrbB	Classe	Distância
0,5	0,8	A	0,5
0,7	0,7	A	0,447
0,9	0,3	B	0,4
0,4	0,8	B	0,509
0,1	0,6	B	0,5

AtrbA	AtrbB	Classe
0,5	0,3	?



# Distância Euclidiana

AtrbA	AtrbB	Distância
0,9	0,3	0,4
AtrbA	AtrbB	
0,5	0,3	



$$\sqrt{(p_x - q_x)^2 + (p_y - q_y)^2}$$

$$\sqrt{(0,9 - 0,5)^2 + (0,3 - 0,3)^2}$$

0,4

```
sqrt( ( 0.9 - 0.5 )^2 + ( 0.3 - 0.3)^2 )
```

```
#####
```

```
x = c(0.9,0.3)
```

```
y = c(0.5,0.3)
```

```
dist(rbind(x,y),method = "euclidean")
```

