



features

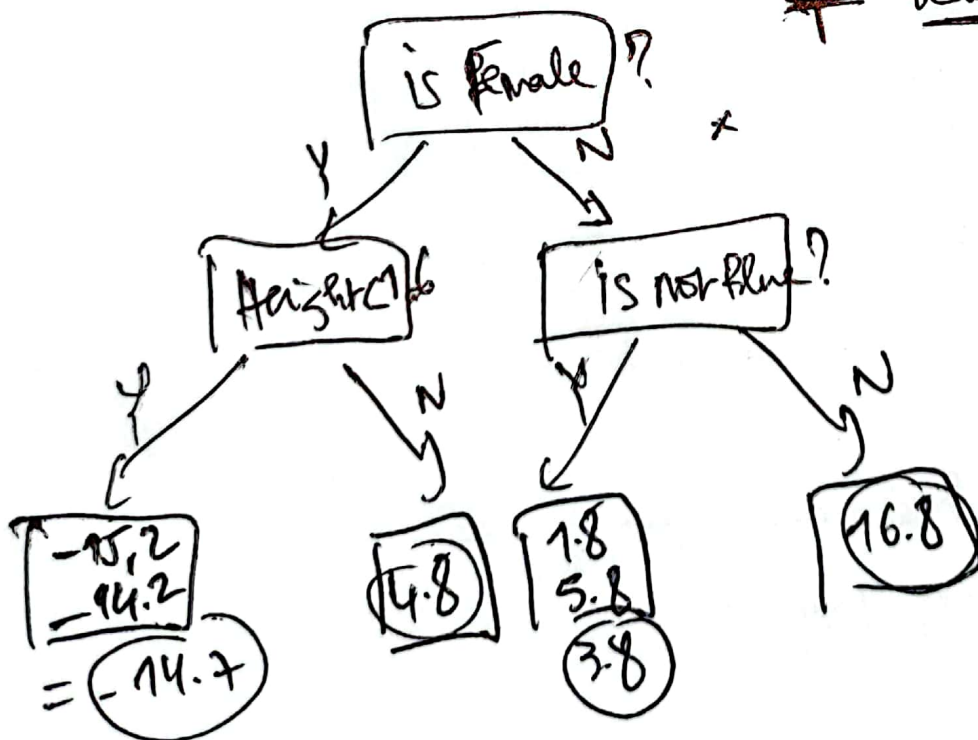
target

index	Height	Color	Gender	Weight	Error (Residuals)	New prediction	New Residual
1	1.6	Blue	M	88	10.8	$71.2 + 0.1 \times 10.8 = 72.3$	$16.8 - 72.3 = -55.5$
2	1.6	Green	F	76	4.8		4.3
3	1.5	Blue	F	56	-15.2		-13.7
4	1.8	Red	M	73	1.8		1.4
5	1.5	Green	M	77	5.8		5.4
6	1.4	Blue	F	57	-14.2		-12.7

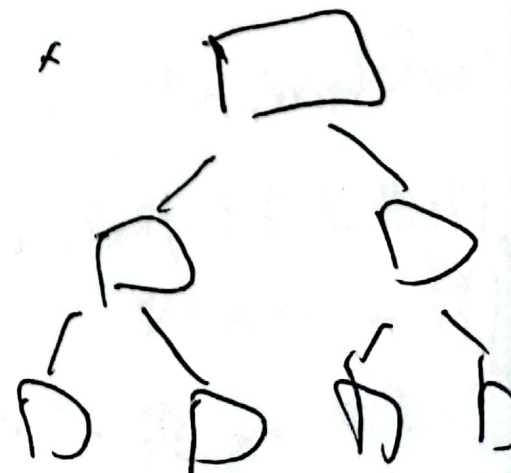
initial prediction

$$\frac{\sum_{i=1}^6 y_i}{6} = 71.2$$

+ learning rate (0.1)



+ learning rate (0.1)





Naïve Bayes

Outlook = Sunny, Temperature = Cool, Humidity = High, Wind = True

Probabilité
a priori

$$P(\text{Play} = \text{Yes}) = \frac{9}{14} = 0.64$$

$$P(\text{Play} = \text{No}) = \frac{5}{14} = 0.36$$

Probabilité
Conditionnelle

Outlook	Y	N
Sunny	2/9	3/5
Overcast	4/9	0
Rain	3/9	2/5

Humidity	Y	N
High	3/9	4/5
Normal	6/9	1/5

Temperature	Y	N
Hot	2/9	2/5
Mild	4/9	2/5
Cool	3/9	1/5

Windy	Y	N
True	3/9	3/5
False	6/9	2/5

Probabilité
a posteriori

$$P(\text{Play} = \text{Yes} \mid \text{Out} = \text{Sunny}, \text{Temp} = \text{Cool}, \text{Hum} = \text{High}, \text{Wind} = \text{True})$$

$$= P(\text{Play} = \text{Yes}) \cdot [P(\text{Out} = \text{Su} \mid Y) \cdot P(\text{Temp} = \text{Cool} \mid Y) \cdot P(\text{Hum} = \text{High} \mid Y) \cdot P(\text{Wind} = \text{True} \mid Y)]$$

$$= \frac{9}{14} \cdot \left[\frac{2}{9} \cdot \frac{3}{9} \cdot \frac{3}{9} \cdot \frac{3}{9} \right] = 0.0053 \sim 0.25$$

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$$P(A|B) = \frac{P(A) \cdot P(B|A)}{P(B)}$$