ASSIGNMENT 8

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GINI INDEX

1st split:

$X_1 \leq 1,5$

$S_1 \rightarrow$ 1 element of class 1

$S_2 \rightarrow$ 2 elements of class 1 and 1 of class 0

$$GI(S_1) = 1 - 0^2 - 1^2 = 0 \quad \text{(pure)}$$

$$GI(S_2) = 1 - \left(\frac{1}{3}\right)^2 - \left(\frac{2}{3}\right)^2 = 0,(4)$$

$$\text{Overall } GI = \frac{1}{4} \times 0 + \frac{3}{4} \times 0,(4) = 0,(3)$$

2nd split:

$X_1 \leq 2,5$

$S_1 \rightarrow$ 2 elements of class 1

$S_2 \rightarrow$ 1 element of class 0 and 1 element of class 1

$$GI(S_1) = 1 - 0^2 - 1^2 = 0 \quad \text{(pure)}$$

$$GI(S_2) = 1 - \left(\frac{1}{2}\right)^2 - \left(\frac{1}{2}\right)^2 = 0,5$$

$$\text{Overall } GI = \frac{2}{4} \times 0 + \frac{2}{4} \times 0,5 = 0,25$$

3rd split:

$X_1 \leq 3,5$

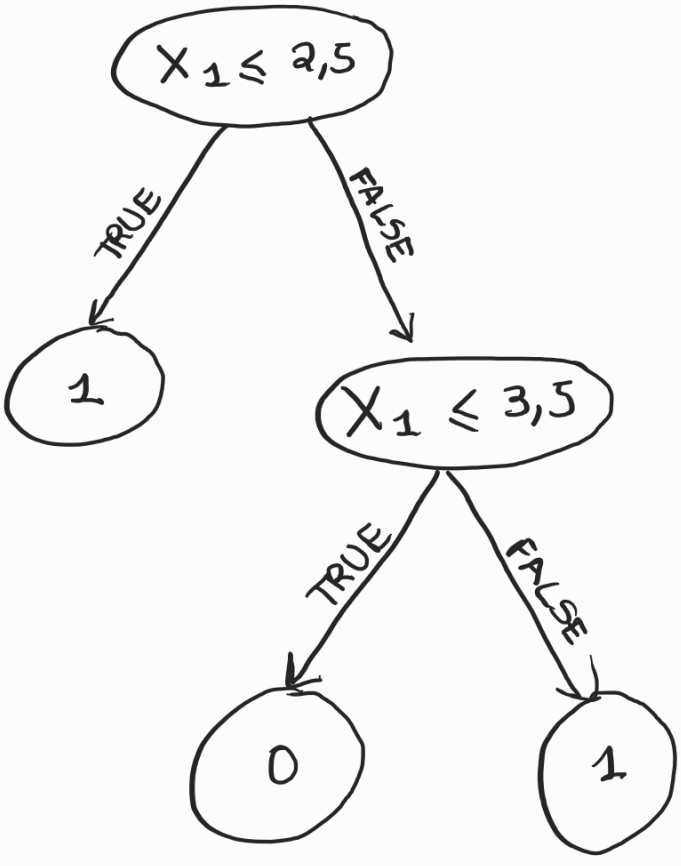
$S_1 \rightarrow$ 2 elements of class 1 and 1 element of class 0

$S_2 \rightarrow$ 1 element of class 1

$$GI(S_2) = 1 - \left(\frac{1}{3}\right)^2 - \left(\frac{2}{3}\right)^2 = 0,(4)$$

$$GI(S_2) = 1 - 0^2 - 1^2 = 0 \quad \text{(pure)}$$

$$\text{Overall } GI = \frac{3}{4} \times 0,(4) + \frac{1}{4} \times 0 = 0,(3)$$



remaining dataset:

X_1	X_2	y
3	4	0
4	5	1