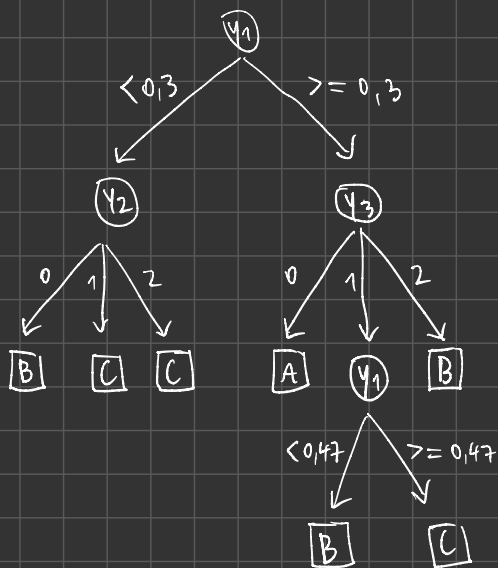


1.



2.

pred \ true	A	B	C
A	8, 11		
B		2, 4, 6, 12	
C	7		1, 3, 5, 9, 10

pred \ true	A	B	C
A	2	0	0
B	0	4	0
C	1	0	5

3.

$$\text{recall} = \frac{TP}{TP + FN}$$

$$\text{precision} = \frac{TP}{TP + FP}$$

$$\text{recall}_A = \frac{2}{3}$$

$$\text{precision}_A = \frac{2}{2}$$

$$\text{recall}_B = \frac{4}{4}$$

$$\text{precision}_B = \frac{4}{4}$$

$$\text{recall}_C = \frac{5}{5}$$

$$\text{precision}_C = \frac{5}{6}$$

$$F1 = \frac{2}{\frac{1}{P} + \frac{1}{R}}$$

$$F1_A = \frac{2}{\frac{1}{1} + \frac{3}{2}} = 0,80$$

$$F1_B = \frac{2}{\frac{1}{1} + \frac{1}{1}} = 1$$

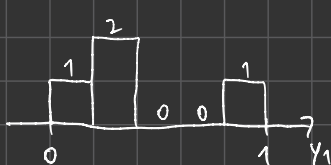
$$F1_C = \frac{2}{\frac{6}{5} + \frac{1}{1}} = 0,91$$

4.

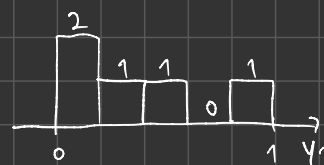
$y_1 \mid y_{out} = A$



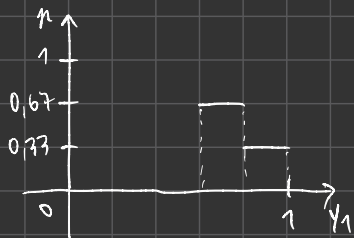
$y_1 \mid y_{out} = B$



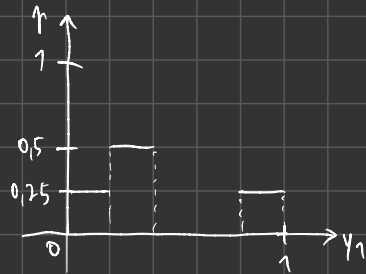
$y_1 \mid y_{out} = C$



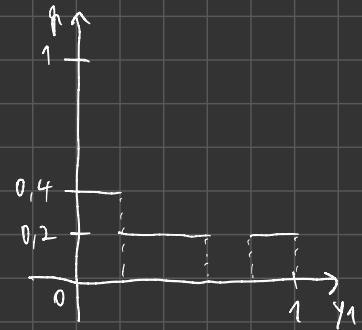
$$P(y_1 | y_{out} = A)$$



$$P(y_1 | y_{out} = B)$$



$$P(y_1 | y_{out} = C)$$



$$\begin{aligned} y_1 < 0,2 &\Rightarrow C \\ 0,2 \leq y_1 < 0,4 &\Rightarrow B \\ 0,4 \leq y_1 < 0,6 &\Rightarrow C \\ 0,6 \leq y_1 &\Rightarrow A \end{aligned}$$