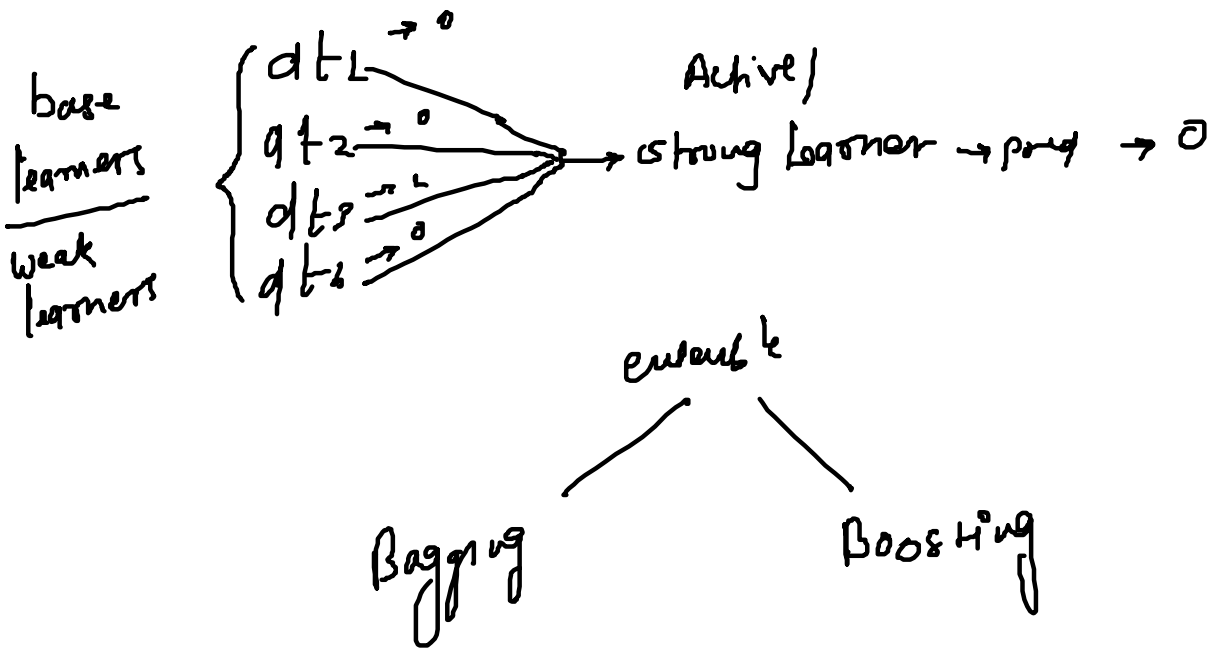
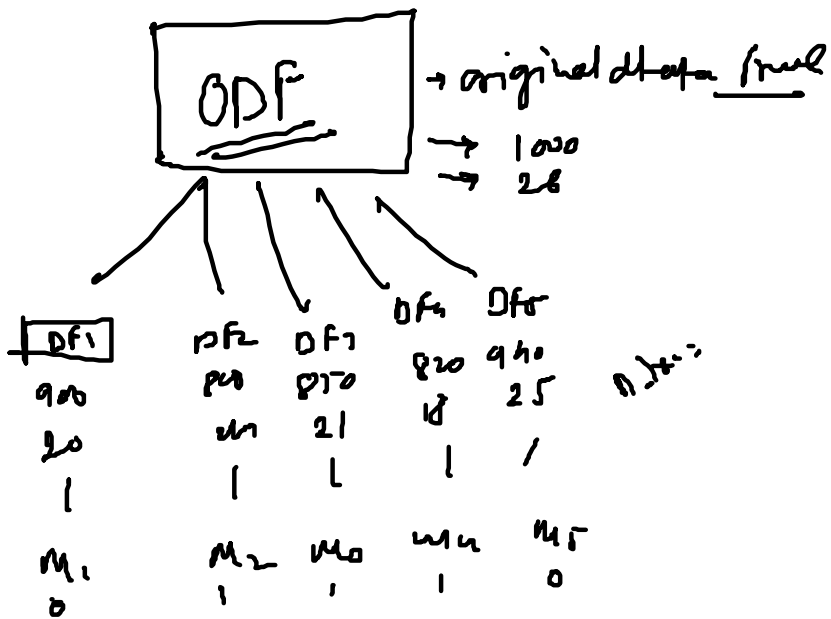


ensemble = Assembly



Bagging

Objt:- reduce the variance of decision tree.


$$x_1 \mid x_2 \mid x_3 \mid x_4 \mid x_5 \mid T$$
$$\begin{aligned} \text{DF-1} &= x_1, x_2, x_3, x_5 \\ \text{DF-2} &= x_1, x_3, x_4, x_5 \\ \text{DF-3} &= x_1, x_2, x_4, x_5 \\ \text{DF-4} &= x_1, x_2, x_3, x_5 \end{aligned}$$

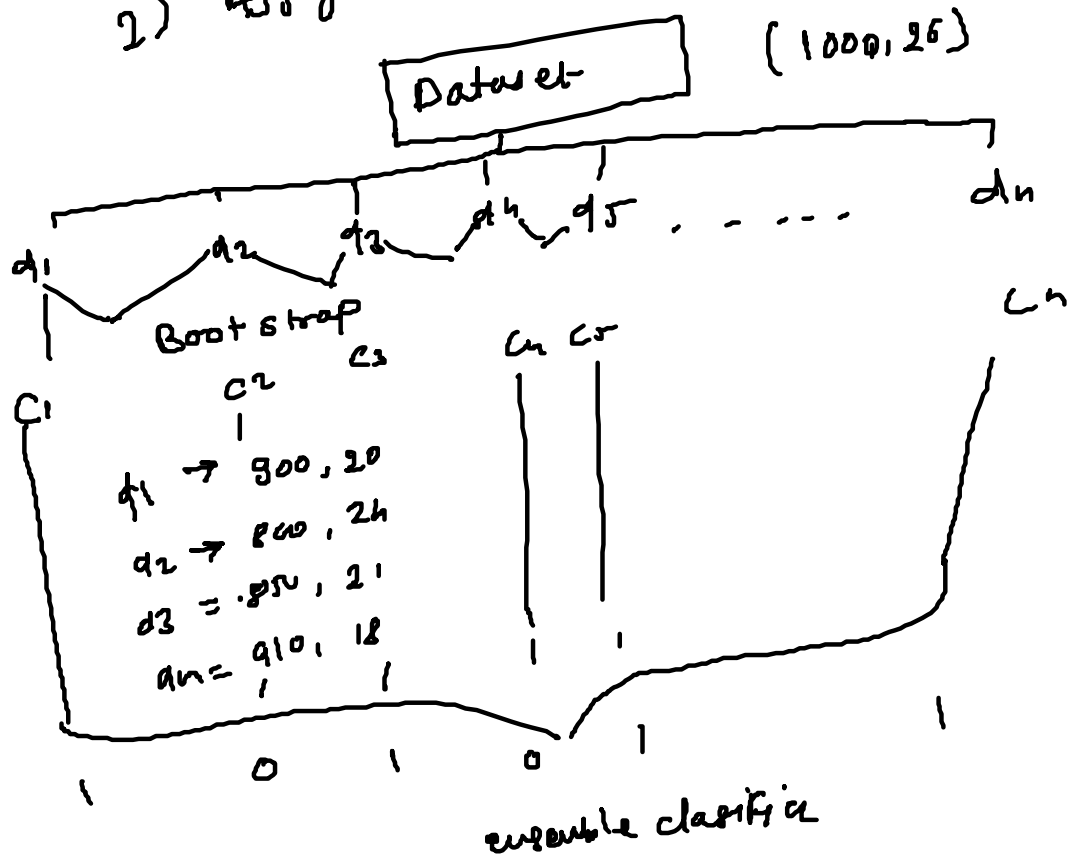
Bagging consist of 2 types

- 1) Bootstrapping

1) Bootstrapping

↓ Sampling technique to create subset of your original dataset

2) Aggregation.



0 → 2
1 → 4

1

for prediction we use voting classifier

Classification

1) Hard voting (majority voting) (max count)

$m_1 \rightarrow [0.9, 0.1]$
 $m_2 \rightarrow [0.8, 0.2]$
 $m_3 \rightarrow [0.3, 0.7]$

class 0
 0
 1

} class = 0

2) Soft voting (probabilities)

2) Soft voting (probabilities)

$$\left. \begin{aligned} p(0) &= (0.8 + 0.8 + 0.3) / 3 = \underline{\underline{0.67}} \\ p(1) &= (0.1 + 0.2 + 0.7) / 3 = 0.33 \end{aligned} \right\} \text{Class} = 0$$

0, 1, 2

$$\begin{array}{cccccc} m_1 & 2 & 3 & 4 & 5 & 6 \\ 0 & 1 & 2 & 1 & 2 & 2 \end{array} \rightarrow \text{class } \underline{\underline{2}}$$

$$\begin{aligned} 0 \text{ vs } (1, 1) & [0.18] \\ 1 \text{ vs } (1, 2) & [0.35] \\ 2 \text{ vs } (0, 1) & \boxed{0.5} \end{aligned}$$

Regression

data

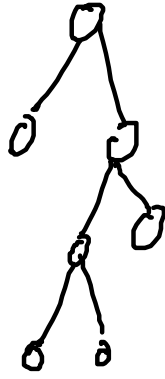
	d1	d2	d3	d4	d5
r1	33	37	37	34	36
r2					
r3					
r4					
r5					

Req^d

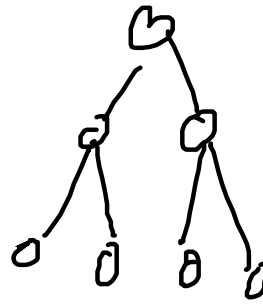
$$\frac{33 + 37 + 37 + 34 + 36}{5} = \underline{\underline{35.67}}$$

5 — model

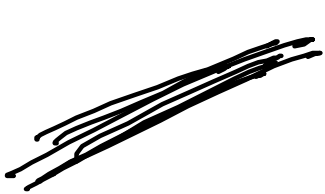
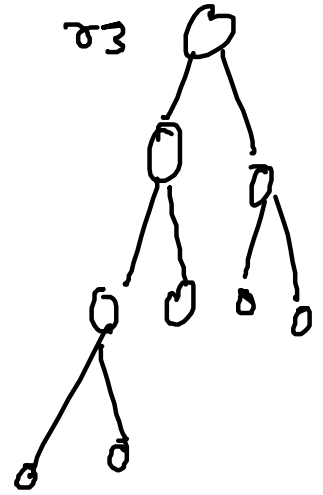
$\gamma_1 ?$



γ_2



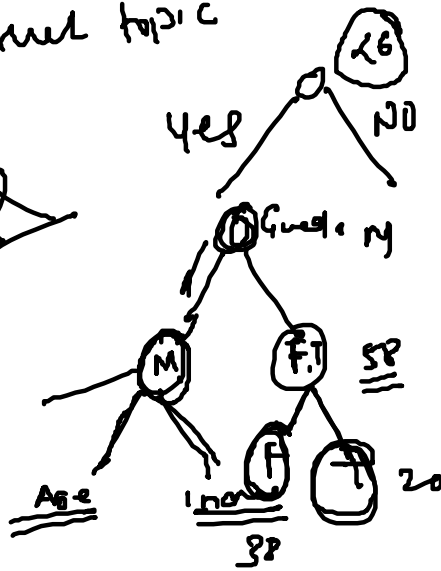
γ_3



another topic

$w \rightarrow 0.647$
 $f \rightarrow 0.527$
 $t \rightarrow 0.32$

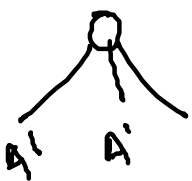
42



A_0



critic



G. value

$w = 42$
 $f = 38$
 $t = 20$