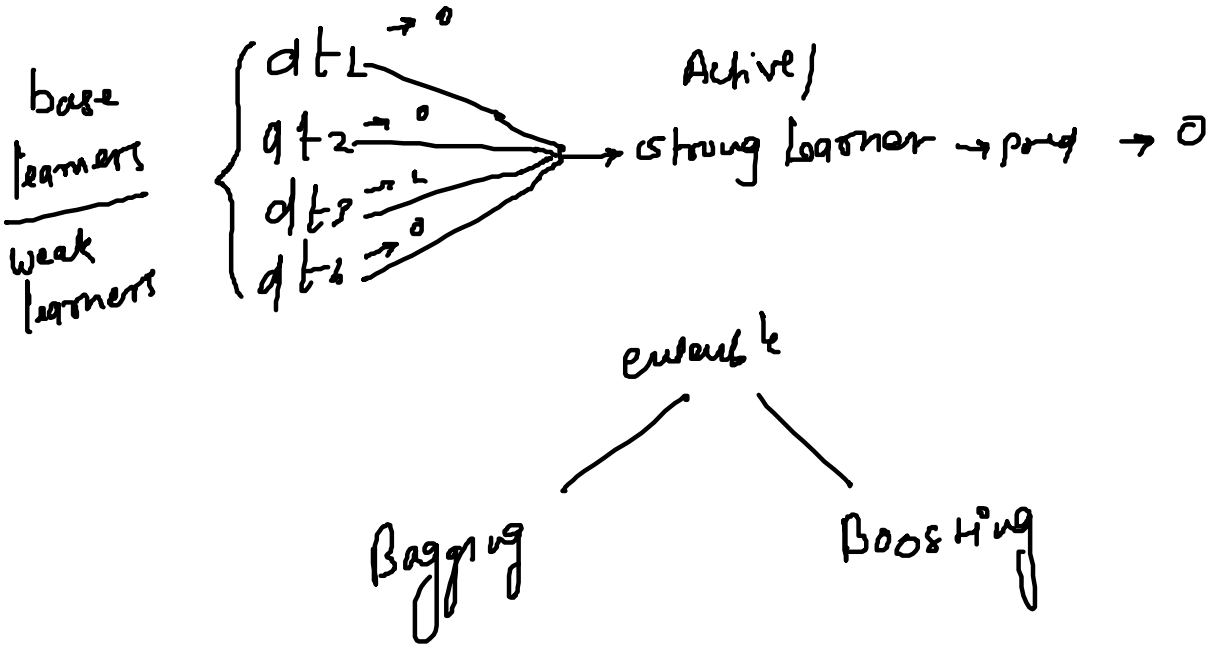
Ensemble Learning

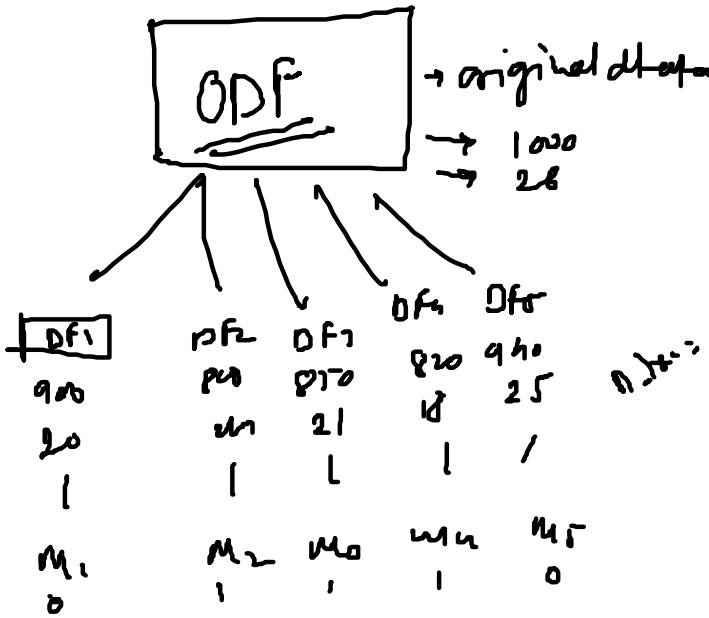
16 March 2022 08:18

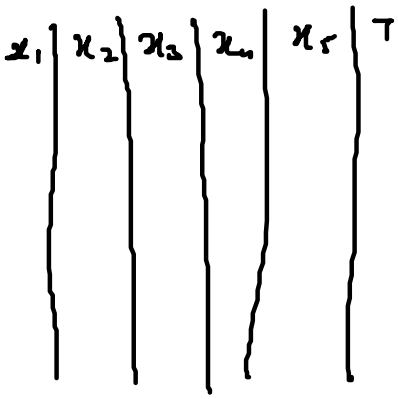
Ensemble = Assemble



Bagging

Obj^{t} :- reduce the variance of decision tree.





DF-1 = x1, x2, x3, x5

DF-2 = x2, x3, x4, x5

DF-3 = x1, x4, x4, x3

DF-4 = x1, x2, x3, x5

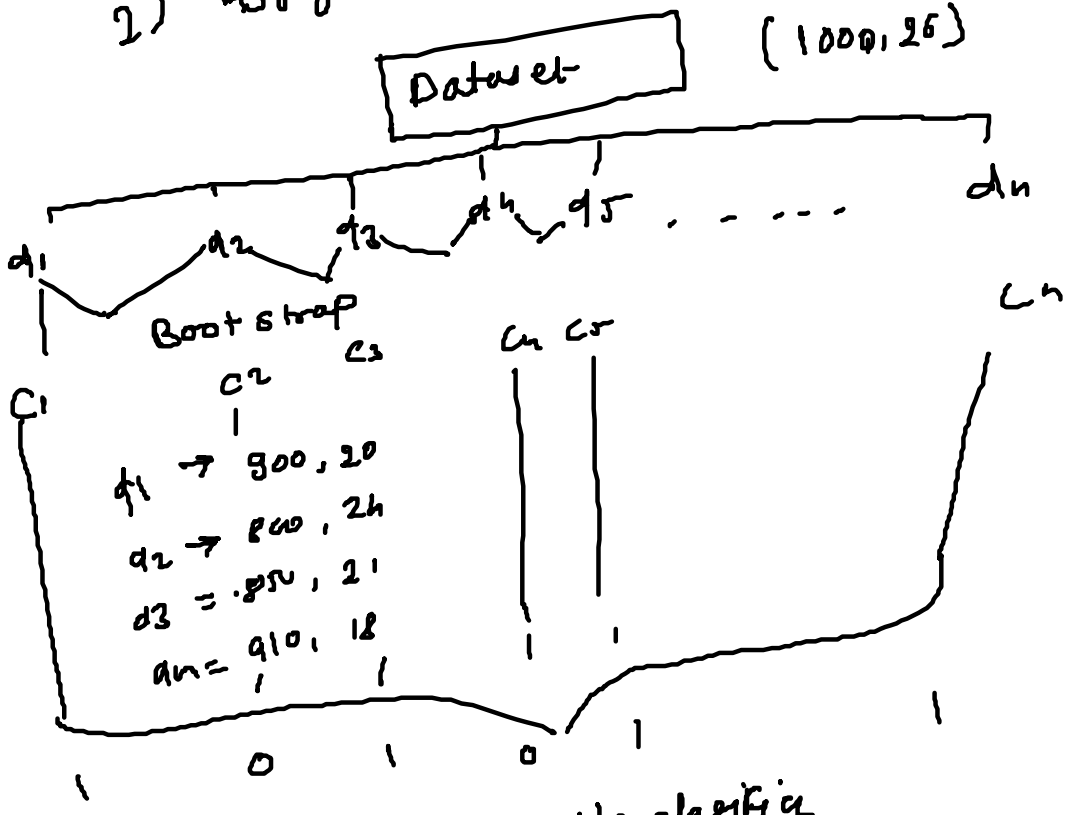
Bagging consist of 2 terms

1) Bootstraping

1) Bootstraping

↓ 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)

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3) Soft voting (probabilities)

$p(0) = (0.8 + 0.8 + 0.3)/3 = 0.67$

$p(1) = (0.1 + 0.2 + 0.7)/3 = 0.33$

} class = 0

0, 1, 2

m1	2	3	4	5	6
0	1	2	1	2	2

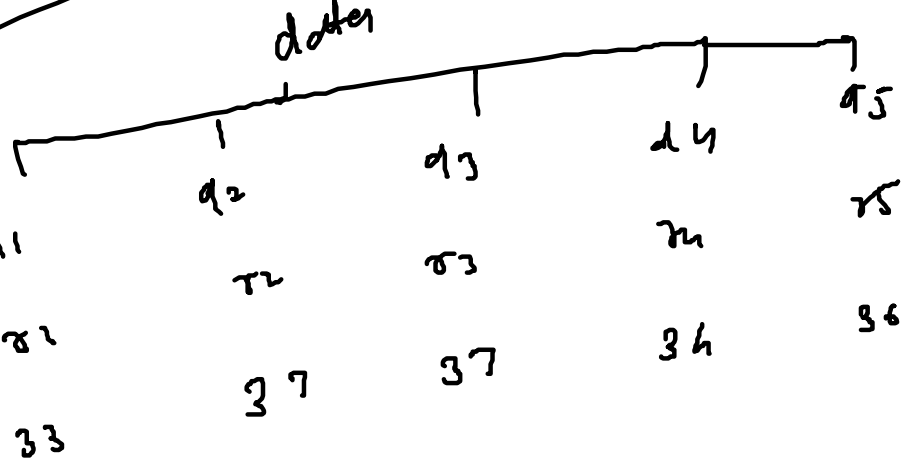
→ class 2

0 vs [1,2] [0.67

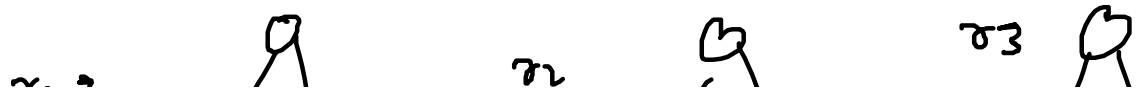
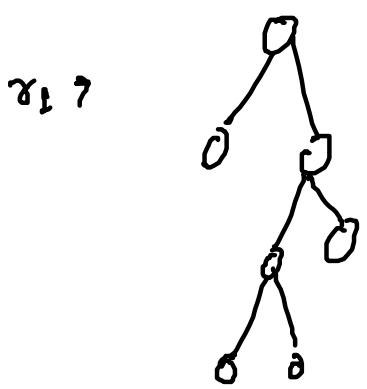
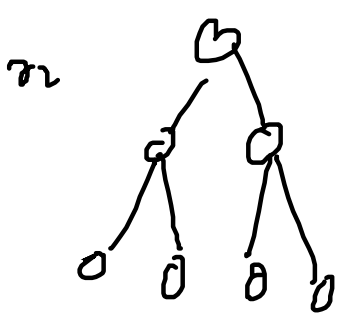
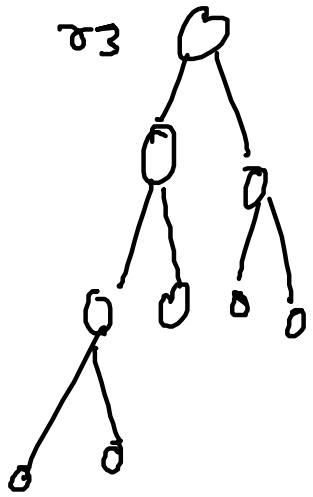
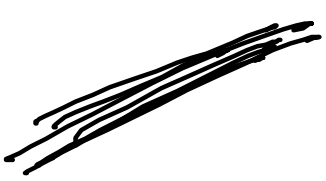
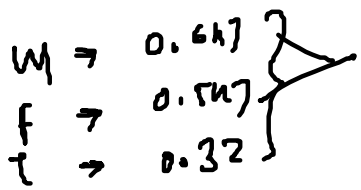
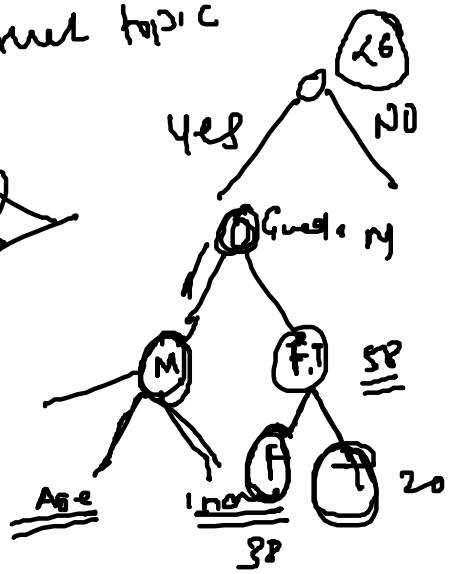
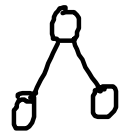
1 vs [0,2] [0.33

2 vs [0,1] 0.5

Regression



Ref

$\frac{33 + 37 + 37 + 34 + 36}{5 \text{ — mod}} = 35.67$

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