

Gradient Boosting

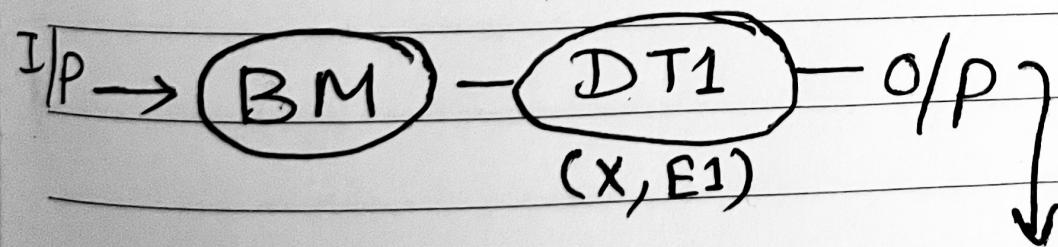
Age	Income	P1	E1	P2	E2
20	10K	20K	-10K	19.9K	-0.9K
30	30K	20K	10K	20.1K	0.9K
35	40K	20K	20K	20.2K	19.8K
25	15K	20K	-5K	19.95K	-0.95K
50	<u>5 K</u>	20K	-15K	19.85K	-14.85K

$$\frac{10 + 30 + 40 + 15 + 5}{5}$$

$$= \frac{100}{5}$$

① BMP = 20K

② Train DT on (Age, E1)



for \underline{IP} Age E1 $\rightarrow 20K + (-10K)$
 \underline{IP} 20 -10K = 10K

Introduce LR (Learning Rate)

$$\Rightarrow BMP + LR * E1$$

$$\Rightarrow 20K + (0.01) * (-10K) = 19.9K$$

for

$$\frac{\delta}{P} \rightarrow \text{Age } E_I \\ 30 \quad 10k$$

$$= \text{BMP} + LR * EI$$

$$= 20k + 0.01 * 10k$$

$$= 20.1k$$

$$\Rightarrow 20k + 0.01 * 20k$$

$$= 20.2k$$

$$\Rightarrow 20k + 0.01 * (-5k)$$

$$= 19.95k$$

$$\Rightarrow 20k + 0.01 * (-15k)$$

$$= 19.85k$$