

Gradient Boosting

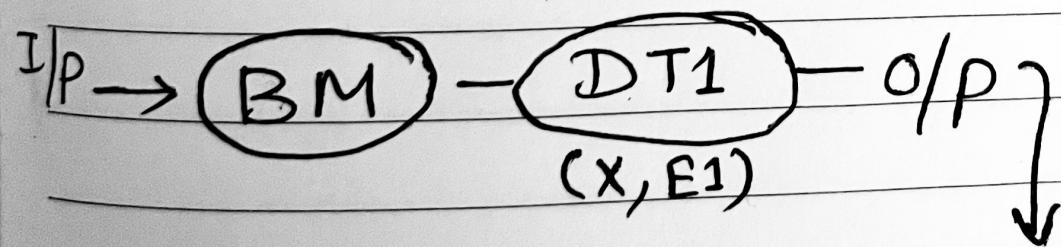
Age	Income	P1	E1	P2	E2
20	10K	20K	-10K	19.9K	-9.9K
30	30K	20K	10K	20.1K	9.9K
35	40K	20K	20K	20.2K	9.8K
25	15K	20K	-5K	19.95K	-4.95K
50	<u>5 K</u>	20K	-15K	19.85K	-14.85K

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

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

① BMP = 20K

② Train DT on (Age, E1)



$$\text{for } \begin{array}{lll} \text{Age} & \text{E1} & \rightarrow 20K + (-10K) \\ \underline{\text{IP}} & 20 & -10K = 10K \end{array}$$

Introduce LR (Learning Rate)

$$\Rightarrow \text{BMP} + \underline{\text{LR}} * \text{E1}$$

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

for

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

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

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

$$= 20.1k$$

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

$$= 20.2k$$

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

$$= 19.95k$$

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

$$= 19.85k$$