UNDERSTANDING p_j IN COORDINATE DESCENT

$$p_j = \sum_{i=1}^{N} x_i^j \left(y_i - \hat{y}_i^{(-j)} \right)$$

UNDERSTANDING ρ_j IN COORDINATE DESCENT
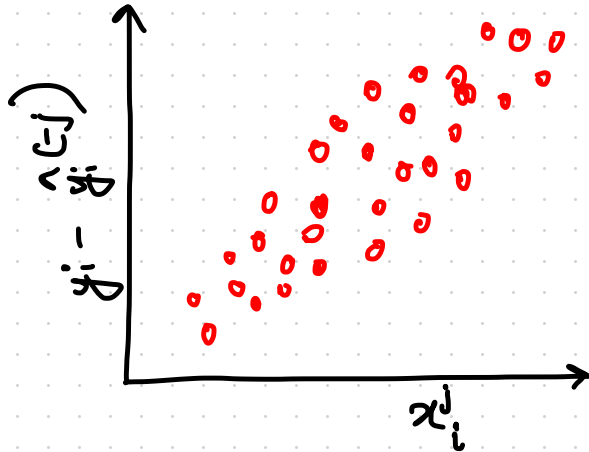
$$\rho_j = \sum_{i=1}^{N} x_i^j \left(y_i - \hat{y}_i^{(-j)} \right)$$

CASE 1

x_i^j STRONG +VE CORR.
WITH $y_i - \hat{y}_i^{(-j)}$

Scatter plot with x_i^j on the horizontal axis and $y_i - \hat{y}_i^{(-j)}$ on the vertical axis, showing a strong positive correlation.

UNDERSTANDING P_j IN COORDINATE DESCENT

$$P_j = \sum_{i=1}^{N} x_i^j \left(y_i - \hat{y}_i^{(-j)} \right)$$

CASE 1

x_i^j STRONG +VE CORR. WITH $y_i - \hat{y}_i^{(-j)}$
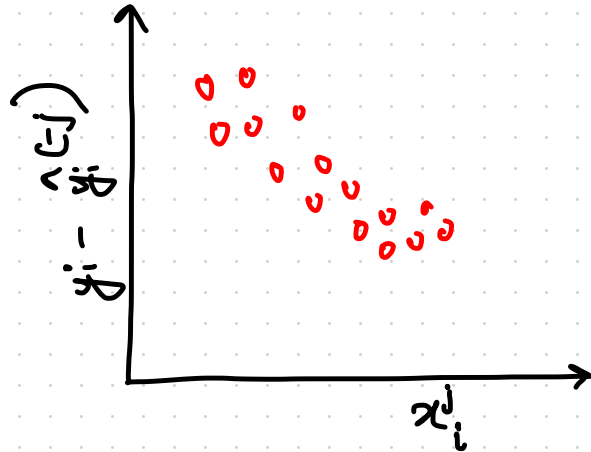
$\Downarrow$
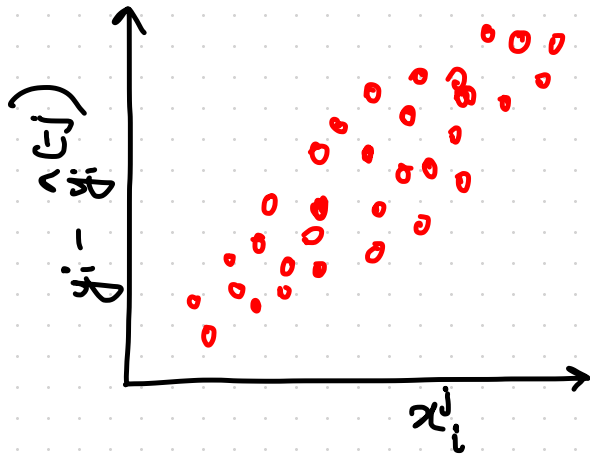
j^{th} FEATURE IS IMPT. AND ITS COEFFICIENT +VE

UNDERSTANDING P_j IN COORDINATE DESCENT

$$P_j = \sum_{i=1}^{N} x_i^j \left(y_i - \hat{y}_i^{(-j)} \right)$$

CASE II

x_i^j STRONG $-VE$ CORR. WITH $y_i - \hat{y}_i^{(-j)}$

$\Downarrow$

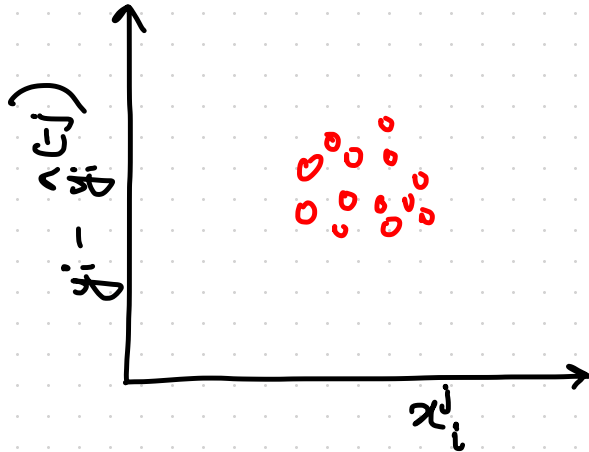j^{th} FEATURE IS IMPT. AND ITS COEF. $-VE$

UNDERSTANDING P_j IN COORDINATE DESCENT

$$P_j = \sum_{i=1}^{N} x_i^j \left(y_i - \hat{y}_i^{(-j)} \right)$$

CASE II

x_i^j WEAK CORR. WITH $y_i - \hat{y}_i^{(-j)}$

$\Downarrow$

j^{th} FEATURE IS NOT IMPT.

AND ITS COEF. $\rightarrow 0$