

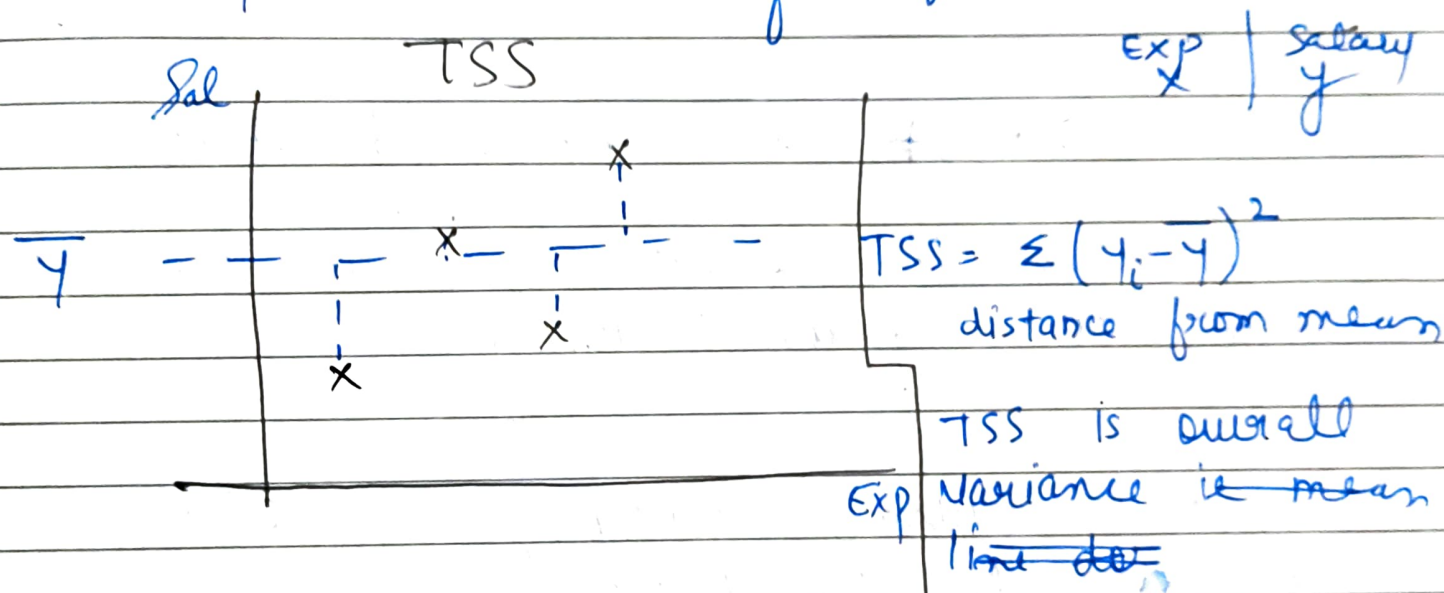
Regression Analysis

TSS, ESS, RSS

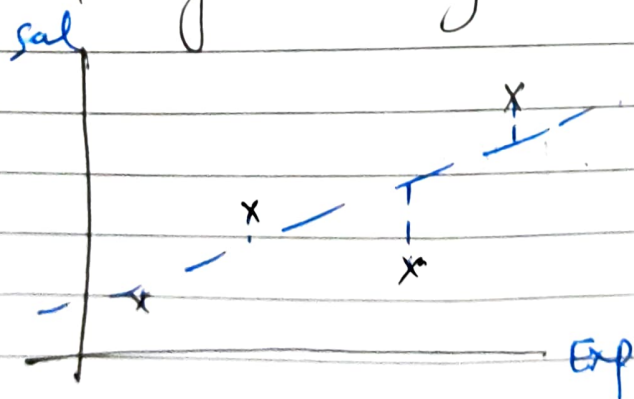
TSS - Total sum of squared

RSS - Residual sum of squared

ESS Explained sum of squared



Fitting a regression line RSS



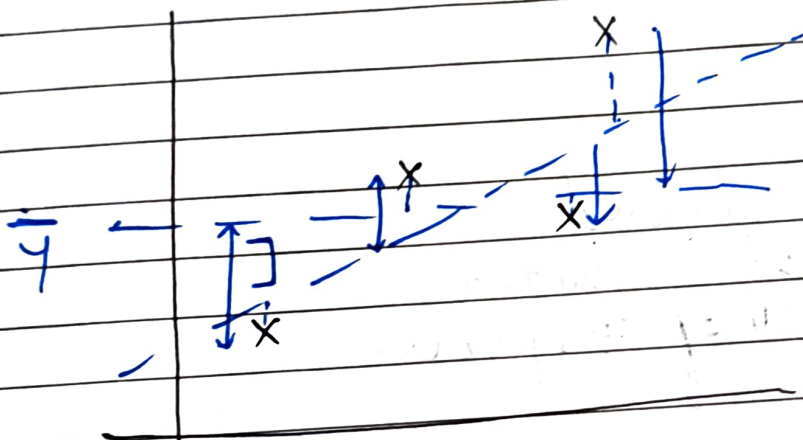
$$y = 5x + 2$$

$$RSS = \sum (\text{Actual} - \text{Predicted})^2 = \sum (y_i - \hat{y}_i)^2$$

Variance wrt regression line

\therefore TSS - Overall variance in data
 RSS - Even after fitting regression line, you were not able to explain that variance.

ESS



TSS \rightarrow RSS + ESS Explained variance

ie This is the component/ variance we were able to explain using ML model

\therefore Total Overall variance = Explained variance + unexplained variance

TSS \rightarrow ESS + RSS
 \downarrow \downarrow
 explained unexplained