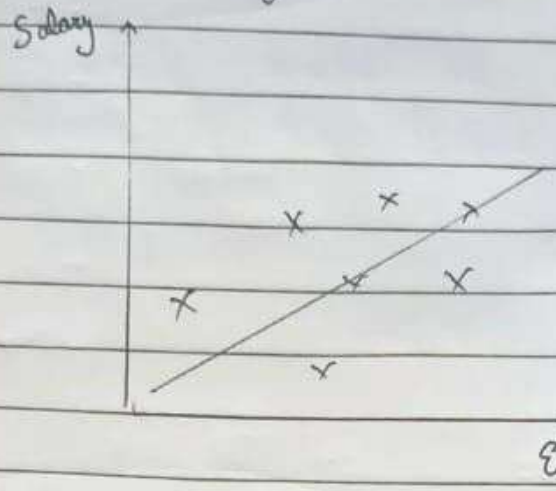
Ridge and Lasso Regression

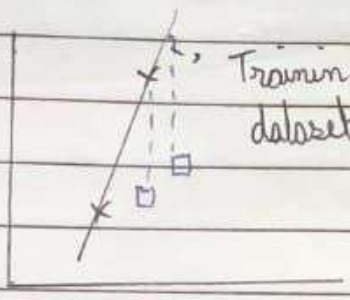


$$\left\{ \sum_{i=1}^{n} (y-\hat{y})^2 \right\}$$ sum of Residuals

↳ Cost func =

$\hat{y} = mx + c$

↳ Best fit line



In Training dataset, say we get very low error

But for Test-dataset, we get high error

↳ we call this → 'Overfitting'

↓

High variance

Generalized model → Low bias & low variance models are generalized models. i.e. they are most efficient

For ridge regression

$$CF \rightarrow J = \sum_{i=1}^{n} (y-\hat{y})^2 + \underbrace{\lambda}_{\hookrightarrow 1} (\text{slope})^2.$$

→ Task: we decrease value of Cost func by solving some errors.

* High error for both Training & Testing data.

Fun Fact → { Slope steepness ∝ High error }

In Ridge Regression, we use $CF = \sum_{i=1}^{n}(y-\hat{y})^2 + \lambda \times (slope)^2$

↳ more for the value of slope.
we compare best fit line & diverse errors.
($\lambda \to 1$)
Used to reduce Overfitting

In Lasso Regression. we use $CF = \sum_{i=1}^{n}(y-\hat{y})^2 + \lambda\,|slope|$

↳ • It is used to predict BFL.
• It does feature ~~eng~~ selection.
• It is also used for reduc overfitting