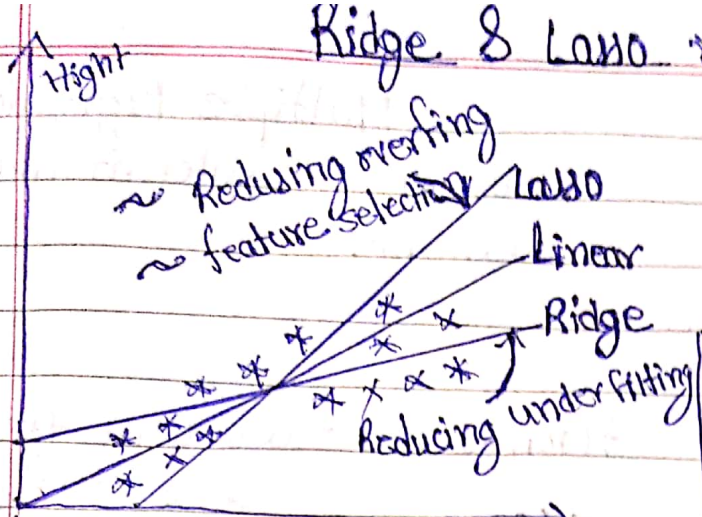
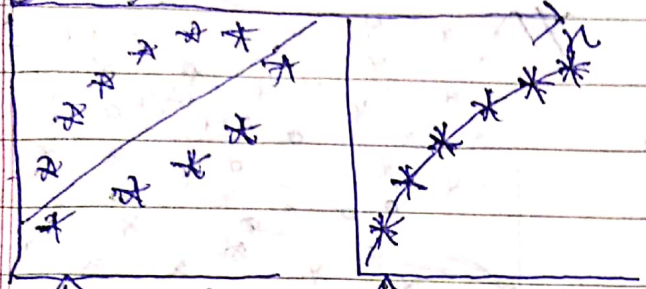
Ridge & Lasso regression



~ Reducing overfing
~ feature selection

~ Bias → traning data Error
~ Variance → test data Error

	Model-1	Model-2	Model-3
	~ Traning error = 1%	Traning error = 25%	Traning error = 16%
	~ Test error = 20%	test error = 26%	test error = 20%
	~ Low Bias	High Bias	Low Bias
	~ High Variance	High Variance	Low Variance
	↓	↓	↓
	overfitting	Underfitting	Generalise



Underfitting overfitting ~

$$\text{Error} = \sum_{i=1}^{n} (y - \hat{y})$$

$$\text{Ridge} = \underbrace{\sum_{i=1}^{n} (y - \hat{y})^2}_{\text{cost function}} + \lambda (\text{slope})^2$$

$\lambda > 0$ or any +ve value

$$\text{Lasso} = \sum_{i=1}^{n} (y - \hat{y})^2 + \lambda |\text{slope}|$$