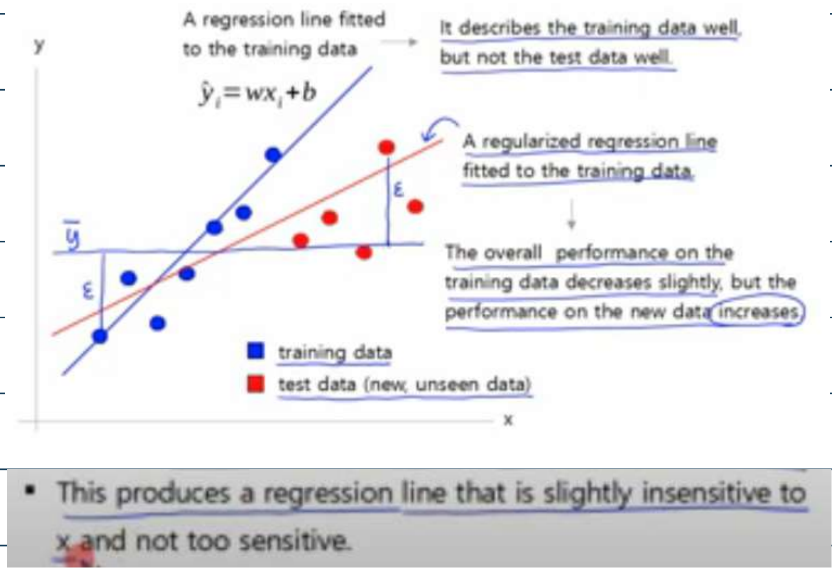
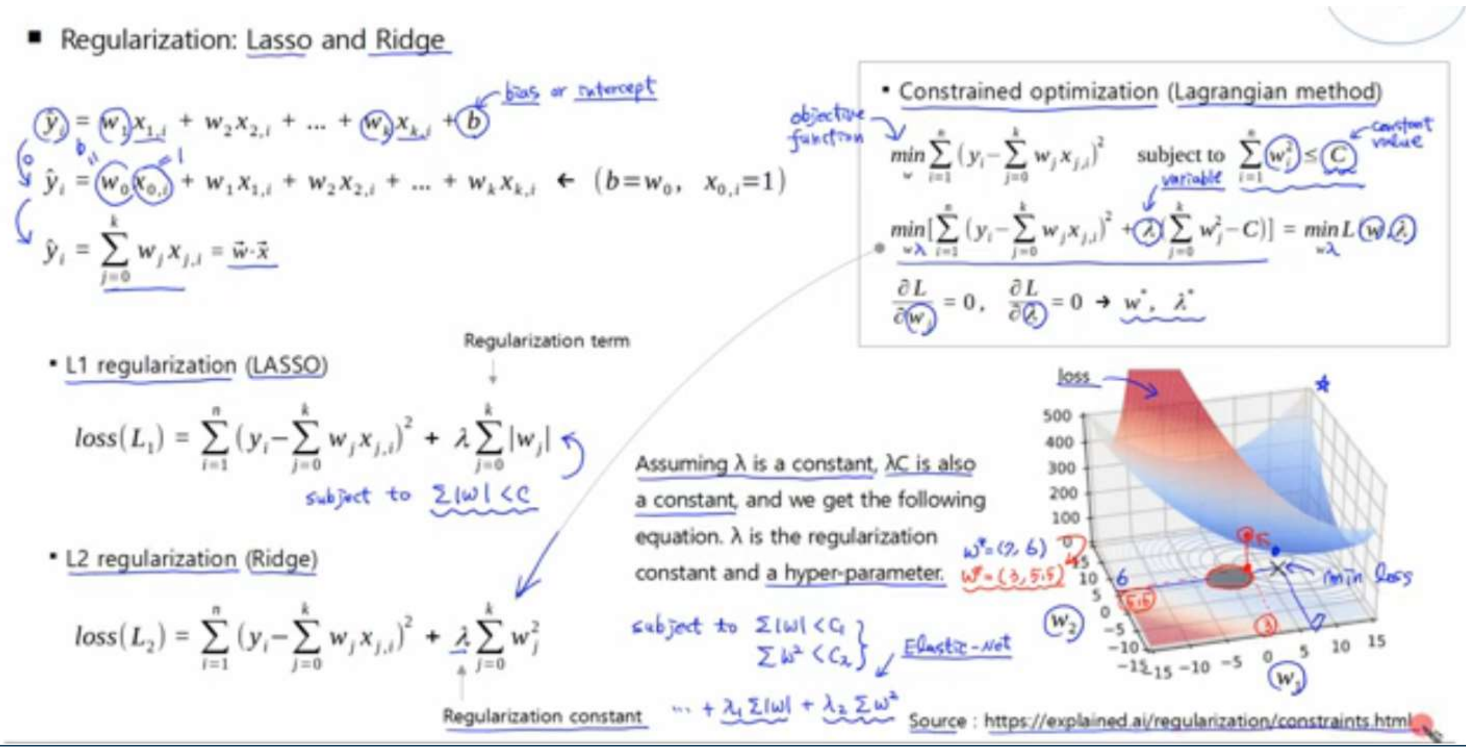
→ Regularization is a key technique that prevent overfitting by adding a penalty term to the model's loss function.

→ The penalty term prevent the loss from becoming too small.

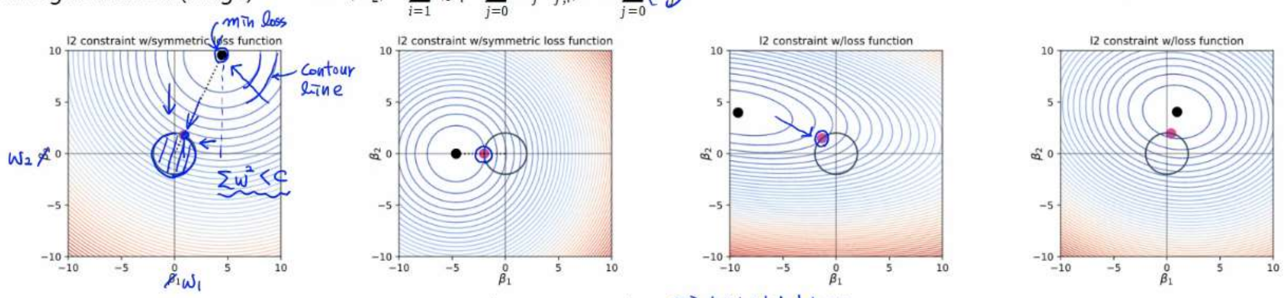




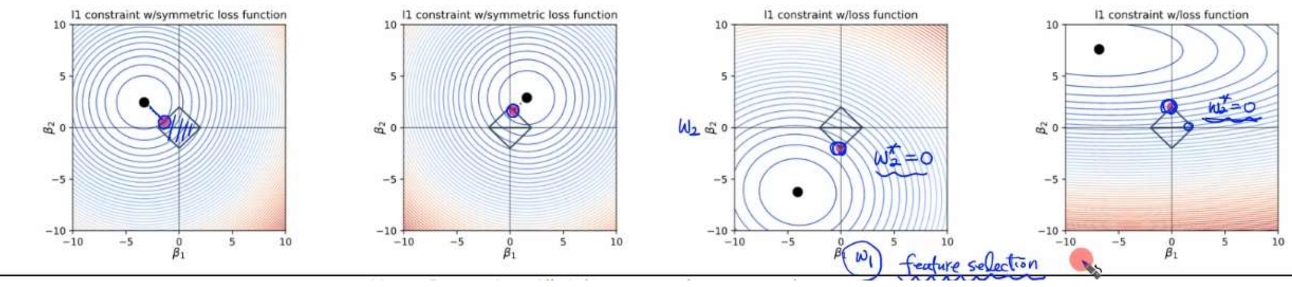
Regularization: Lasso and Ridge

- L2 regularization (Ridge) $loss(L_2) = \sum_{i=1}^{n}\left(y_i - \sum_{j=0}^{k} w_j x_{j,i}\right)^2 + \lambda \sum_{j=0}^{k} w_j^2$ $\;\; w_1^2 + w_2^2 + \cdots$

Source : https://explained.ai/regularization/constraints.html



- L1 regularization (LASSO) $loss(L_1) = \sum_{i=1}^{n}\left(y_i - \sum_{j=0}^{k} w_j x_{j,i}\right)^2 + \lambda \sum_{j=0}^{k} |w_j|$ $\;\; |w_1| + |w_2| + \cdots$



* No regularization on bias / intercept term