Gird search

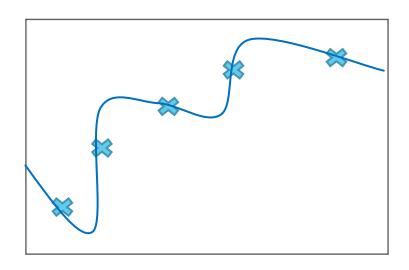
Advanced machine learning



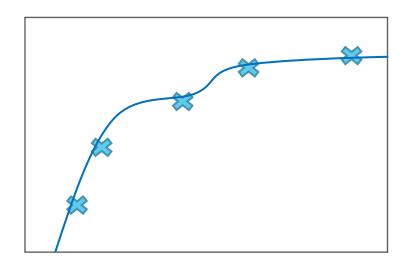


Impact of lambda on the cost function

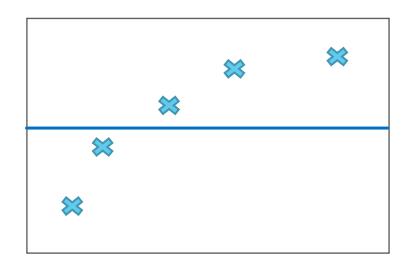
$$J(w) = \frac{1}{2m} \left[\sum_{i=1}^{m} (h(x^{(i)}) - y^{(i)})^2 + \lambda \sum_{j=1}^{n} w_j^2 \right]$$



 λ equal to 0 -> overfitting



Perfect value for λ -> good fitting



 λ too large -> underfitting



Use your Validation set





How to choose your hyperparameters

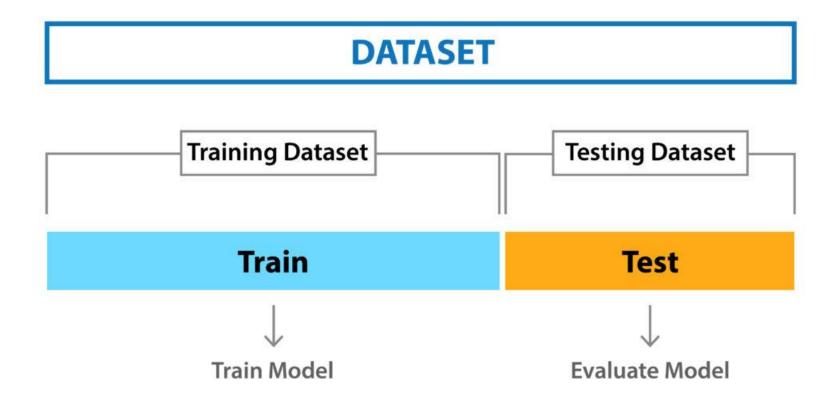
Overfitting

Good fitting

Underfitting

Value for lambda	Performance on the training set	Performance on the validation set
0	100%	20%
0.1	98%	40%
0.5	90%	70%
0.7	89%	85%
1	80%	75%
10	50%	45%
100	0%	0%

Holdout cross-validation method



K-fold cross-validation method

