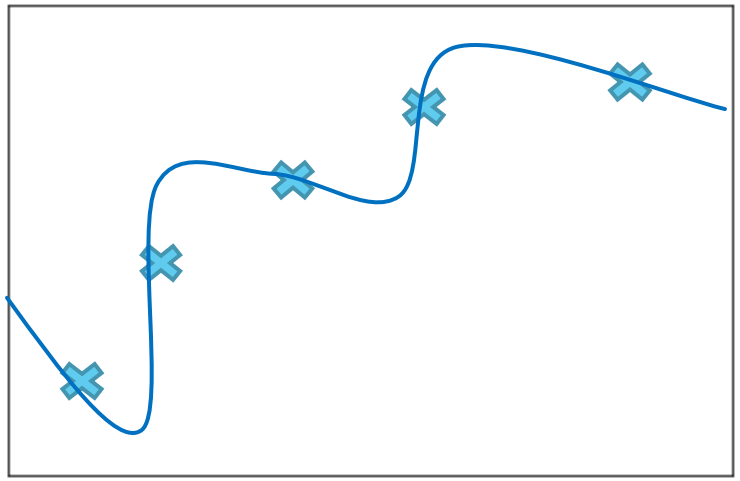
Gird search

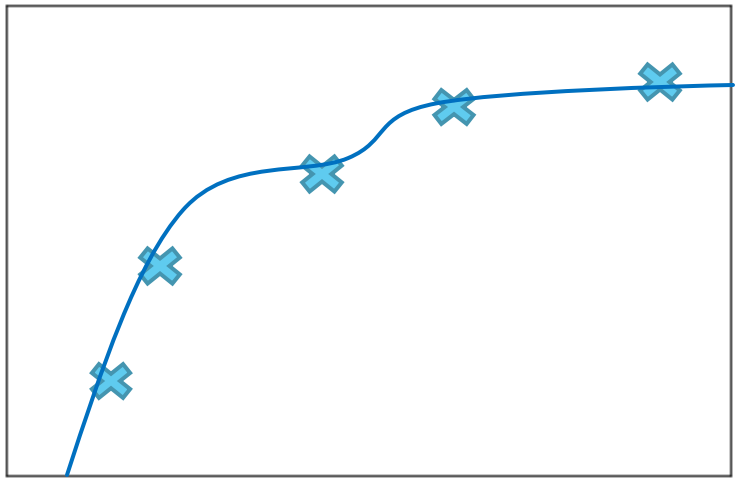
Advanced machine learning

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

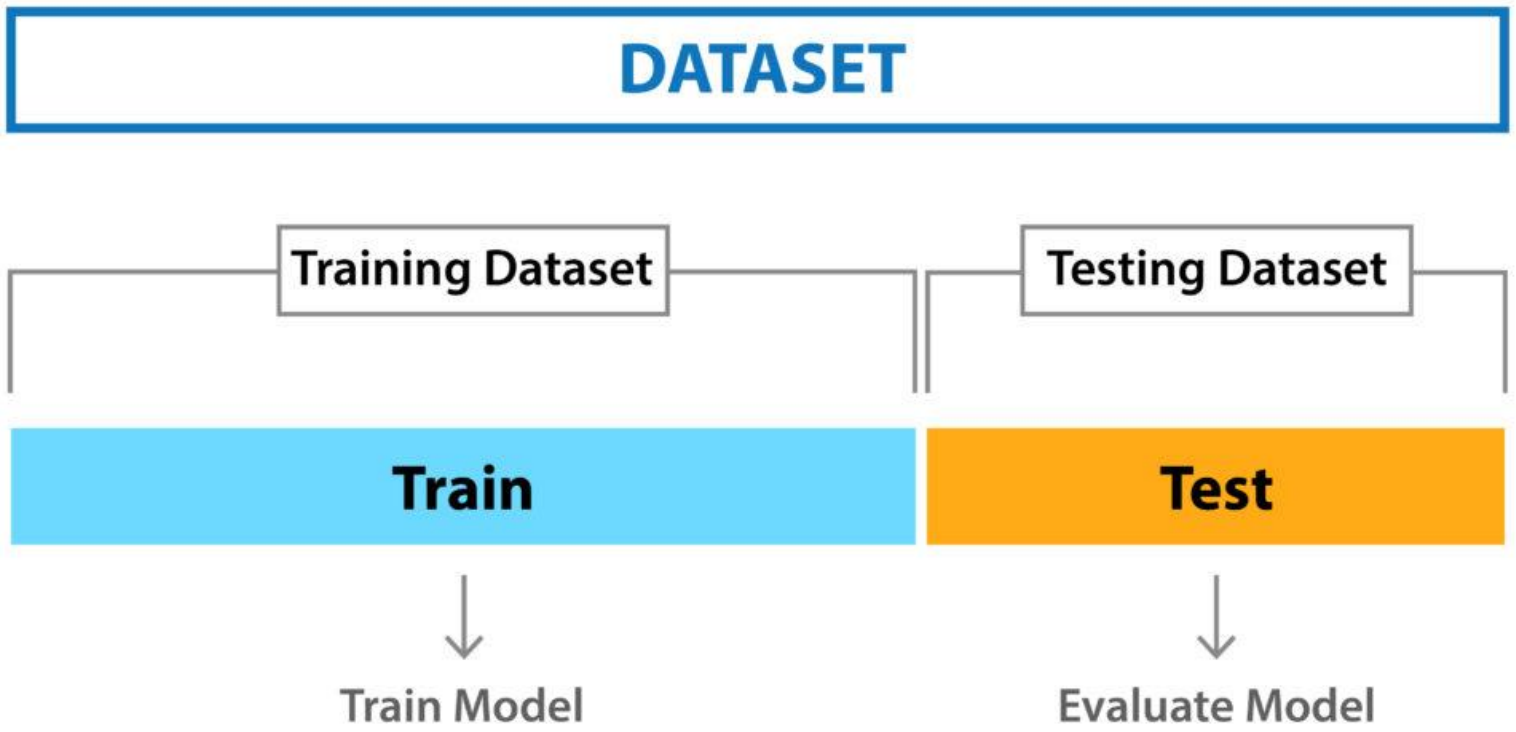
λ too large -> underfitting

Use your Validation set

How to choose your hyperparameters

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

Holdout cross-validation method



K-fold cross-validation method