Report for Sheet 3

Lab Course Machine Learning and Data Analysis

Hiromasa Okada

June 12, 2017

Implementation comments

In this exercise I implemented Cross-validation function

`def cv(X, y, method, parameters, nfolds, nrepetitions, loss function)`

and Kernel Ridge Regression class

`class krr(kernel, kernelparameter, regularization)`

The cross validation function will find the best parameter combination for Kernel Ridge Regression during compute loss of the prediction.

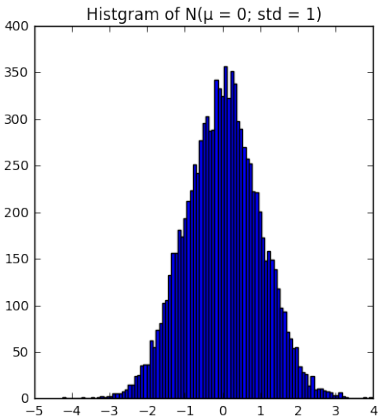
Assignment 3

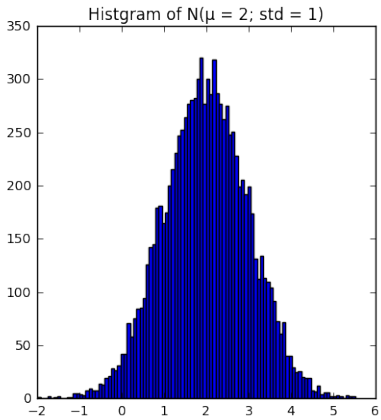
Assignment 4

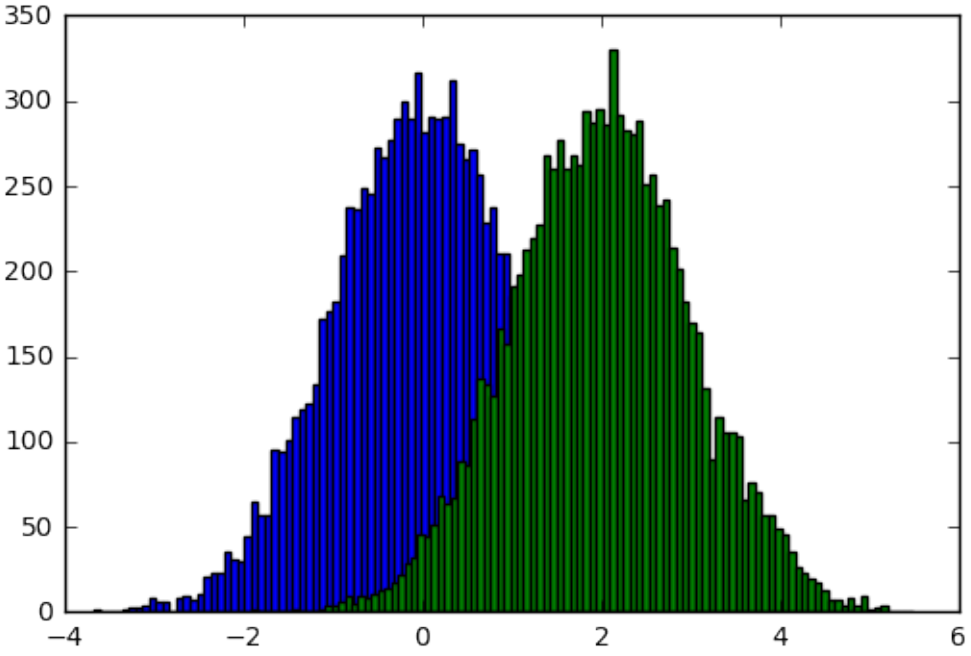
Inv or Solve

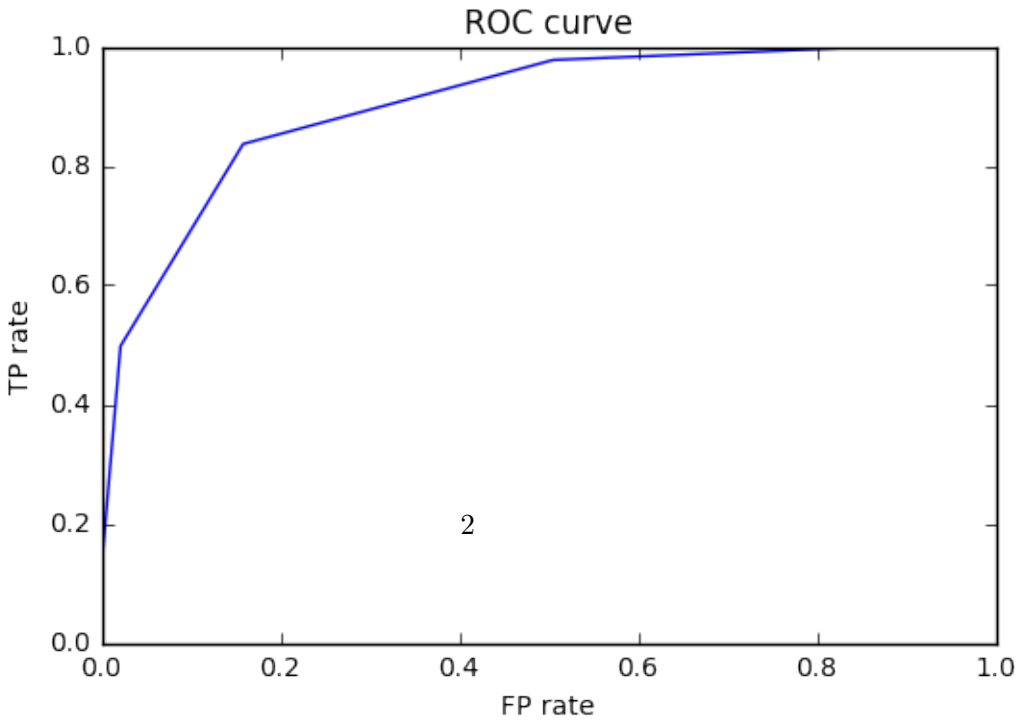
$$X = \begin{pmatrix} 2 & 4 & 6 \\ 8 & 10 & 12 \end{pmatrix}, \quad \mu = \begin{pmatrix} 4 \\ 10 \end{pmatrix}$$

$$C = \begin{pmatrix} -2 & 0 & 2 \\ -2 & 0 & 2 \end{pmatrix} \begin{pmatrix} -2 & -2 \\ 0 & 0 \\ 2 & 2 \end{pmatrix} = \begin{pmatrix} 8 & 8 \\ 8 & 8 \end{pmatrix}$$


Histgram of N(μ = 0; std = 1)


Histgram of N(μ = 2; std = 1)




ROC curve
TP rate
FP rate

$$\Rightarrow \quad \det(C) = 0$$