

# Tutorial 6

Machine Learning and Big Data for Economics and Finance

## List of activities

- I. Complete **Section 5.3 Lab: Cross-validation and the Bootstrap**, subsection 5.3.4.
- II. Complete the list of exercises in this tutorial.

### Exercise 1. Bootstrap for the logistic regression model

Consider the logistic regression model

$$\Pr\{Y = 1|X = x\} = \frac{1}{1 + e^{-\beta_0 - \beta_1 x - \beta_2 x^2}}$$

Write your own code to maximize the likelihood function with respect to  $(\beta_0, \beta_1, \beta_2)$  and to compute the standard errors of the parameter estimators by the bootstrap method. Test your code on the dataset in `LR2.csv`.

### Exercise 2. Linear discriminant analysis

Derive formula 4.13 in the textbook.