

FIN414 Machine Learning Algorithms / Lab 2

Non-regularized regression

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Due: Before the next lab session.

Evaluation: Interrogation during the next lab session about:

- code (in group of up to 3 people)
- (theoretical, practical) questions (individual)

Remark:

- Only groups of one/two/three people accepted. Forbidden groups of larger number of people.
- No late homework will be accepted.
- No plagiarism. If plagiarism happens, both the “lender” and the “borrower” will have a zero.
- Code yourself from scratch. No homework will be considered if you solve the problem using any ML library.
- Do thoroughly all the demanded tasks.
- Study the theory for the interrogation.

1 Tasks

- 1) Read the dataset given in the provided file `data.lab2.fin414.txt` and plot the output value as a function of the input data.
- 2) Fit the univariate linear regression parameters to the dataset using batch gradient descent. What are the optimal values of the parameters?
- 3) Fit the univariate linear regression parameters to the dataset using stochastic gradient descent. What are the optimal values of the parameters?
- 4) Fit the univariate linear regression parameters to the dataset using the closed-form method. What are the optimal values of the parameters?
- 5) Plot the linear regressors obtained in 2), 3) and 4) over the original dataset.
- 6) Test your model choosing yourself some new input data. Plot also these results.

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