

Name:

ID:

Date:

ITU, Computer Engineering Dept.

BLG454E, Learning From Data HW1

Due. April 27, 2017, 23:00 . NO LATE SUBMISSION WILL BE ACCEPTED.

Upload your report and matlab codes through Ninova. DO NOT SUBMIT THROUGH E-MAIL.

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Policy:

Please do your homeworks on your own. You are encouraged to discuss the questions with your class mates, but the code and the hw you submitted must be your own work. **Cheating is highly discouraged** for it could mean a zero or negative grade from the homework.

If a question is not clear, please let me know (via email or in class). Unless we indicate otherwise, do not use libraries for machine learning methods. When in doubt, email me.

In order to be able to take the final exam for BLG454E you have to have a **weighted average score of 40 (over 100) for midterm, homeworks and term project**. Otherwise you will get a VF from the course.

DO NOT USE ANY BUILT-IN FUNCTION OR LIBRARY, WRITE YOUR OWN CODES. OTHERWISE YOU WILL GET 0(ZERO) GRADE.

Matlab Task (Write codes in Matlab and provide your plot and results in report)

Q1) You will use the following dataset given for this hw. The last column of the file represents the label (class 0 or class 1)

Examine the dataset. The number of features and the number of classes. Classify given dataset using logistic regression. Write comments below codes you implemented. Plot the classification results and put it into your report.

Q2) Analyze the effect of learning rate. What will happen if the learning rate is high or low? Compare your results with different learning rates. (Iteration vs classification accuracy.)

Q3) Derive the update rule of the gradient descent for logistic regression when the number of classes are greater than 3 (For detailed derivations see Ethem Alpaydın's book).