University of TEHRAN

Machine Learning

Problem Set 4

Hesam Montazeri
Fahimeh Palizban
Zohreh Toghraee

Mehr 23, 1398
(October 15, 2019)

Problem 1: Review Questions
Write a summary of the lectures of this week. Write down all formulas we discussed in the lectures and explain in detail each step of derivations. As a guideline, you may consider the following topics:

(a) Nonparametric methods; K-nearest neighbor regression; classification; the Bayes classifier; KNN classifier

(b) logistic regression; Newton's method; the exponential family

Problem 2: Conceptual questions
[ISL] chapter 2: questions 5, 6, 7

chapter 3: question 2

chapter 4: questions 1, 4, 6, 7, 8, 9.

Problem 3: Newton's method for linear regression
Derive the updating formula of Newton's method for linear regression.

We encourage discussing the problems with other students, however, similarity between solutions is not allowed. (**Important**) Studying any online solution, no matter to what extent, is strictly forbidden and is considered as a violation of the academic honor code. Please write in the first page of your submission whom you have brainstormed the questions. Submit your solutions (using Easyclass) by Mehr 28, 1398 (Sunday).