University of TEHRAN

Machine Learning

Problem Set 14

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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) Markov chain Monte Carlo

(b) Principal component analysis

(c) Neural networks

Problem 2: Eigenvalues and Eigenvectors
Find the eigenvalues and associated eigenvectors of the matrix $\begin{bmatrix} 2 & 3 \\ 3 & 2 \end{bmatrix}$.

Problem 3: Programming: Markov Chain Monte Carlo for Bayesian Linear regression
Implement an MCMC algorithm (without using the existing packages) for parameter estimation of the Bayesian linear regression.

Submit your solutions (using Easyclass) by Dey 14.