Quiz 3

MACHINE LEARNING, SUMMER 2019

Name: UID:

Problem 1.(2 =1+.5+.5+1 points.)
1a. Select the right option

1. Principle component directions are orthogonal to each other.
2. Both LDA and PCA are linear transformation techniques
3. Both 1 and 2 are True.

1b. What will happen when eigenvalues are roughly equal in PCA?
enumerate

(A) PCA will work well

(B) PCA will perform badly.

(C) None of the above

1c. In fisher LDA for k class, the maximum number of dimensional we can project data into is? K-1

1d. If k is mercer kernel with implicit associated mapping ϕ then for a vector $\boldsymbol{x}$ in the input space, its length or ℓ_2-norm is feature space is $\|\phi(\boldsymbol{x})\|_2$. Write $\|\phi(\boldsymbol{x})\|_2$ using kernel and vector $\boldsymbol{x}$.

$$\|\phi(\boldsymbol{x})\|_2 = \sqrt{K(x,x)}$$