Indian Institute of Information Technology Guwahati
CS360: Machine Learning

Lab 3: Matrix norms and Bayesian learning

Date: 13.08.2019 Total Marks: 15
Deadline: 19.08.2019

Implement the following questions in Matlab:

Q.1) Compute the following norms:

$$A = \begin{bmatrix} 1 & 4 & 7 \\ 2 & 5 & 8 \\ 3 & 6 & 9 \end{bmatrix}$$

Find $\|A\|_1$, $\|A\|_2$, $\|A\|_\infty$, $\|A\|_F$ and $\|A\|_N$?

5 marks

Q.2) Implement the Bayes minimum error classification on the given *breast cancer* data set (check the attached files). The training data set can be used to obtain relevant probability distribution to obtain a posteriori probability and evaluate the classifier using test data set. The file *Readme.txt* gives the information regarding the dataset. Each tuple contains multiple features, ie., feature vector $\mathbf{x} = (x_1, x_2, \ldots x_n)$ and

$$p(y|x_1, x_2, \ldots, x_n) = \frac{p(x_1|y)p(x_2|y)\ldots p(x_n|y)p(y)}{p(x_1)p(x_2)\ldots p(x_n)}$$

10 marks