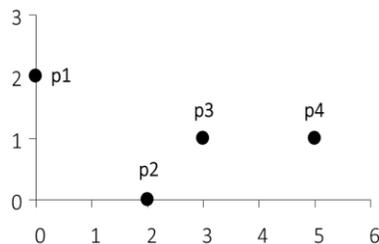

MERCY COLLEGE
Department of Mathematics and Computer Sciences
IASP 520 Data Mining and Knowledge Discover
Fall 2019

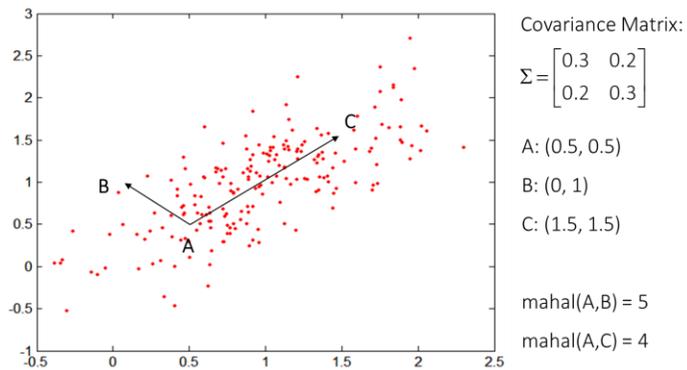
Assignment (100 pts):

1. Import the numpy package under the name np.
2. Import the matplotlib.pyplot package under the name plt.
3. Create a zero vector of size 10.
4. Create an constant vector with value 5 of size 10 but the fifth value which is 10.
5. Create a vector with values ranging from 10 to 49.
6. Reverse a vector from question 4 (first element becomes last).
7. Create a 4x4 matrix with values ranging from 0 to 10.
8. Create a 4x4 identity matrix.
9. Create a 4x4x4 array with random values.
10. Find the mean, median, sum of each column and row of the array from question 8.
11. Create a 5x5 matrix with value 10, diagonal values are 100, 200, 300, 400, and 500.
12. Create two matrices with random values. Multiply a 3x2 matrix by a 2x3 matrix.
13. Create a 4x4 array by multiplying coordinate of each element.
14. Create two 4x4 random array A and B, then create an array with the equal elements.
15. Stack array A and B from question 12 together both vertically and horizontally.
16. Evenly split the resulting arrays from A and B both vertically and horizontally.
17. Create a random array with shape (3, 5) and extract the second column and third row as separate arrays.
18. Create a random 4x4 array and get the transpose and inverse of the matrix.
19. Calculate L1, L2 and L^∞ norm distance given a coordinate matrix represented as a numpy array
Plot the coordinate matrix.



point	x	y
p1	0	2
p2	2	0
p3	3	1
p4	5	1

20. Calculate Mahalanobis Distance.



21. Calculate SMC / Jaccard coefficient of two attributes.

p = 1000000000
q = 0000001001

22. Read data from data.txt into a numpy array and calculate mean, std, var, cov and corr of two attributes.

Instructions:

1. Write a function for each problem. Add all the functions to one module. Save it as *Lastname_Firstname_hw2.py*, e.g. John Adam's file name should be Adam_John_hw1.py.
2. Submit it through Mercy Blackboard → Course Material → Assignments → Assignment Class Unit 2.

Due: [10/23/2019 11:59 pm \(Wednesday\)](#)