

Second Lab Assignment (Due by 3pm on Oct. 23)

Reference MATLAB tutorial.

Lab assignments

Assignment 1 Given the following dataset, which contains the prime numbers less than 100. $Dataset2 = [2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97]$;

1. Compute the sample median.

Given the following dataset, which contains Fibonacci numbers less than 100. $Dataset3 = [0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]$;

1. Compute the standard deviation
2. Compute the MAD(mean absolute deviation)

Assignment 2 Please compute the covariances by using the dataset *cov.mat*¹, the datapoints are stored in a matrix X , where each row stands for one observation (datapoint) and each column stands for one attribute describing the datapoint. Now we would like to know how those attributes are correlated? Please compute the covariance of each pair of those attributes. Based on the computed covariance, are they positively correlated, negatively correlated, or uncorrelated? You have to submit your MATLAB codes, which is a script file with .m extension. In this script file, you can add your computed covariances and conclusions as comments. What is the value of the covariance for each pair of the attributes and how they are correlated ?

Assignment 3 Please compute the correlation coefficient by using the dataset *crcf.mat*². This dataset contains one matrix X and one vector Y . For the matrix X , each row stands for one observation (datapoint) and each column stands for one attribute describing the datapoint. For the vector Y , it stores the label of each observation. Please note that the i 'th row of X and the i -th row of Y are related to the same datapoint. Now we would like to know how those attributes are correlated with the class labels? **a)** Please compute the correlation coefficient between the class label and each of those attributes. **b)** Based on the computed results, are they positively correlated, negatively correlated, or uncorrelated? **c)** Which attribute is the most correlated with the class label? **d)** Please rank the attributes from the most correlated to the least correlated? You have to submit your MATLAB codes, which is a script file with .m extension. In this script file, you can add your computed results of correlation coefficient and conclusions as comments. What is the value of the correlation coefficient between the class label and each of the attributes and how they are correlated ? You also have to present the ranking list of the attributes.

¹http://astro.temple.edu/~tuf28053/CIS2033_Spring2015/lab_assignments/cov.mat

²http://astro.temple.edu/~tuf28053/CIS2033_Spring2015/lab_assignments/crcf.mat