CS2035b Data Analysis and Visualization - Lab 10

General Lab Instructions to Help Labs Run Smoothly

- Read through the lab instructions **before** coming to the lab.

- Do any required pre-lab preparation.

- Bring a **printed** copy of the lab instructions to the lab.

- Note: you must both sign the signature sheet in the lab and submit your (mostly) completed lab via OWL by Saturday 10:55pm

Overview and Preparation

This (and all subsequent) labs will be using MatLab 2016b as installed in the Health Sciences 14 and 16 general computing labs. You must attend this lab in HSB14 OR HSB16 in order to get assistance from the TA. Attendance will be taken. You can use your UWO login/password to login to these machines. Lab submission is to be done via Owl. Remember, labs are worth 10% of the total grade for this course (there are 11 labs in total, you must do 8 to receive full marks).

Upon completion of this lab, you should have done the following in the MatLab environment:

- Created a script file, lab10.m, containing the MatLab code to do the exercises below and the 15 generated jpg files. Also submit a small txt file, lab10_analysis.txt, with any comments you find in your 5 datasets. Submit these files via Owl.

Exercise 1: Reading Datasets and Computing Simple Statistics

Consider the data in five **mat** files, **lab10dataset1.mat**, **lab10dataset2.mat**, **lab10dataset3.mat**, **lab10dataset4.mat** and **lab10dataset5.mat** on the course webpage. Each `mat` file consists

of a x and y row vector of the same size. For each dataset, plot the display of the data points as asterisks. Label that plot with the name of the `mat` file, and the average, standard deviation, skewness and kurtosis for the x and y vectors. Plot these out on the graphs in places that look good. My plots for **lab10dataset1.mat** and **lab10dataset5.mat** are given in Figure 1 below. My program has a loop going from `I=1:5`, plotting the graphs by computing x and y
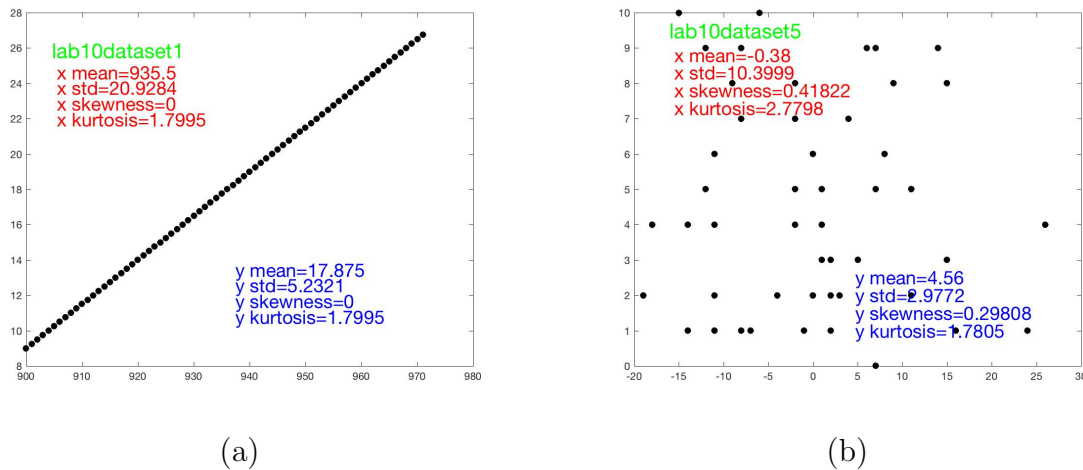

(a)

(b)

Figure 1: Scatter plots **lab10dataset1.mat** and **lab10dataset5.mat** with average, standard deviation, skewness and kurtosis values printed.

text locations from the **xmin, xmax, ymin** and **ymax** for each graph.

# Exercise 2: Plotting the Histograms of the x and y Vectors

Plot histograms of the x and y vectors for the 5 datasets (10 histogram plots in total). Looking at these plots and the above 5 scatter plots can you draw any conclusions (you may not be able to). Figure 2 shows my histograms for the x and y values using `hist(x,11)` and `hist(y,11)` [the numbers of data points is about 50 or so for most datasets]. Submit your code **lab10.m** and your 15 **jpeg** files via OWL.
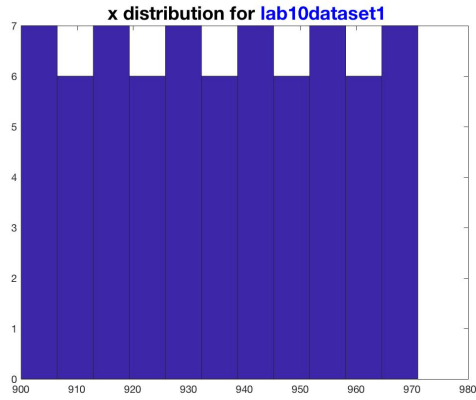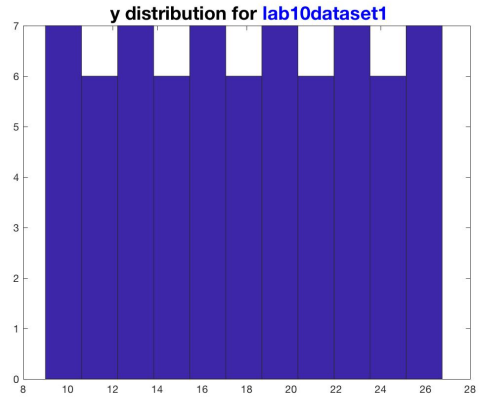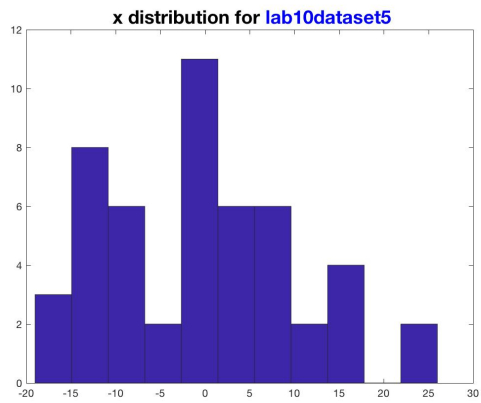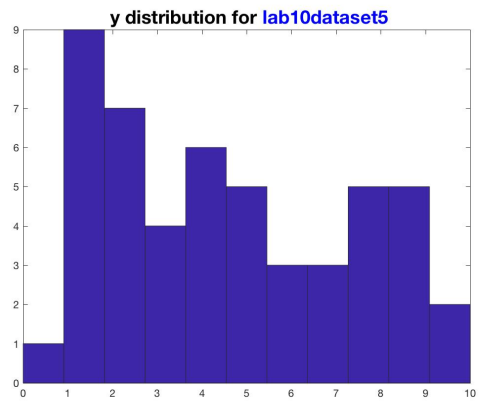
Figure 2: (a) and (b) The x and y histograms for the 1st dataset and (c) and (d) The x and y histograms for the 5th dataset.