Third Lab Assignment (Due by 3pm on Nov. 13)

Reference MATLAB tutorial, Chapter 5 examples from textbook.

Lab assignments

Assignment 1 Suppose we only have a random number generator, which has a $U(0,1)$ distribution. But we want to generate a sequence of random numbers with a non-uniform distribution (e.g., $Exp(2)$). Now, please

- first use the random number generator to generate 10^5 uniformly ($U(0,1)$) distributed samples
- then transform those samples to data points, which should have a $Exp(2)$ distribution
- finally plot those transformed samples by using the hist function.

You have to submit

1. MATLAB codes, which should be put in script files (.m)
2. Figure, which should be in png format (.png)

Assignment 2 Suppose we only have a random number generator, which has a $U(0,1)$ distribution. But we want to generate a sequence of random numbers with a non-uniform **discrete** distribution (e.g., $Pois(5)$). Now, please

- first use the random number generator to generate 10^5 uniformly ($U(0,1)$) distributed samples
- then transform those samples to data points, which should have a $Pois(5)$ distribution
- finally plot those transformed samples by using the hist function.

You have to submit

1. MATLAB codes, which should be put in script files (.m)
2. Figure, which should be in png format (.png)

Assignment 3 Please draw two histograms with respect to different bin widths by using the data *hist.mat*[1].

a) The first histogram corresponds to evenly paced bin widths. The bin width is 10 and the first bin starts at 0. For example, you can use these bins: ([0,10), [10,20), [20,30), ..., [90,100]).

b) The second histogram corresponds to unevenly paced bin widths. The bins are [0, 5), [5, 30), [30, 40), [40, 45), [45, 65), [65, 90), [90, 100].

You have to submit both of the MATLAB codes, which is a script file with .m extension, and the plotted two histograms, which are eps figures with the .eps extension.

[1] http://astro.temple.edu/~tuf28053/CIS2033_Spring2015/lab_assignments/hist.mat