First Lab Assignment (Due by 3pm on Feb. 18)

Reference MATLAB tutorial and MATLAB lab demonstrations.

Lab assignments Please complete following sequence of problems in MATLAB:

Assignment 1 Let X be a discrete random variable (use same span of values as demonstrated in the lab), plot the probability density function $f(x)$ if

- X is a Negative binomial distribution[1], $X \sim NegBinom(p, \alpha)$, where (p, α) are from $\{(0.1, 90), (0.5, 50), (0.9, 10)\}$
- X is a Poisson distribution, $X \sim Poiss(\lambda)$, where $\lambda = \{0.5, 1, 2\}$

For each of those two cases, you have to plot multiple curves, one for each of the probability density functions and cumulative density functions when the parameter is fixed. For example, for the Poisson distribution, you have to plot the probability density functions for Poiss(0.5), Poiss(1), Poiss(2). Please use different colors (e.g., red, blue, black) for those curves and put those curves in one figure for each distribution. Analyze those curves in these figure and draw a conclusion for how does the curve changes when we increase (or decrease) the parameter value. You have to submit:

1. MATLAB codes, which should be put in script les (.m)
2. Two gures, which should be in png format (.png)
3. Two observations (conclusions), which should be in a plain text le (.txt), or as a comment section inside script (.m) le.

Please submit both of your MATLAB codes and the plotted figure.

Assignment 2 For a given probability mass function please calculate and plot in MATLAB proper cumulative distribution function (CDF).

a	-1	0	1	2	3
$p(a)$	1/24	1/2	1/4	1/6	1/24

Please label the axes and add a title. You should also specify other properties such as the line width, the font size and the color. Please save the figure as .png. Submit both of your MATLAB codes and the plotted figure.

[1] Used to model the number of trials needed until the r'th success (extension of Geometric distribution). Based on there being r-1 successes in first v-1 trials, followed by a success. :)