Lab 1 – Law of Large Numbers

August 20,2012

All of you need an EECS account. If you do not have one, please contact the EECS help desk.

Brief Introduction: Weak law of large number states that the sample mean converges in probability to the expected value as the sample size increases (tending to infinity).

1. Open MATLAB.
2. Copy the two files **lln.m** and **randomSample.m** to your current directory.
3. Run the main file lln.m.
4. Note that lln.m calls a function file i.e. randomSample.m.
5. The inputs to the main program are:
   - The number of samples N
   - The sample size n
   - The parameter 'para'
   - Type of distribution method
6. Try to change the method to binomial and Gaussian. Also change the corresponding parameters. (Hint: Each distribution requires different number of parameters)
7. The aim of this exercise is to show that by increasing the sample size, the average of the samples converge to the expected value.

   Example: For a binomial distribution, as we increase the sample size, the sample average needs to be closer to the expected value i.e. n*p where n is the no.of trials and p is the parameter.

Please summarize your observations and inference and submit it on 8/27/2012.