LAB 7 TASK 2 - NOISE SAMPLES
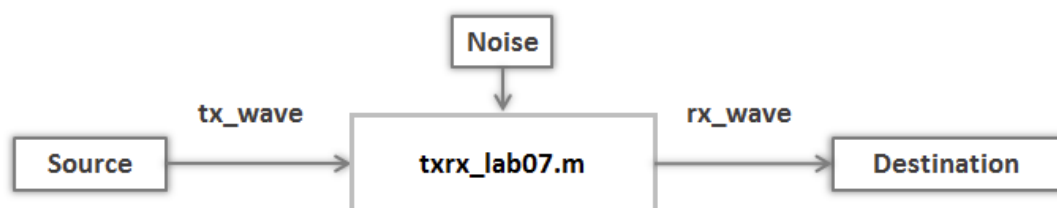
You will investigate the effect of the number of samples on the histogram.



```
 1 % Copy your code from Task 1 below
 2  SPB = 50;                              % bit time in samples
 3 tx_bs = zeros(1,1280);               % generate the all-zero bit sequence
 4 tx_wave = format_bitseq(tx_bs,SPB);  % create waveform following protocol
 5
 6 % transmit and receive over noisy channel
 7 [rx_wave,start_ind,rx_min,rx_max,sigma] = txrx_lab07(tx_wave);
 8 sample_ind = start_ind+2*SPB-1+SPB*[0:1279]; % set subsampling points
 9 signal_samples = rx_wave(sample_ind);        % get the received samples
10
11 xhist = 0.1:0.01:0.7;    % centers of histogram bins
12
13 % Do not modify code above this line
14 nsamp = 500;   % number of samples to use for histogram
15 signal_samples_firstNSAMPbits = signal_samples(1:nsamp);
```

Unanswered

Figure 1
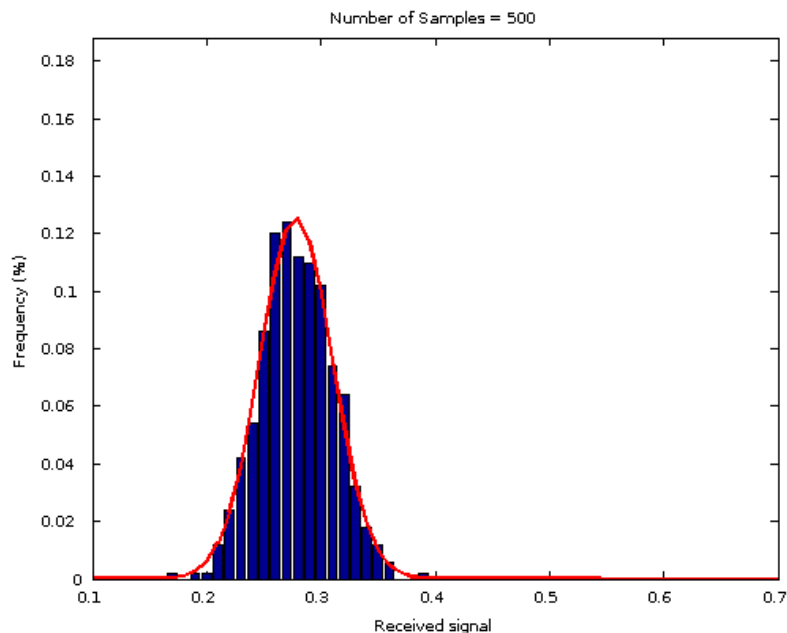
Run Code

Check

INSTRUCTIONS

Step 1: Copy your code from Task 1

Copy your code in Task 1 where you generated the empirical histogram for the additive noise to the blank code window above.

Step 2: Effect of the number of samples

In Task 1, you generated the empirical histogram for the first **nsamp=80** signal samples. Try adjusting the number of samples to **nsamp=200, nsamp=500, nsamp=1280** and observe the resulting histograms corresponding to different number of signal samples. You do not need to submit your work for this task. Based on your observations, **answer the questions below** for credit.

LAB 7 TASK 2 - QUESTION 1 (1 point possible)

Which one of the following phrases is the correct completion of the sentence that starts "As the number of signal samples used in computing the empirical histogram increases," ?

Please select the correct answer.

○ The values of the histogram converge towards the theoretical predictions.

○ The values of the histogram vary more widely around the theoretical predictions.

○ The mean (center) of the empirical histogram increases.

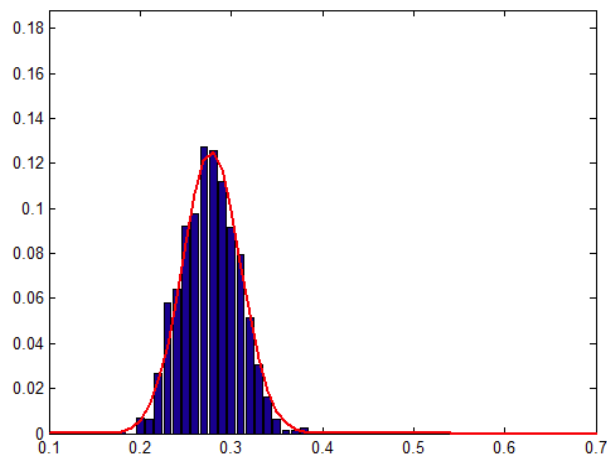○ The mean (center) of the empirical histogram decreases.

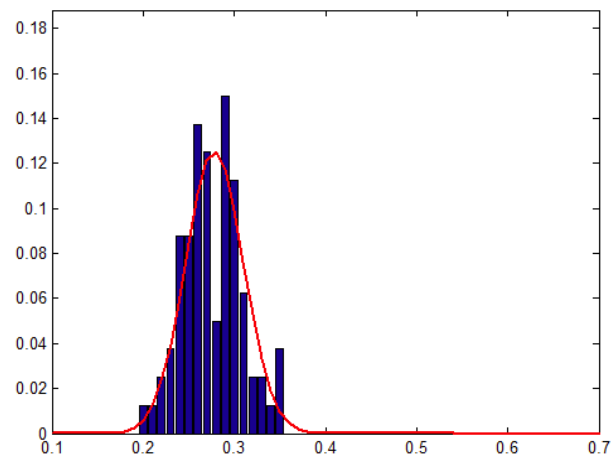| Check | Save | *You have used 0 of 2 submissions* |

LAB 7 TASK 2 - QUESTION 2 (1 point possible)

Which one of the following empirical histograms (blue bars) is generated with a smaller number of samples? The red line shows the theoretically predicted distribution.

Please select the correct answer.

○ A

○ B

(A)　　　　　　　　　　　　　　　　(B)

| Check | Save | *You have used 0 of 2 submissions* |

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