STOCHASTIC PROCESSES II

Exercises for Lecture 6

The file SEMG_SIGNAL.mat is a time-series data recorded from surface EMG. The sampling frequency Fs=1k Hz. Use Matlab to solve the following problems.

1) Estimate PSD using periodogram method.

2) Estimate PSD using averaged periodogram weighted with Hann window. Compare the result from 1).

3) Find the 5th-order AR model parameters by estimating the autocorrelation and solving Yule-walker equations.

4) Find the 5th-order AR model parameters with aryule( ) function. Compare the results with the results from 3).

5) Estimate PSD using the results from 4).

6) Make a plot of the model error versus the model order p with p from 1 to 100.

7) Increase the order to 30, 90, 500, and compare the PSD's. [Hint: plot the psd's in one figure].

8) Estimate PDS using one of other methods provided by Matlab. [Hint: choose whichever method you like to have a try]