

EC516 Project Assignment 01 (Fall 2018)
Due By: **Monday, December 10, 2018**

*This Project is worth a **bonus** of 10 points out of the total of 100 points on the EC516 Final Exam in EC516. However, your total score on the Final exam cannot exceed 100 points. For example, if you get 95 points on the EC516 Final Exam and you receive a full credit of 10 points on Project Assignment 01, your Final Exam score will be raised to 100 points (not to 105 points).*

You may carry out this project with up to two other partners. If you do the project with a partner, you must write down the name(s) of your partner(s) on the Project Report (see below) and specify the specific roles played in the project by each of the partners. Although you may collaborate with your partners in designing and implementing the project, your Project Report should be in your own words (Results displayed in the Report can be shared among the partners' Reports).

Assignment

(a) (3 points): Record and display a speech signal. Select a windowed interval of approximately 20 ms within the speech signal such that the speech signal within the interval has an approximately periodic structure. *Compute* a DFT of the interval and display the *log-magnitude* of the DFT of the selected interval.

(b) (4 points): For the interval selected in the previous part, compute an order 10 indirect least-squares model. Plot the log-magnitude of the frequency response (appropriately sampled in frequency) corresponding to the model you computed for the selected interval.

(c) (3 points): Discuss the similarities and differences between the log-magnitude plots you obtained in the

Deliverable

You should submit a *Project Report* of **at most 5 pages**. The report should describe the challenges you faced in carrying out the project and how knowledge from EC516 helped you carry out the project. The report should include displays of the selected speech interval and the log-magnitude plots in the frequency domain. You must include information such as the sampling rate for the recorded speech, the analysis window used, and details of how the order 10 indirect least squares model was computed. It is **not necessary** to include any code in your report. However, if you decide to include it, you must stick to the 5-page limit for the report. Any pages of the report beyond the fifth page *will not be graded*.

If you have any questions, please don't hesitate to contact Prof. Nawab during office hours or via email.