

BioSignalsNI_Assignment

There are 5 tasks, with each one referring to a particular Matlab script from the **Biomed_SP_basics** directory (downloadable from MATLAB Code and Data section).

1	<p>Use Matlab command-line functions (from script[1]) to perform spectral analysis of the signals listed below :</p> <ul style="list-style-type: none">a) a cardiac signal, using <code>>>load ecgsig.mat</code> (Fs=360 Hz).b) Near-infrared spectroscopy (NIRS) data obtained from two human subjects. Use <code>>>load NIRSDData</code> to read the two signals (Fs=10 Hz), then isolate them as x1 and x2 and compare the brain activity between participants.c) a signal of Otoacoustic emissions (OAEs), using <code>>>load dpoae</code> to read the signal (Fs=20 kHz).
2	<p>Repeat the above task, using the SignalAnalyzer app.</p>
3	<p>Based on the script[4], experiment with changes in the order of the used filter and demonstrate/comment on what is the role of the filter's order parameter.</p>
4	<p>Based on script[5], compare the effects of the two different types of filters (FIR vs IIR). Which is preferable? Can you make the FIR filter as effective as the IIR filter ?</p>
5	<p>Run script[7] and describe the obtained results. What is the reason for performing ICA ?</p> <p>Are the results always the same ?</p> <p>Run ICA on a subsample of sensors and compare the results with the ones obtained from the whole set of sensors.</p>

*"You cannot teach a man anything;
you can only help him find it within himself." -Galileo*