SP_lab: Tasks_for Biomedical_SPbasics

There are 7 pair of tasks, with each one referring to a particular Matlab script from the ***Biomedical_SP_basics*** directory. You first choose 4 out of the 7 following scripts to work with and then select one of the two levels of difficulty and perform the described task.

1	Easy	Run script[1] and compare the different frequency-domain representations
	Difficult	Use Matlab's command signalAnalyzer for performing spectral analysis of the EEG-trace in script[1] (hint: load eeg_data). - Derive different frequency representations and report the results.
2	Easy	Derive the Figs of script[3] and explain the need for smooth command in line 19.What is the reason for using across-beats averaging ?
	Difficult	Modify the script so as to detect ''every-other'' beat and derive the new averaged waveform.
3	Easy	Reproduce the Figs of script[4] and identify the difference between the middle and bottom graph.
	Difficult	By changing the **order** of the filter demonstrate its impact on the output.
4	Easy	Derive the Figs of script[5] and compare the effects of the two different filters. Which is preferable?
	Difficult	Can you make FIR filter as effective as the IIR filter ?
5	Easy	Run script[6] and compare the obtained results.
	Difficult	Can you employ the smooth command for high-pass and band-pass filtering ?
6	Easy	Run script[7] and describe the obtained results. What is the reason for performing ICA ? Are the results always the same?
	Difficult	Run ICA on a subsample of sensors and compare the results with the ones obtained from easy-task.
7	Easy	Run script[8] and based on the resulting visualization try to identify the class-label of the unknown signal.
	Difficult	Repeat the example using 2 of the 3 characteristics.

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