Homework 2

ELEN0071 University of Liège, Spring 2019

Due: Wednesday 10/04/2019 11:59pm

Instructions: Name your homework report `LastName1_LastName2_LastName3_homework2.pdf` (in alphabetical order). Submit your homework report on the Montefiore submission platform (`http://submit.montefiore.ulg.ac.be`).

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1. Noise elimination. An electrocardiogram signal was recorded at the sampling frequency of 250 Hz (`hw2_electrocardiogram.mat`). The signal is corrupted with noise. Our goal is to recover the original signal.

(a) Plot the given signal entirely (the time axis should be expressed in second).

(b) Plot only 3 seconds of the given signal (from the second 2 to second 5).

(c) Plot the single-sided magnitude spectrum of the given signal.

(d) Identify the noise frequencies.

(e) Recover the original signal and plot 3 seconds of the both (noise-corrupted and original) signals in a single frame.

(f) Explain clearly your filter design procedure.