MATLAB Grader (/) ▾

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521273S - Biosignal Processing I - Online Labs - Autumn 2024 (/courses/157000-521273s-biosignal-processing-i-online-labs-autumn-2024) ›

Assignment 3 - Adaptive filtering

Visible: 11 Nov 2024 8:00 AM EET | **Due:** 19 Nov 2024 11:45 PM EET |
Submissions Per Problem: Unlimited

Assignment Description

Learning outcomes

After this assignment student can use adaptive filter to remove interfering signal summed with the desired signa

The concept of adaptive filtering is first approached through more simple linear optimization models, and the stu interpolation.

Required reading

Read chapters 3.6-3.9 -- especially the chapter 3.9 -- from the course book.

Assignment Description

Your task is to implement an adaptive filtering solution to obtain fetal ECG by cancelling out the maternal ECG fr

Data

The file 'signals.mat' contains all the signals of the assignment. The variables contained in the file are listed belc

- Fetus signal: 'fhb' (pure fetus signal that is used to assess analysis results)
- Mother's chest signal: 'mhb' (pure mother's signal that is used to assess analysis results)
- Abdomen signals 'abd_sig1', 'abd_sig2' and 'abd_sig3' (mixed from fetus and mother signals)
- A real respiration movement signal and R-to-R interval sequence from ECG signal: 'RespReference' a

The sampling frequency of 'fhb', 'mhb', 'abd_sig1', 'abd_sig2' and 'abd_sig3' is 1000 Hz, and they are stored as 'RRiInput' is 4 Hz, and they are 1596x1 vectors.

Useful MATLAB commands

Problems