Introduction
Lab 1, SDP

Objective

Reminding students the basic notions of digital signal processing and Matlab basics.

Theoretical aspects

The following aspects shall be explained.

1. Digital signal processing basics:

- system, system function
- impulse response: what it is
- FIR / IIR systems: what they are, how they differ
- order of a filter
- transfer function: complex numbers, modulus and phase, interpretation of modulus and phase
- poles, zeros: what they are, interpretation
- basic filter types: lowpass, highpass, bandpass
- non-ideal filters: transition band, passband ripple, stopband ripple

2. Matlab basics

- vectors & matrices

Exercises

1. Load an audiofile using the Matlab function `audioread()`

2. Keep only the first 5 seconds of the signal, discard the rest.

3. Plot the first 50 samples of the audio signal (one channel only).

4. Filter the signal using `filter()` with a filter $H(z) = \frac{1 + z^{-1} + z^{-2}}{1}$.

5. Output the result using `audioplayer` and `play()`.

Final questions

1. TBD