SGN-84007 Introduction to Matlab

Exercise Set 5: September 26–30, 2016

1. Enter the following commands on the command line and explain what happened:

   ```
   clear all
   load handel
   whos
   ```

   The handel signal is an audio signal. Listen to it with Matlab.

2. Draw the spectrogram of handel and calculate its discrete Fourier transform (DFT). Look at DFT values. Calculate and draw the power spectrum of handel and compare the result with the spectrogram. Comment on the similarities and differences.

3.–4. Design a lowpass and highpass FIR filter and filter handel with them. Listen to the filtered signals. Repeat Problem 2 for the filtered signals. Explain.

5. Solve a least squares problem described at

   `https://youtu.be/0Xr517yTQBM`

   You will need this data:

   `http://www.cs.tut.fi/courses/SGN-84007/gravity.mat`

   Return by email to `scmatlab@cs.tut.fi` on Friday 30.9 at 23:59 at the latest.