Demo 12: Plotting
Exercises

DSP Lab (EE 4163 / EL 6183)

Fall 2017

1 Demo files

`play_randomly.py`
`play_randomly_plots.py`
`plot_micinput.py`

This demo program `play_randomly_plots.py` plays notes randomly and plots the waveform on the screen. This requires the Python library `matplotlib`. See the tutorial at

`http://matplotlib.org/users/pyplot_tutorial.html`

2 Exercises

1. **Stereo.** Write a program based on the demo program `play_randomly.py` that produces stereo audio. The sounds in the left and right channels should start at independent times. To do that, create two independent input signals to go through two independent filters. The output of one filter goes the the left channel; the output of the other filter goes the right channel.

2. **Stereo with plotting.** Modify your program in the previous exercise to plot both channels of the stereo signal — use a different color for left and right channels. The two waveforms in the plot may be vertically offset from on another to improve legibility.

3. **Filtering.** Write a Python program that takes the input audio from the microphone, applies amplitude modulation (AM), and plays the output audio on the speaker. Additionally, in a figure window, plot both the input and output audio signals (use two different colors to plot the respective signals). Use blocking. SUBMIT