

Demo 14: FFT

Exercises

DSP Lab (EE 4163 / EL 6183)

Fall 2017

1 Demo files

FFT_test01.py
FFT_test02.py
FFT_test03.py
FFT_test04.py
FFT_test05.py
plot_micinput.py
plot_micinput_spectrum.py

2 Exercises

1. **Amplitude Modulation.** The Python program `wavefile_AM_blocking_fix.py` in demo 11 SUBMIT applies amplitude modulation to a speech signal. Modify this program to plot in real-time the frequency spectra (Fourier transform) of both the input and output signals (use two different colors). The Fourier transform should be computed using the FFT. What is the relation between the spectra of the output and input signals?
2. **Filtering.** Write a Python program that takes the input audio signal from a microphone and applies a bandpass filter. The bandpass filter should have a passband from 500 Hz to 1000 Hz (as in previous demo programs). The audio signals should be read and written in blocks. Plot in real-time the frequency spectra of both the input and output signals (use two different colors). What is the relation between the two spectra?