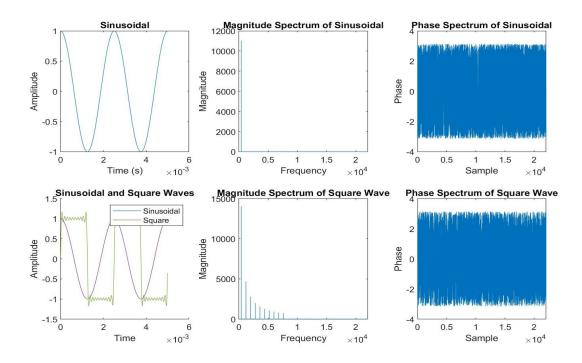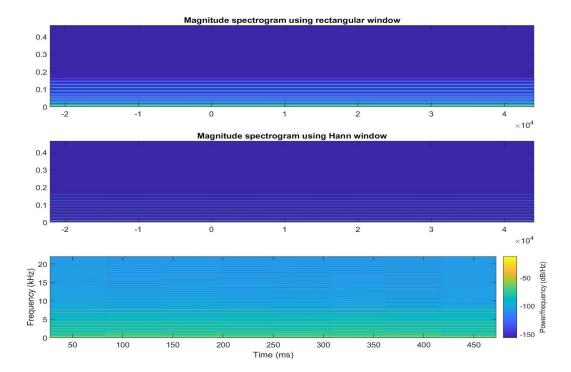Raghavasimhan Sankaranarayanan
Shauna Morrisey

Assignment 2

Repository link: https://github.com/smorrisey07/Assignment2

Magnitude spectrogram using rectangular window

Magnitude spectrogram using Hann window

- What is the frequency resolution (difference in frequency between the bins) of the FFT obtained above?

The bins are 2Hz wide.

- How will the frequency resolution change in this case if you zero-pad the input signal with the same number of zeros as the length of the input signal?

The bins become smaller, or the frequency resolution gets better, with a zero padded signal.

- What is the difference between the two windows used?

The rectangular window has a poor main lobe to side lobe ratio compared to the Hann window, so there is large spectral leakage if rectangular window is used. As a trade off, the Hann window has a wider main lobe vs the rectangular window has the least main lobe width.