

## Practicum II

### Instructor/TA Sign Off Sheet

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1. Pract. II, Procedure 1: plots for (a,b,c) \_\_\_\_\_  
Record requested comments for (a,b,c)

a) The  $x_1$  does look like a sinusoid. Each cycle takes  $0.2 \text{ seconds} = \frac{1}{5} \text{ seconds}$  or  $5 \text{ Hz}$ . This matches the frequency on the spectrogram.

b) The  $x_2$  also looks like a sinusoid. Each cycle took place over a period of  $0.1 \text{ seconds} = \frac{1}{10} \text{ seconds}$  or  $10 \text{ Hz}$ . This also matches the frequency on the spectrogram. There doesn't appear to be any discrepancies.

c) For the  $x_3$  signal, while it still generally looks like a sinusoid, not all the peaks are the same, with some of them being lower than others. However, the signal is still periodic. On average, each cycle takes about  $0.01 \text{ second}$  or for a frequency of about  $100 \text{ Hz}$ , different from  $90 \text{ Hz}$  which is the frequency from the spectrogram. These are a result from higher sampling rate.

2. Pract. II, Procedure 2(a,b): image plots

Record requested comments for (a,b)

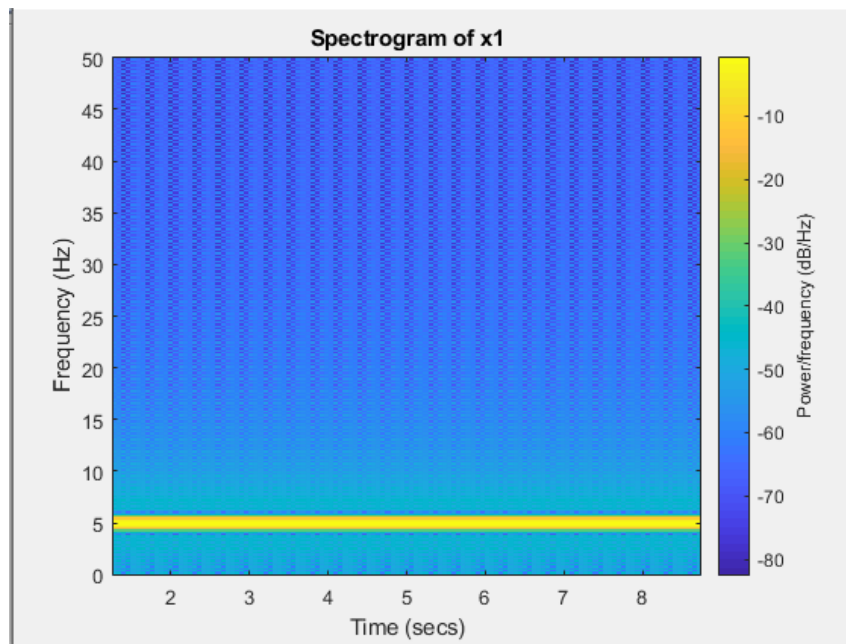
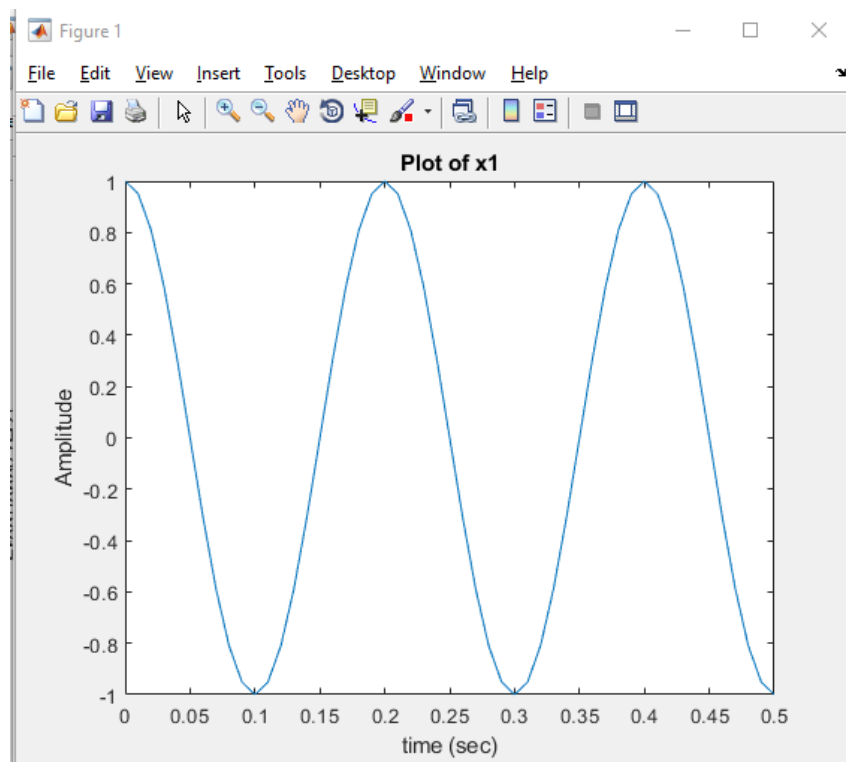
a) When using `"imshow(xx3)"` to display the compressed image, the new image appears to be about  $\frac{1}{9}$  the size of the original. We can also observe how parts of the picture where many fences are close together. It looks like lower amounts of black pixels in between white fences results on that part of the image being more affected.

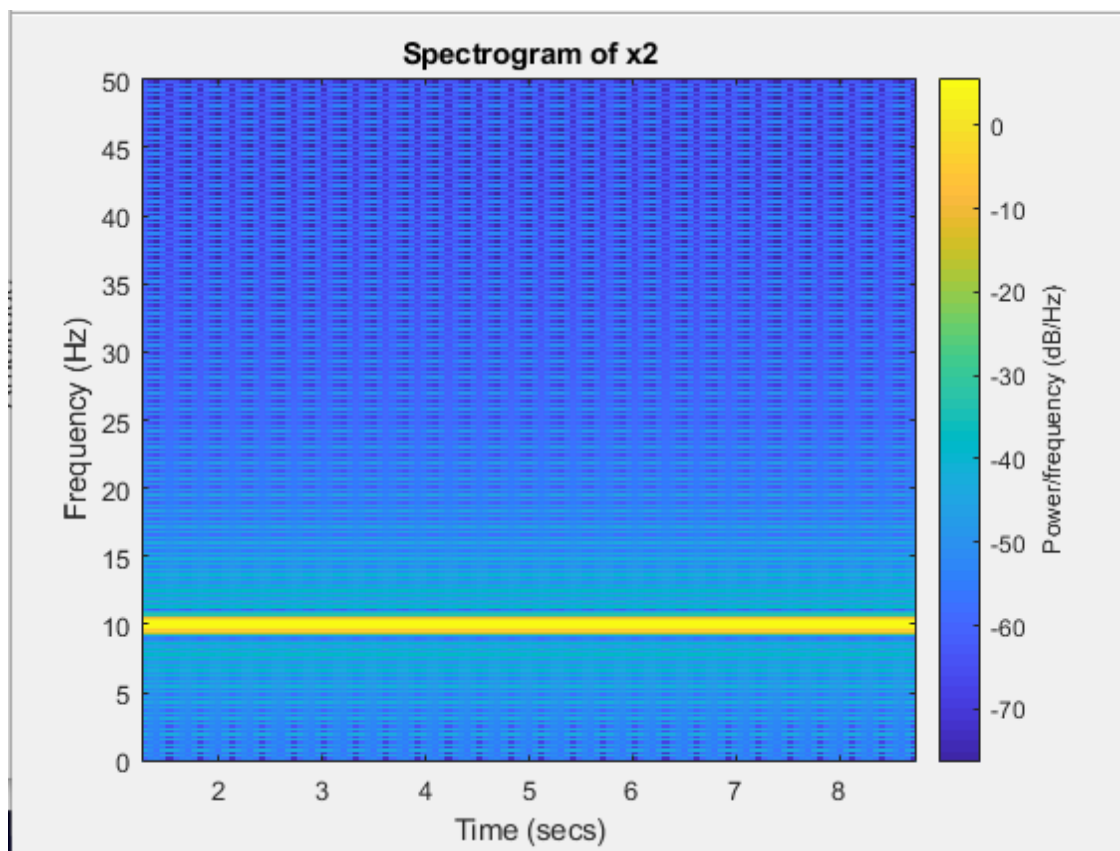
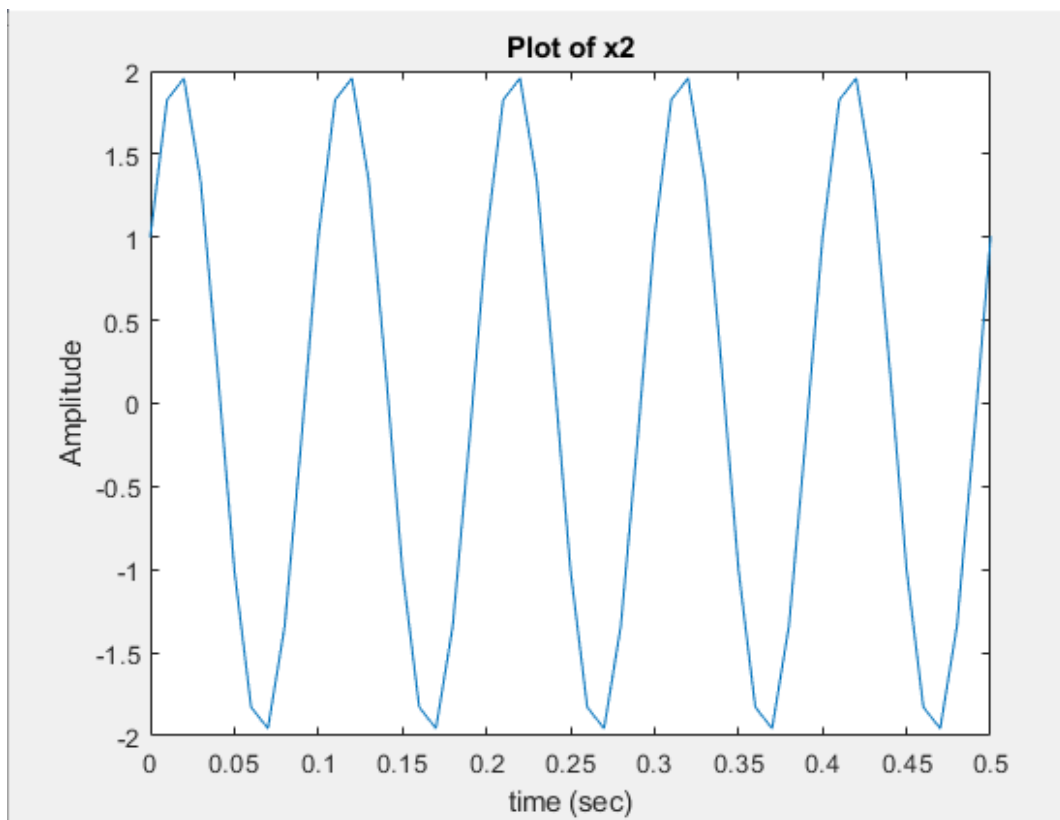
b) The reconstructed image has a grid of black lines going through it. The gray tones in the reconstructed are also darker. However, the up-scaling makes the reconstructed image the same size as the original

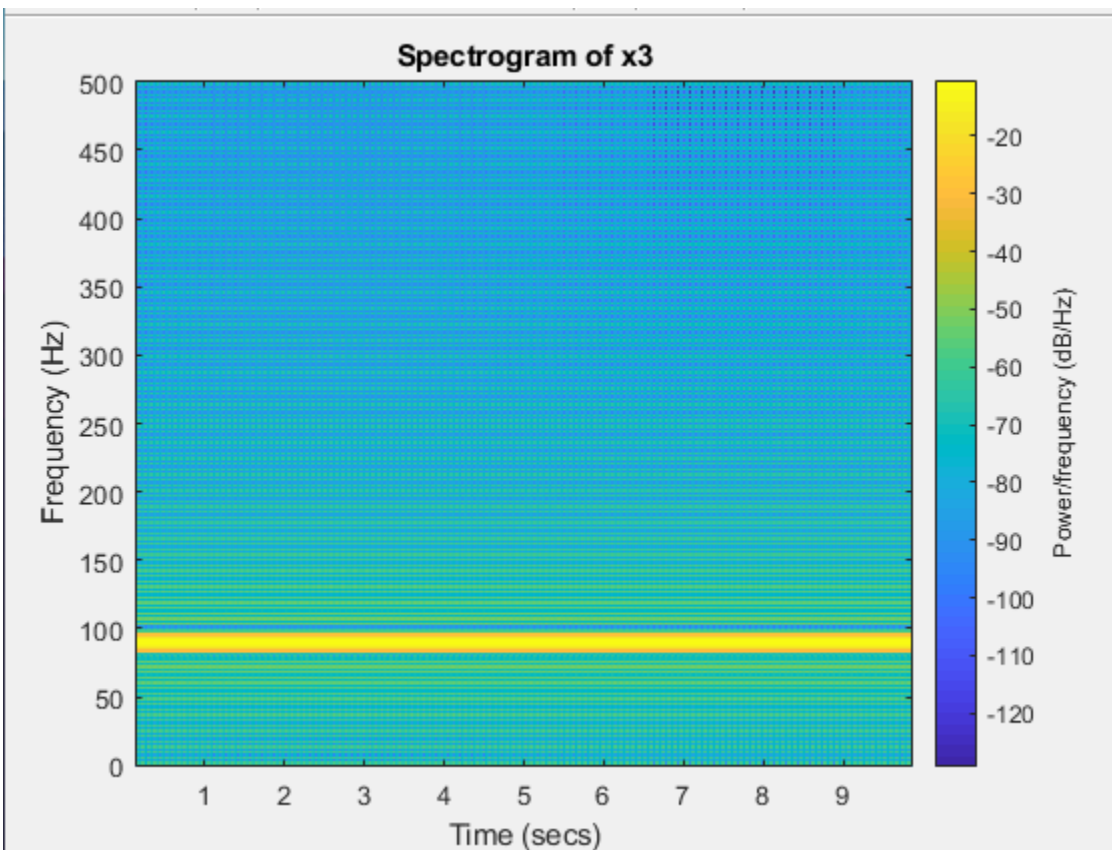
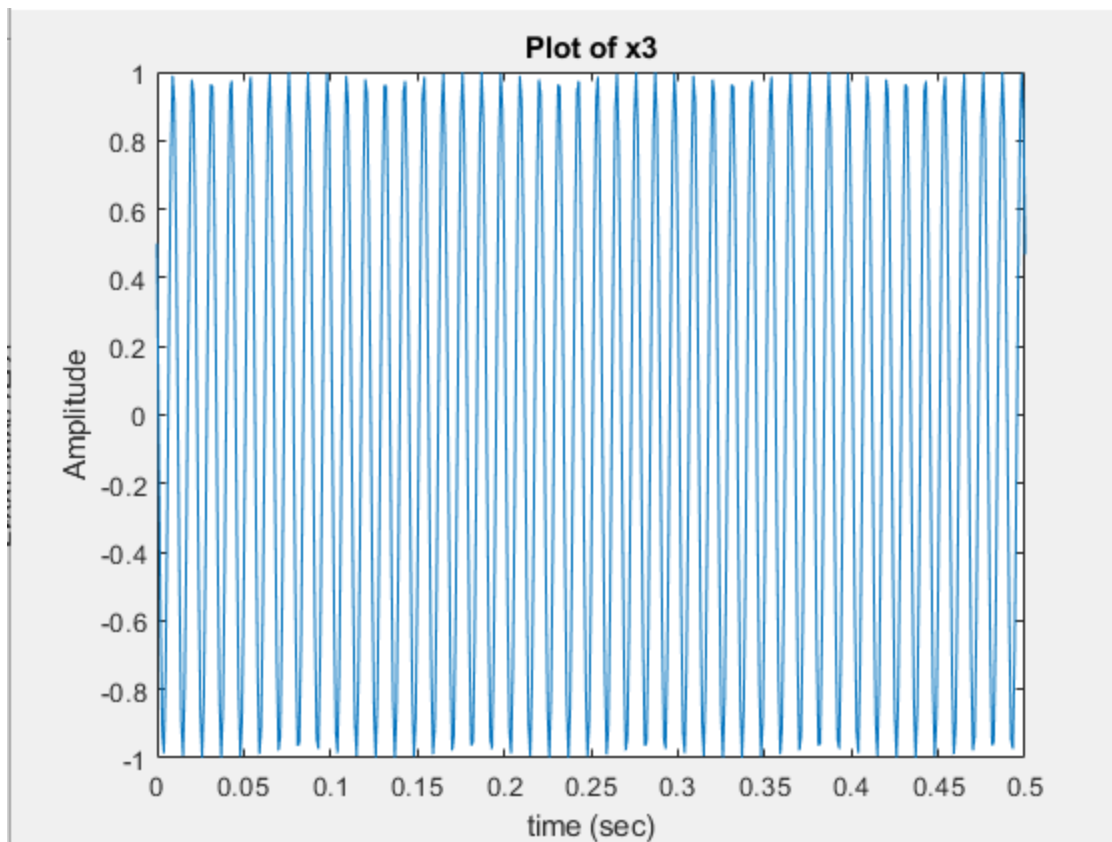
c) Unlike the `xx5` image, this new up-scaled image doesn't have a black grid, and it also keep the same graytone as the original. Like the other up-scaled image, it went back to the same size as the original. It doesn't look like this up-scaling method solved the aliasing effects from the down-sampled image `xx3`.

# Plots

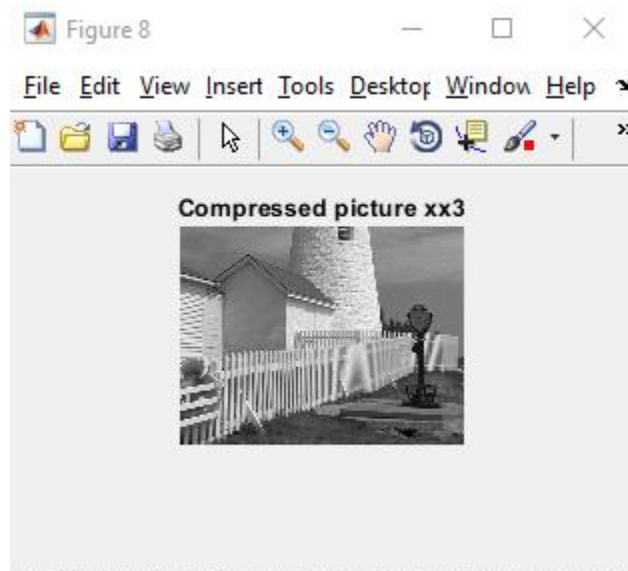
## Part A



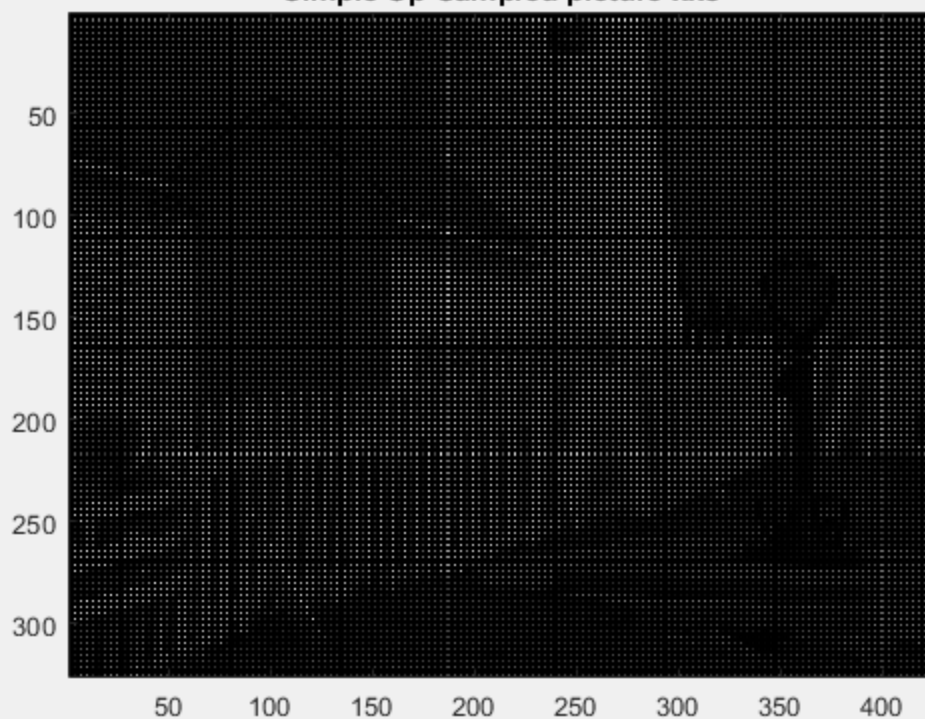




## Part 2



Simple Up-Sampled picture xxs



Effective Up-Sampled picture xxh

