Experiential DSP 03 Solutions
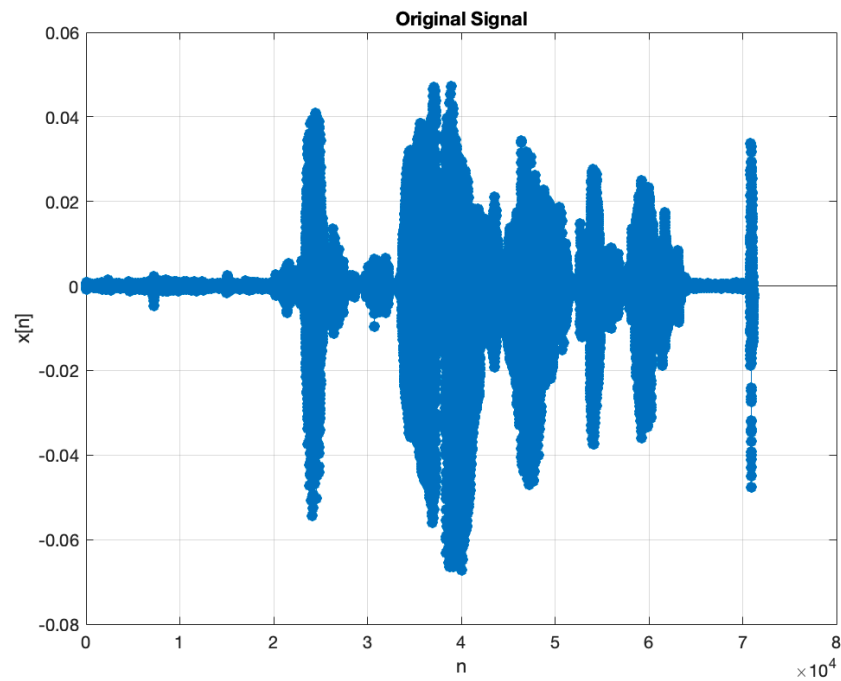
Digital Upsampling:

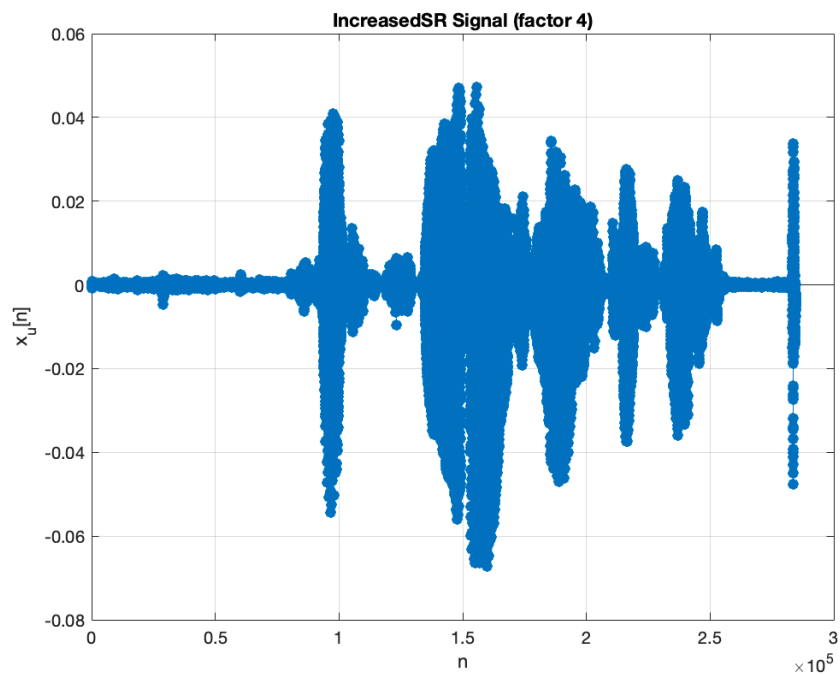Figure 1: Stem plot of audio.wav.

Figure 2: Stem plot of the increased sampling rate signal

Let's zoom in on Figure 2:
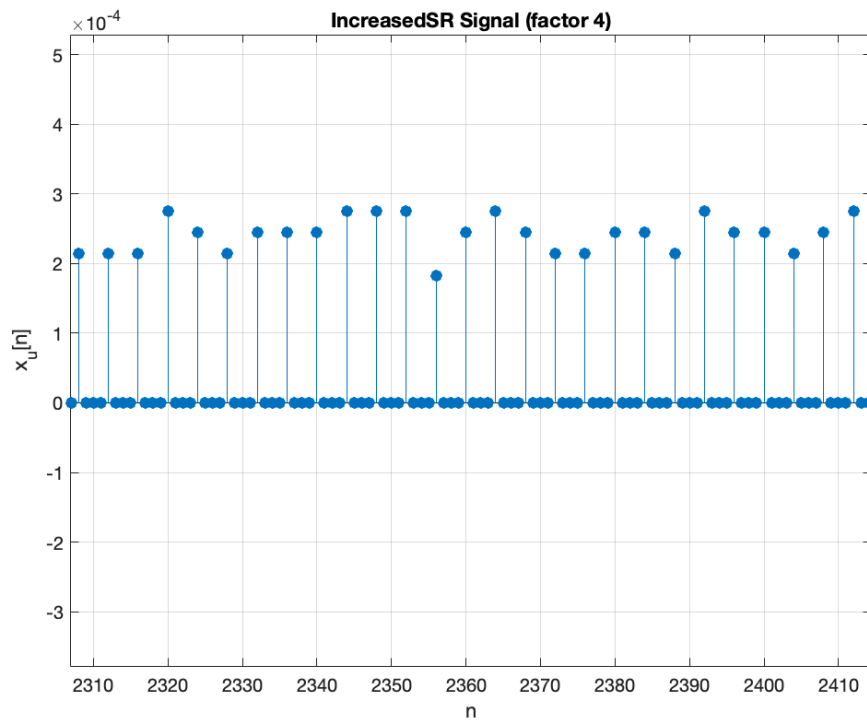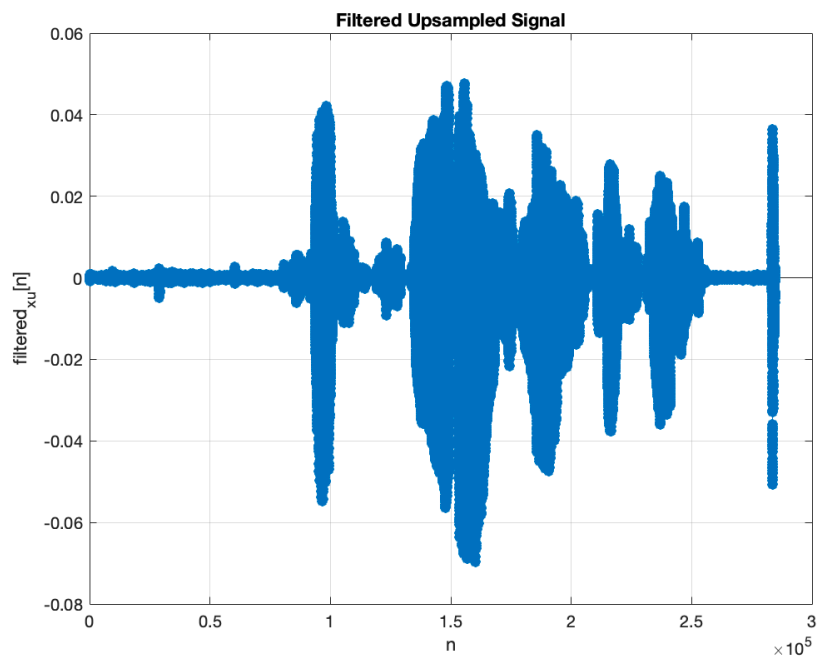

Figure 3: Zommed in view of Figure 2

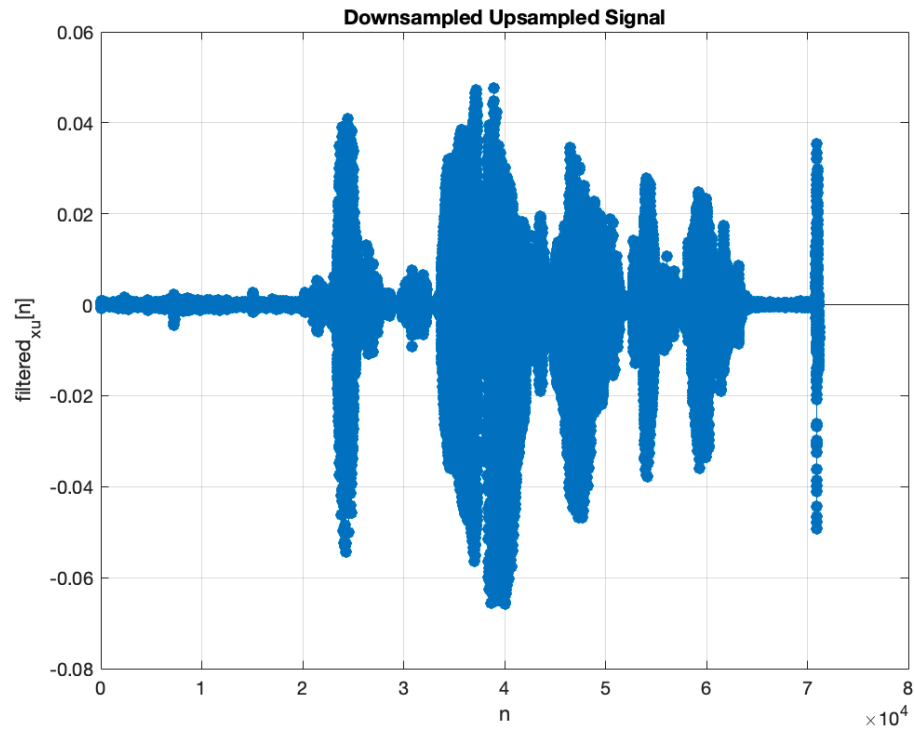Figure 4: stem plot of upsampled signal

Digital Downsampling:

Figure 5: Stem plot of downsampled upsampled signal

The subtle difference we observe between Figure 1 and Figure 6 is because the filters we are using are not ideal, and that is why we can not recreate the original signal perfectly.