University of Washington
Department of Electrical Engineering
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Report for Lab0:
Working with Discrete-Time

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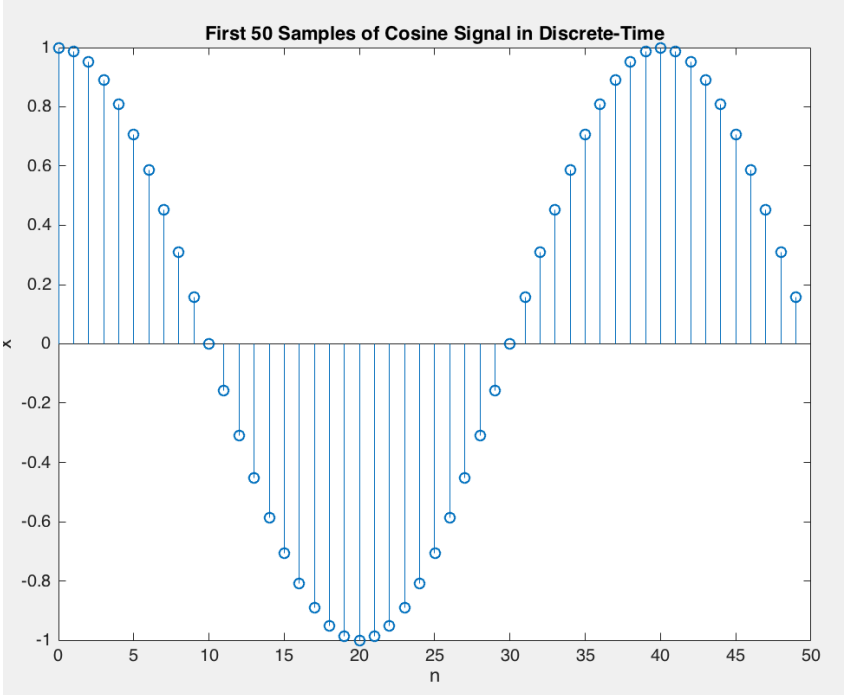
1 EXECUTIVE SUMMARY

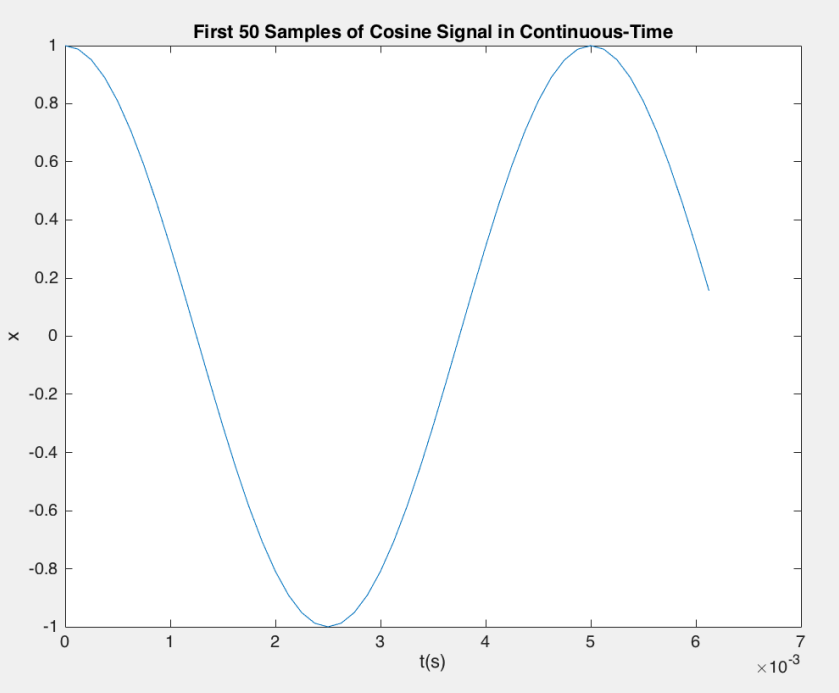
This lab is about reading, displaying and writing sound file. Through this lab I learned how to read and play a new type of sound ---- ".wav".

2 EXERCISE #1: cos(200πt)

Description: Generate a 5 second cosine of frequency 200 Hz assuming an 8kHz sampling rate. Then plot the first 50 samples using a stem plot in discrete-time as well as continuous-time time.

2.1 PLOTS

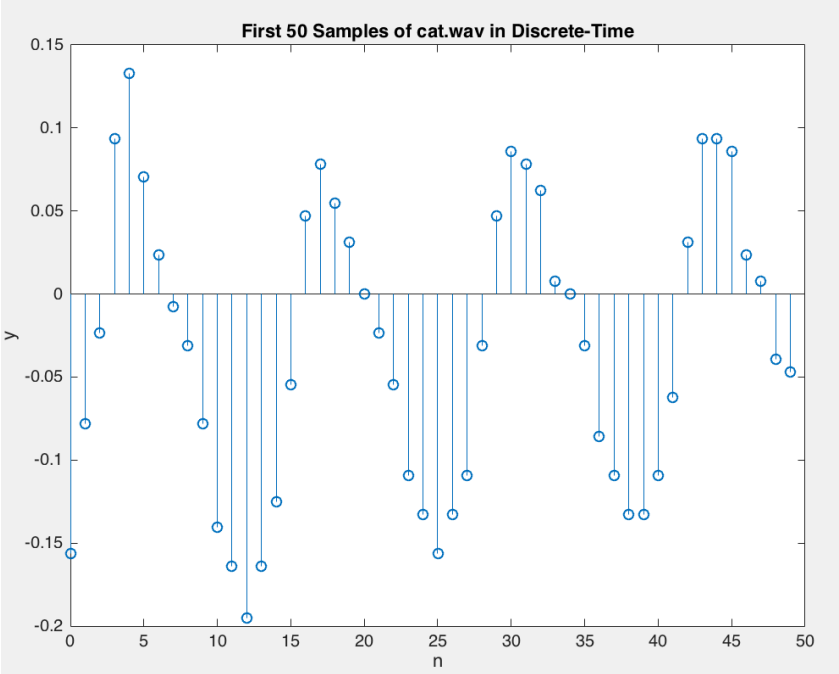


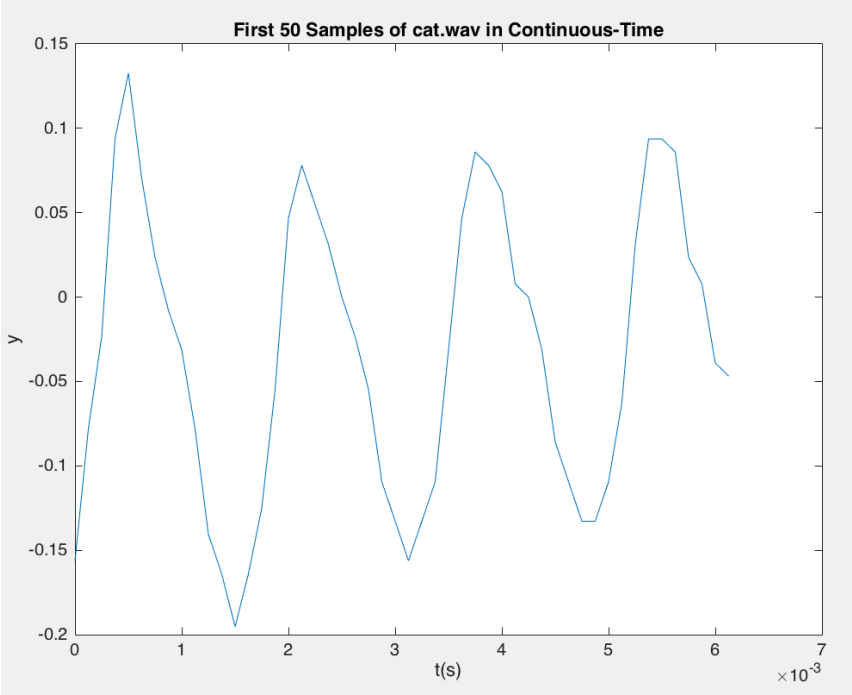


3 EXERCISE #2: CAT.WAV

Description: plot the first 50 samples of "cat.wav" in discrete-time as well as continuous-time time.

3.1 PLOTS





4 EXERCISE #3: MYMEOWS.WAV

Description: Create a signal by cascading different versions (different loudness level) of original "cat.wav" and inserting some short blank interval in between. Plot the new waveform.

4.1 DESCRIPTION

```
% change the scale of each signal in order to change the loundness
[y,Fs] = audioread('cat.wav');
y_1 = y;
y_2 = 4*y;
y_3 = 0.1*y;
y_4 = zeros(200, 1);

% cascade the different versions of the signal to create the mymeows
ynew = [y_1;y_4;y_2;y_4;y_3;y_4;y_1];
```

Remain the loudness:

xnew1[n] = x[n];

Increase the loudness:

xnew2[n] = 4x[n];

Decrease the loudness:

xnew3[n] = 0.1x[n];

The blank interval in between:

xnew4[n] = 0;

Equation: Cascading the above "xnew[n]" as the order shown in the plot above.

xnew[n] = xnew1[n] ([0, n])

= xnew4[n] ([n+1, n+200])

= xnew2[n] ([n+201, 2n+201])

= xnew4[n] ([2n+202, 2n+401])

= xnew3[n] ([2n+402, 3n+402])

= xnew4[n] ([3n+403, 3n+602])

= xnew1[n] ([3n+603, 4n+603])

4.2 PLOTS