REPORT

Assignment – 4

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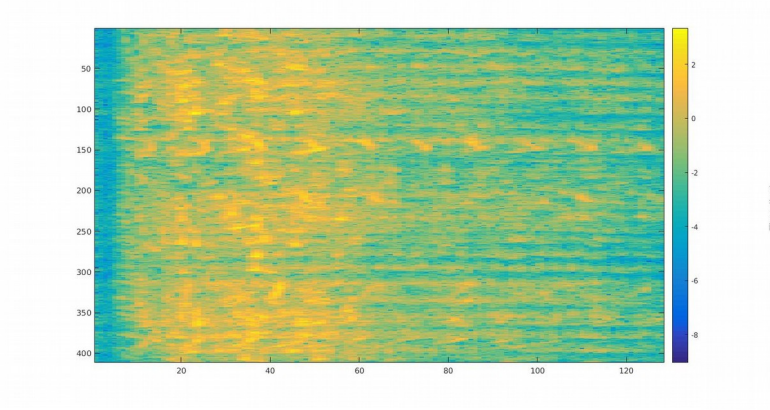
Q1.

Order of steps :

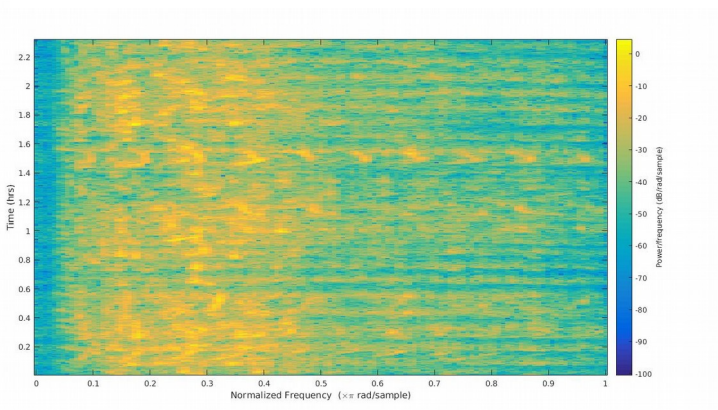
- Create a function which take input of sound file, length of window and length of overlap
- Find the length of input sound file
- Find total number of windows required for the given audio
- Create a gaussian window of size window length
- For each window we do point by point multiplication with gaussian window
- Then take fft of the new array(window) to convert it to frequency domain and store it in a 2D array
- Then we take log base 10 2D array containing frequency upto half size of window length
- Using imagesc displayed the image with scaled colors
- View and set current colormap using colormap

Below is the comparison with the inbuilt spectrogram function having window length 256 :

Created Function

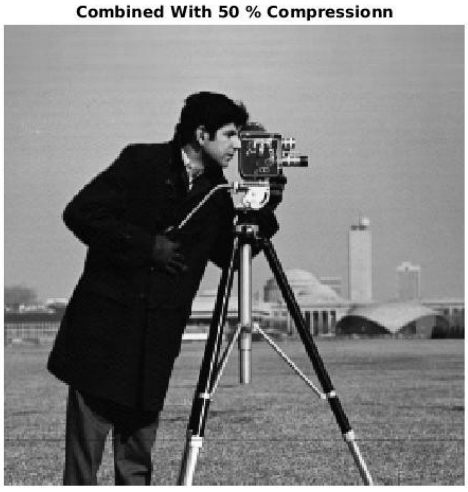


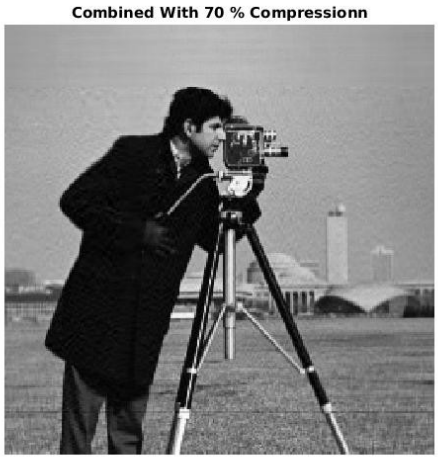
Spectrogram



Q3.

A.) Reconstructed image by zeroing out 50%, 70%, 80%, 90%, 100% eigenvalues





B.) Deleting smaller eigenvalues help because they are of less importance.

C.) 0.7 compression ratio can be achieved after that we can find some small patches in image.

- In 0.5 compression ratio we can't find any changes with naked eyes
- In 0.7 compression ratio we can't find any large visible change
- In 0.8 compression ratio we find there are some small patches starting which are easily visible

- Then as we increase compression ratio patches increases and image starts becoming blured and it is quite hard to see proper image after some value
- At 0.9 compression ratio we can see that image has becomed blured because many of the important eigenvalues has been converted to 0