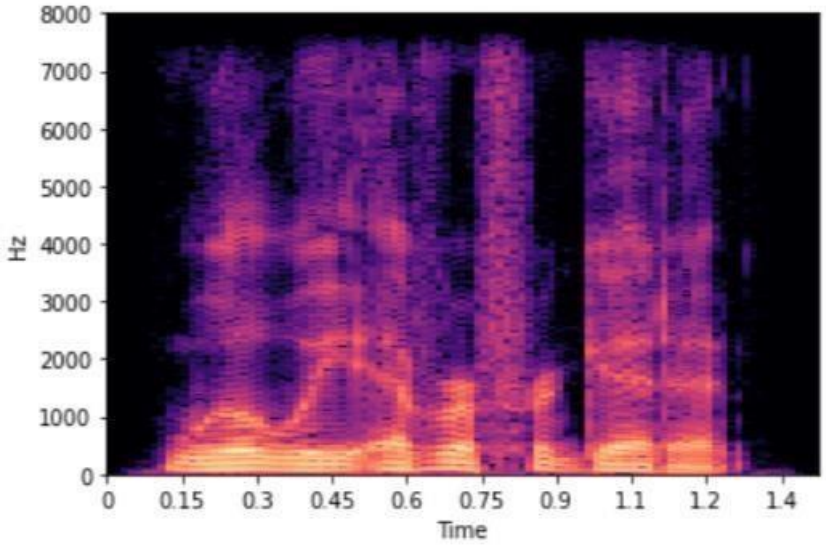
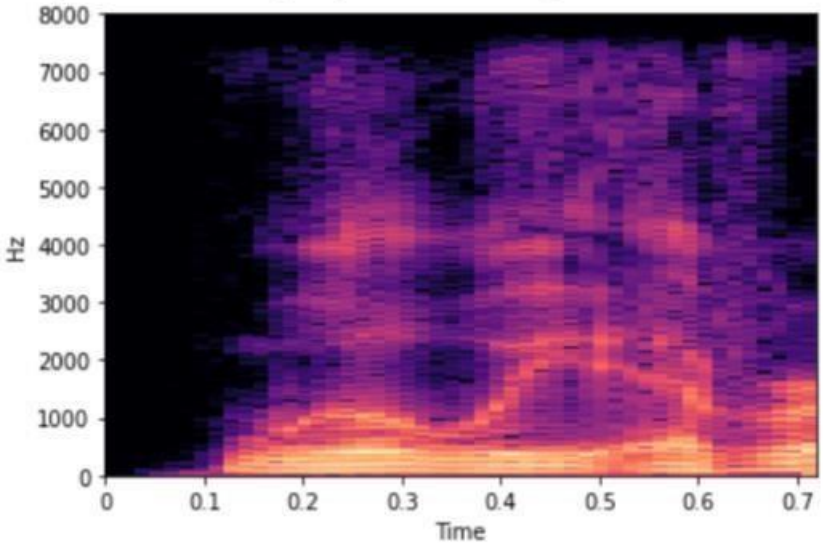
# SIT789 - Applications of Computer Vision and Speech Processing

## Pass Task 7.1: Introduction to Speech Processing

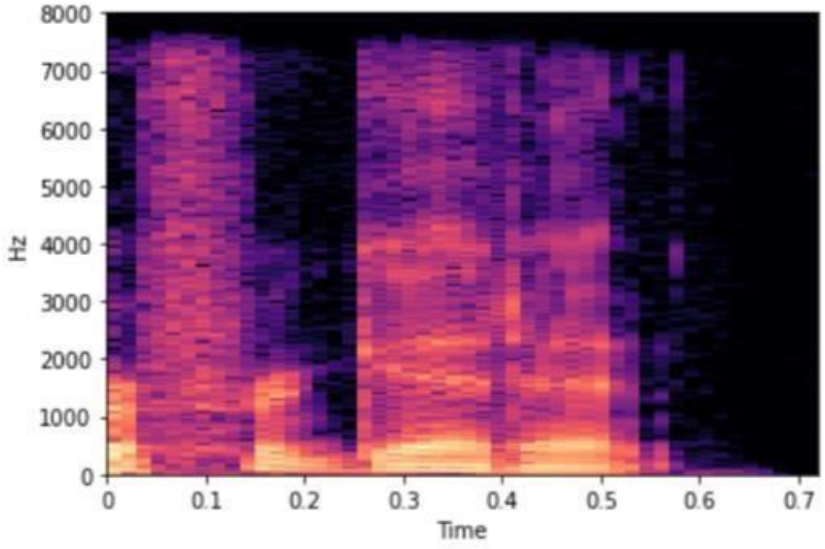



Spectrograms of X




Spectrograms of x1

Spectrograms of x2

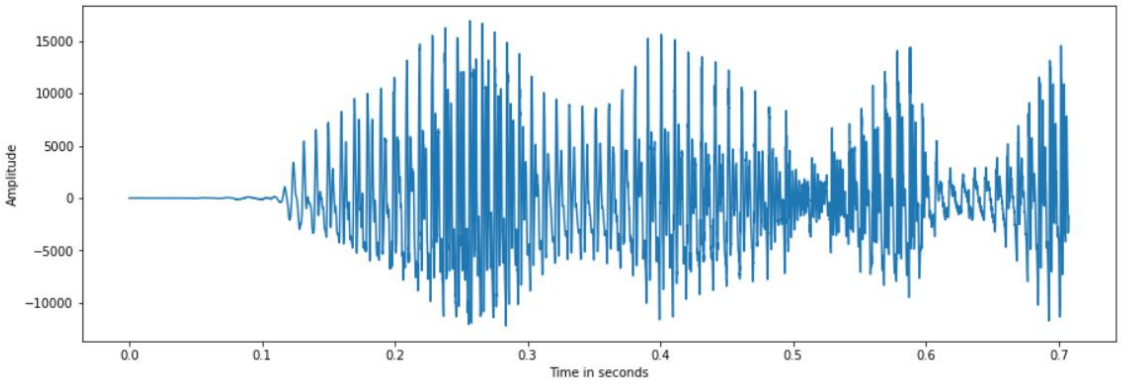



# Visualisation of x1 and x2 in time domain:

X1:

```
x1_range = np.linspace(0, duration1, len(x1))
plt.figure(figsize = (15, 5))
plt.plot(x1_range, x1)
plt.xlabel('Time in seconds')
plt.ylabel('Amplitude')
```

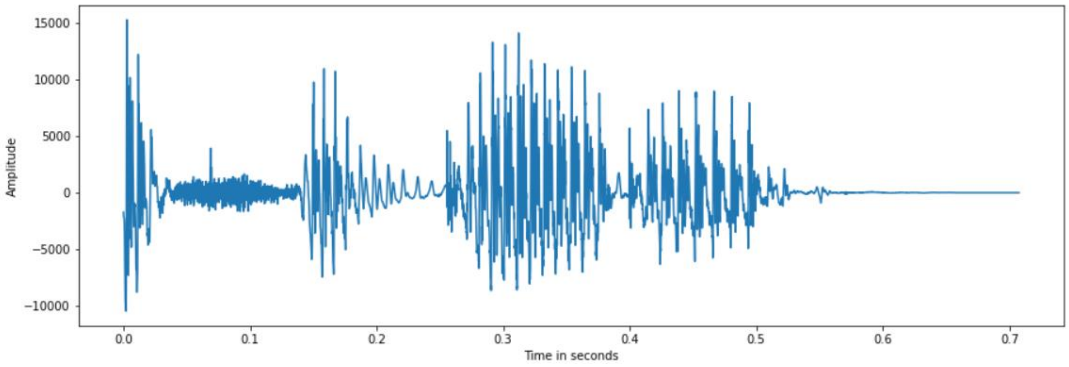
```
Text(0, 0.5, 'Amplitude')
```



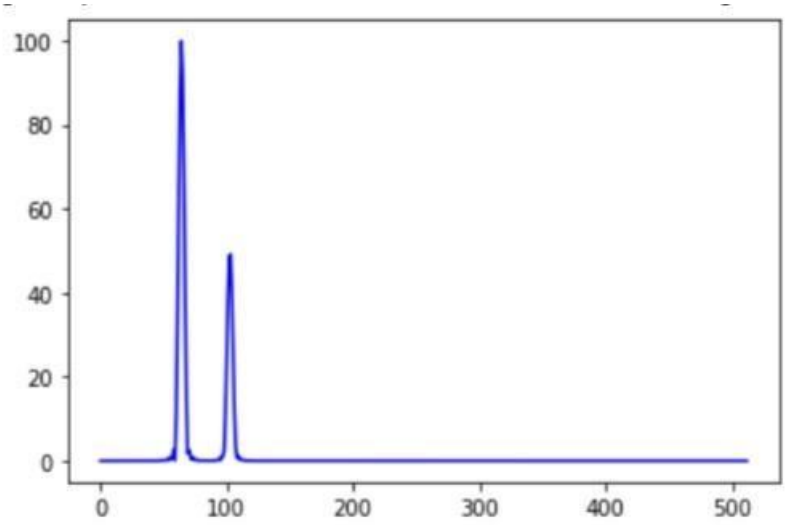
X2:

```
x2_range = np.linspace(0, duration2, len(x2))
plt.figure(figsize = (15, 5))
plt.plot(x2_range, x2)
plt.xlabel('Time in seconds')
plt.ylabel('Amplitude')
```

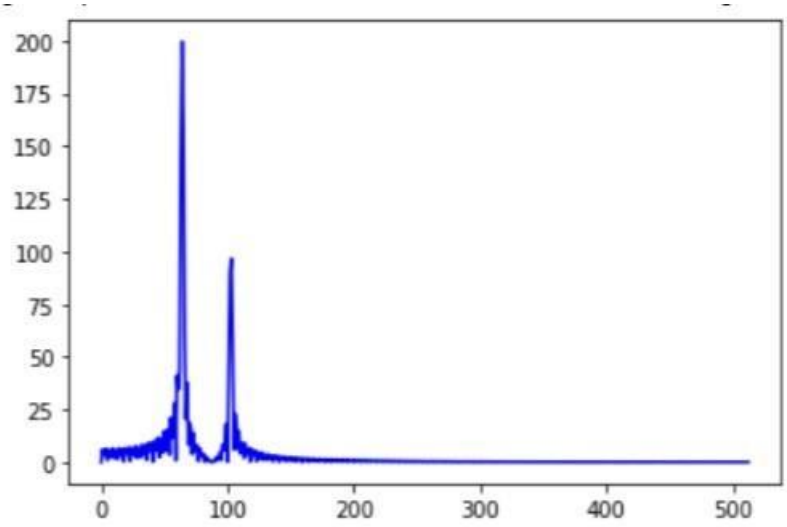
```
Text(0, 0.5, 'Amplitude')
```



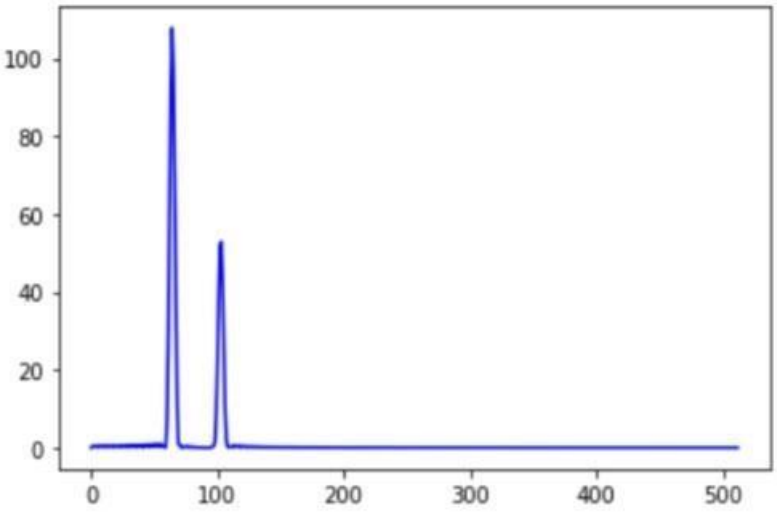

# Fourier transform of s using different windowing techniques (hann)



# Fourier transform of s using different windowing techniques (boxcar)




# Fourier transform of s using different windowing techniques (hamming)




The boxcar technique gives a rectangular window, Hamming window stops just shy of zero, meaning that the signal will still have a slight discontinuity whereas the hanning tries to remove discontinuity.