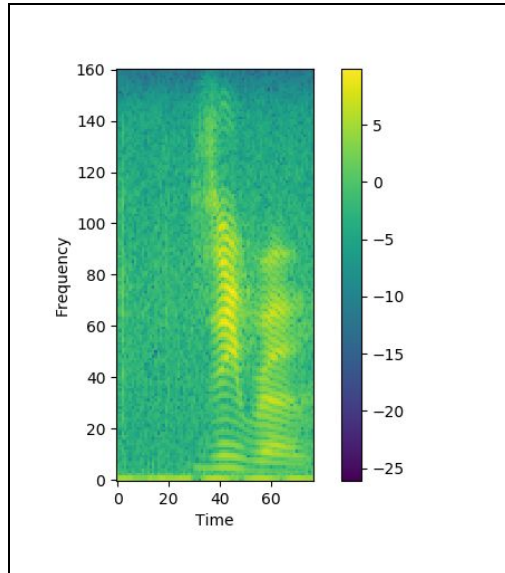


MCA: Assignment 2

Speech Classification

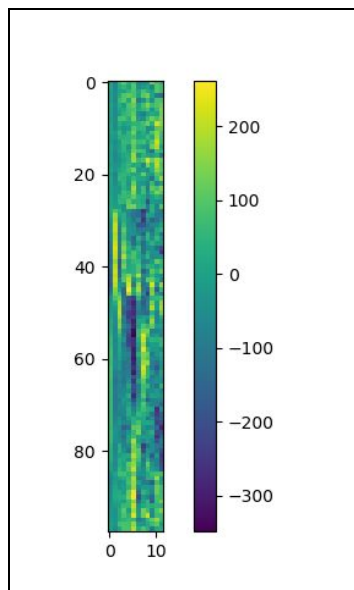
1. Spectrogram:

The code for this part was written with the help of this [resource](#).



2. MFCC:

The code for this part was written with the help of this [resource](#).



3. A. Due to space constraints, my PC was unable to train on the entire **Spectrogram** dataset. The code has been modified to just differentiate between the class 'zero' and 'one' sounds. The following results were obtained:

| | precision | recall | f1-score | support |
|--------------|-----------|--------|----------|---------|
| 0 | 0.99 | 0.89 | 0.94 | 242 |
| 1 | 0.89 | 0.99 | 0.94 | 214 |
| accuracy | | | 0.94 | 456 |
| macro avg | 0.94 | 0.94 | 0.94 | 456 |
| weighted avg | 0.94 | 0.94 | 0.94 | 456 |

B. On running an SVM with an rbf kernel on the MFCC data, the following results were obtained:

| | precision | recall | f1-score | support |
|--------------|-----------|--------|----------|---------|
| 0 | 0.86 | 0.87 | 0.87 | 245 |
| 1 | 0.76 | 0.80 | 0.78 | 215 |
| 2 | 0.74 | 0.80 | 0.77 | 222 |
| 3 | 0.88 | 0.83 | 0.86 | 229 |
| 4 | 0.89 | 0.83 | 0.86 | 268 |
| 5 | 0.78 | 0.75 | 0.76 | 232 |
| 6 | 0.80 | 0.86 | 0.83 | 248 |
| 7 | 0.80 | 0.83 | 0.82 | 245 |
| 8 | 0.87 | 0.83 | 0.85 | 229 |
| 9 | 0.79 | 0.74 | 0.77 | 222 |
| accuracy | | | 0.82 | 2355 |
| macro avg | 0.82 | 0.82 | 0.82 | 2355 |
| weighted avg | 0.82 | 0.82 | 0.82 | 2355 |