

Assignment 2

F1 Score

Model/Features	Spectrogram	Spectrogram + Noise	MFCC	MFCC + Noise
SVM (rbf)	72.05%	73.58%	77.8%	77.9%

Precision

Model/Features	Spectrogram	Spectrogram + Noise	MFCC	MFCC + Noise
SVM (rbf)	73.1%	74.71%	78.06%	78.09%

Recall

Model/Feature	Spectrogram	Spectrogram + Noise	MFCC	MFCC + Noise
SVM (rbf)	71.80%	73.37%	77.7%	77.8%

We note that the MFCC feature set gives better results as compared to the spectrogram feature set. This may be attributed to the inherent properties of the dataset and the fact that MFCC features are designed in a way to mimic the biological sense of hearing.

We also note that adding noise to the data gives a slight improvement in the result. We use the following update rule while adding noise:

$$x = x + 0.0001 * \text{noise},$$

Where x is a training sample and noise is a randomly selected segment of a randomly selected noise clip. We experiment with various multiplicative factors and note that the above-mentioned one performs the best. We add noise to every 5th sample.

Adding noise to the data makes the model more robust and hence leads to gain in results.