Assignment 4

Problem Statement

To design and build CNN model for identification of Dysarthria disease

Data:

https://www.kaggle.com/datasets/iamhungundji/dysarthria-detection

Create a Kaggle notebook in this dataset. Perform all the tasks in this notebook.

Task:

- 1. Read data.csv in pandas
- 2. Visualize the waveplot, MFCC, and Mel Spectrogram for any 1 random sample of dysarthric male, dysarthric female, non-dysarthric male, and non-dysarthric female.
- 3. Comment on the output.
- 4. Define a function to create 256 MFCC features for any given audio file.
- 5. Apply the function on all audio files listed in data.csv
- 6. Split the data into training and validation by a ratio of 90:10.
- 7. Reshape the MFCC features for CNN.
- 8. Build the CNN model with padding on a training set.
 - a. Include some dropout layers.
 - b. Use metrics as recall score in compile function.
 - c. Adam optimisers with different learning rates, beta1 and beta2. Select the best parameter based on your evaluation
- 9. Evaluate the validation set.
- 10. Calculate and comment on ROC AUC score, recall score and confusion matrix.