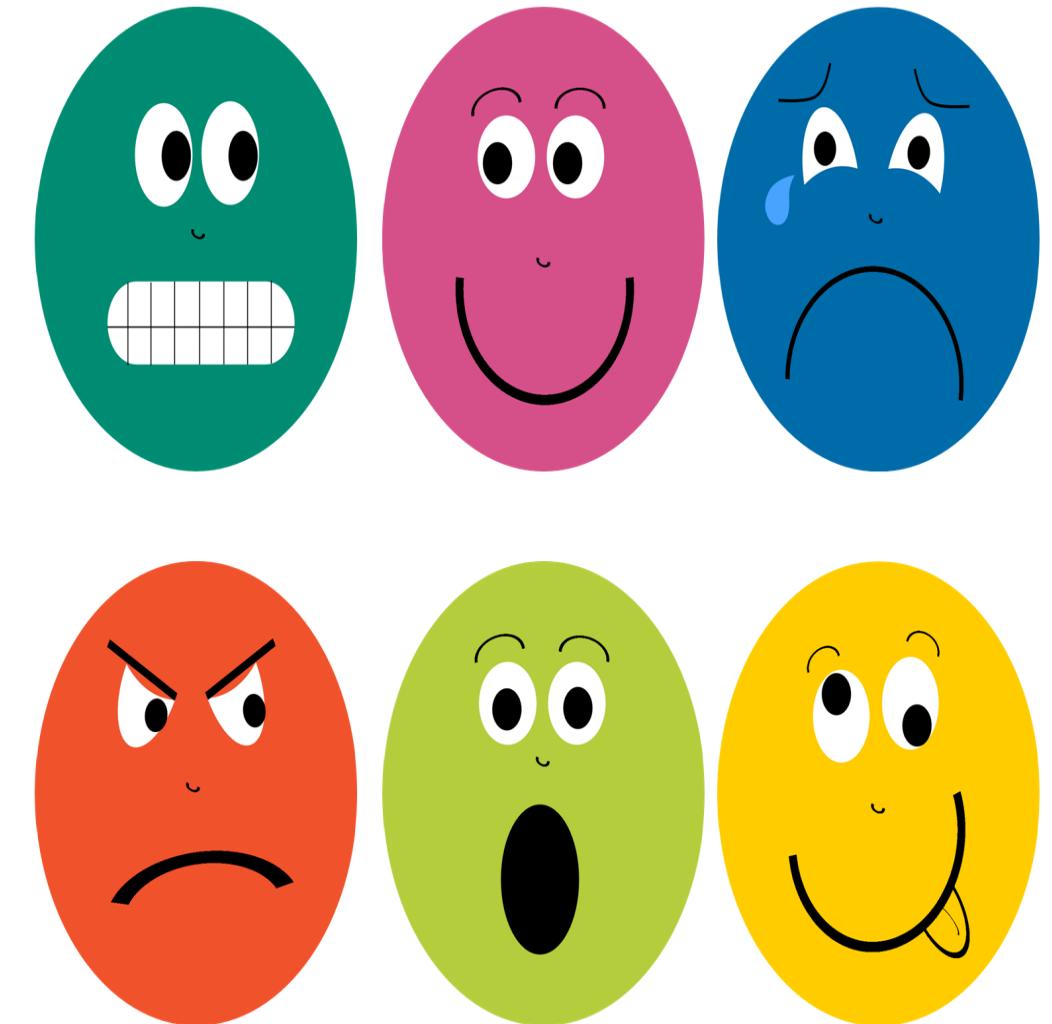


# SPEECH EMOTION DETECTION

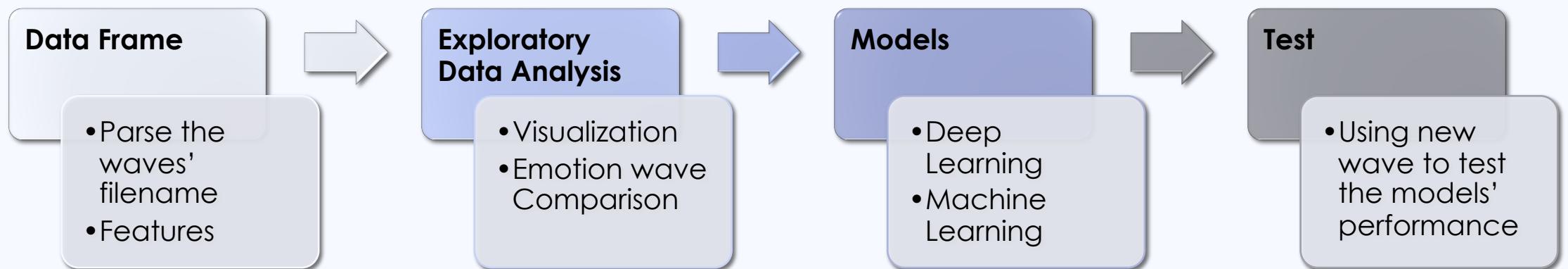
AUTHOR: ARWA ASHI  
SAUDI DIGITAL ACADEMY  
FINAL PROJECT - DEC 3RD, 2020



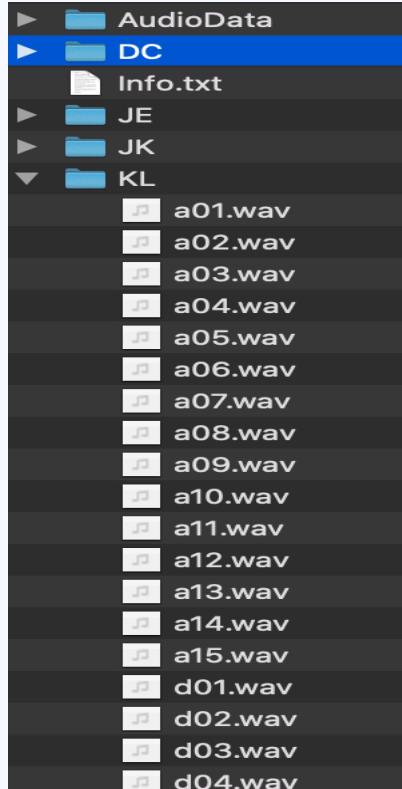
## OBJECTIVE:

- As a Data Scientist, I have been tasked with designing a model that detects speech emotions such as anger, disgust, fear, happiness, neutral, sadness and surprise.

## PROJECT OUTLINE:



# DATA FRAME



Speakers: 'DC', 'JE', 'JK' and 'KL' are four male speakers recorded for the SAVEE database

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Audio data

Audio files consist of audio WAV files sampled at 44.1 kHz

There are 15 sentences for each of the 7 emotion categories.

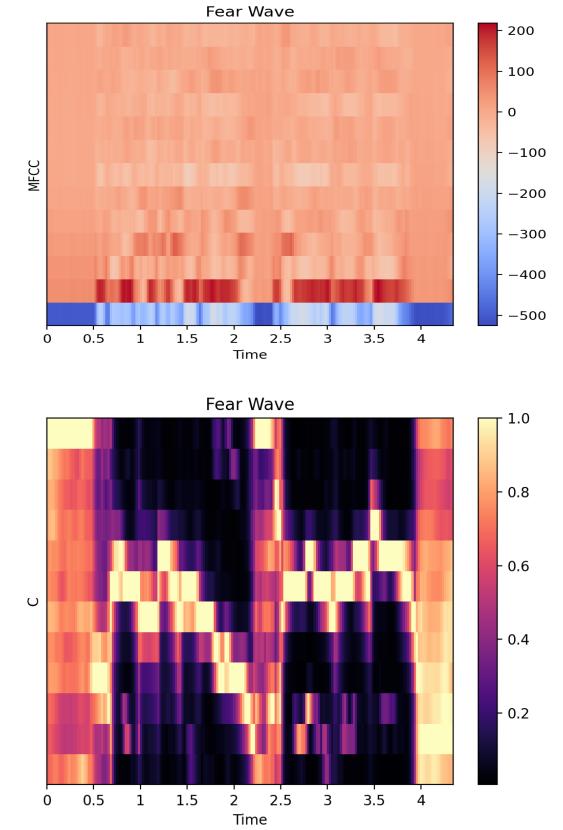
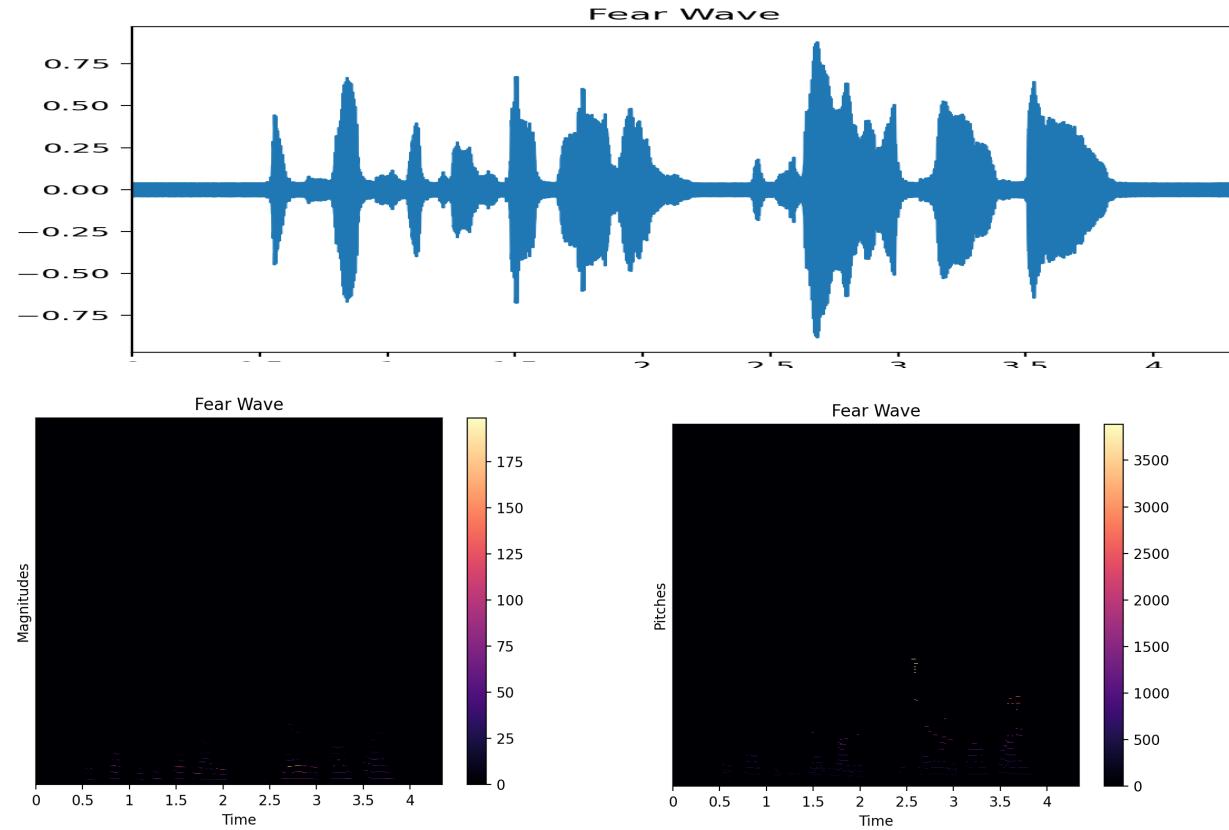
The initial letter(s) of the file name represents the emotion class, and the following digits represent the sentence number.

The letters 'a', 'd', 'f', 'h', 'n', 'sa' and 'su' represent 'anger', 'disgust', 'fear', 'happiness', 'neutral', 'sadness' and 'surprise' emotion classes respectively.

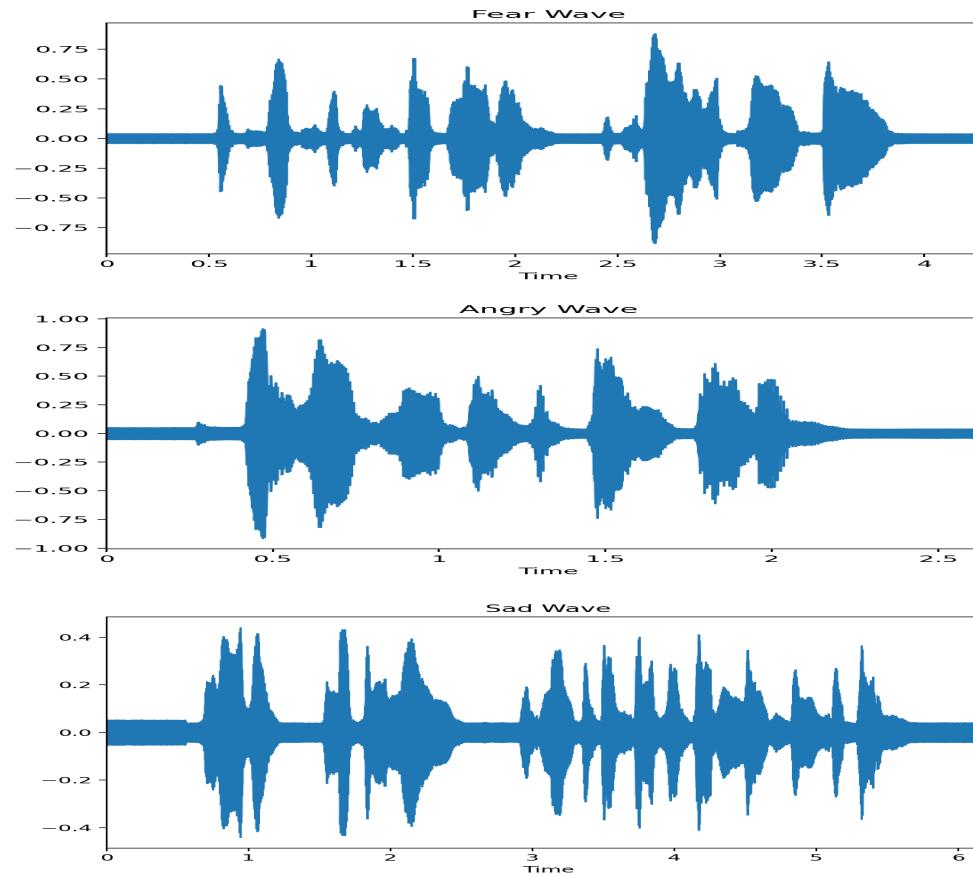
E.g., 'd03.wav' is the 3rd disgust sentence.

Source: <https://www.kaggle.com/barelydedicated/savee-database>

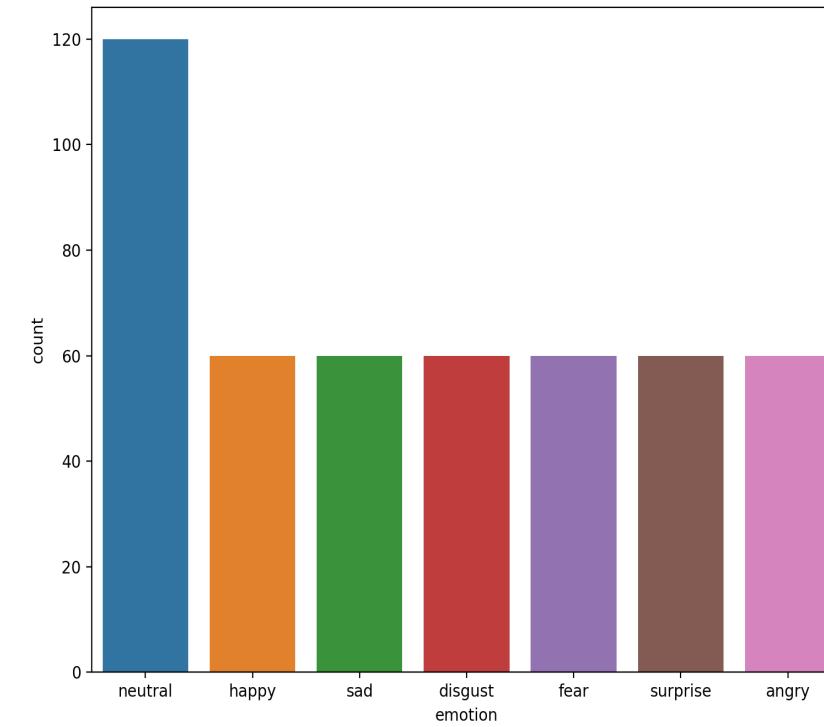
# FEATURES



# EXPLORATORY DATA ANALYSIS

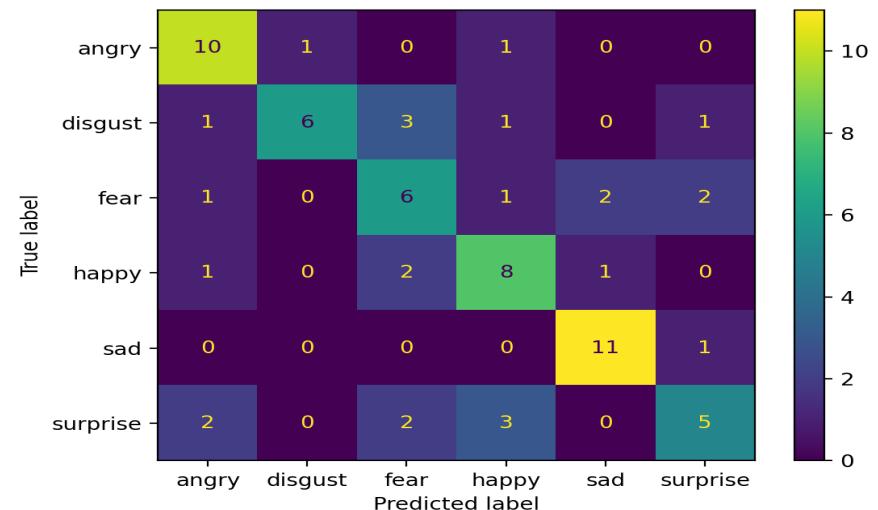


**TOTAL WAVES FOR EACH EMOTION**



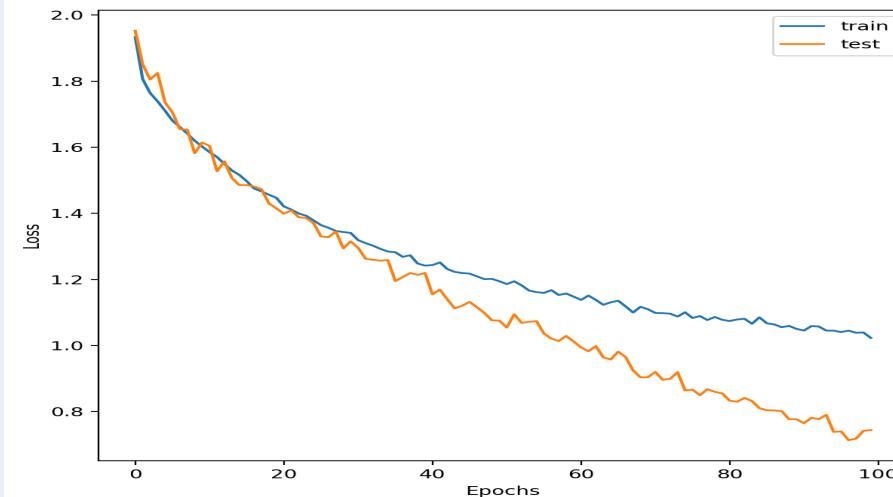
# MODELS' RESULTS

## MACHINE LEARNING MODEL



	Data Type	Accuracy Score	Best Classifier
0	Training Data	0.560870	{'clf': GradientBoostingClassifier()}
1	Validation Data	0.534483	{'clf': GradientBoostingClassifier()}
2	Testing Data	0.638889	{'clf': GradientBoostingClassifier()}

## DEEP LEARNING MODEL



	Data Type	Accuracy Score
0	Training Data	85.652173
1	Validation Data	56.896549
2	Testing Data	61.111110

# TESTING ANGRY WAVE TO SEE HOW WILL THE MODELS PERFORM?

## MACHINE LEARNING MODEL

```
Python 3.8.2 Shell

-----
Data Type Accuracy Score          Best Classifier
0  Training Data    0.526087 {'clf': RandomForestClassifier()}
1  Validation Data  0.603448 {'clf': RandomForestClassifier()}
2  Testing Data     0.680556 {'clf': RandomForestClassifier()}

-----
Testing the angry wave result

[1] [1] = angry emotion
>>> |
```

Ln: 47 Col: 4

## DEEP LEARNING MODEL

```
Python 3.8.2 Shell

-----
Data Type Accuracy Score
0  Training Data    86.956519
1  Validation Data  56.896549
2  Testing Data     45.833334

1/1 [=====] - ETA: 0s
1/1 [=====] - 0s 104ms/step

-----
Testing the angry wave result
98% that the wave is
an angry wave
[[9.8705494e-01 3.9408444e-03 5.5059744e-03 1.4425812e-03 1.2239718e-04
  1.9332444e-03]]
[angry , disgust, fear , happy , sad , surprise]
>>>
```

Ln: 295 Col: 4



# Questions?

Thank you