

# Lab exercise:15 - Extract features, Train the model and use classifiers for any input data

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Q. Use at least any 4 models and 2 classifiers and compare their performance and justify your answer.

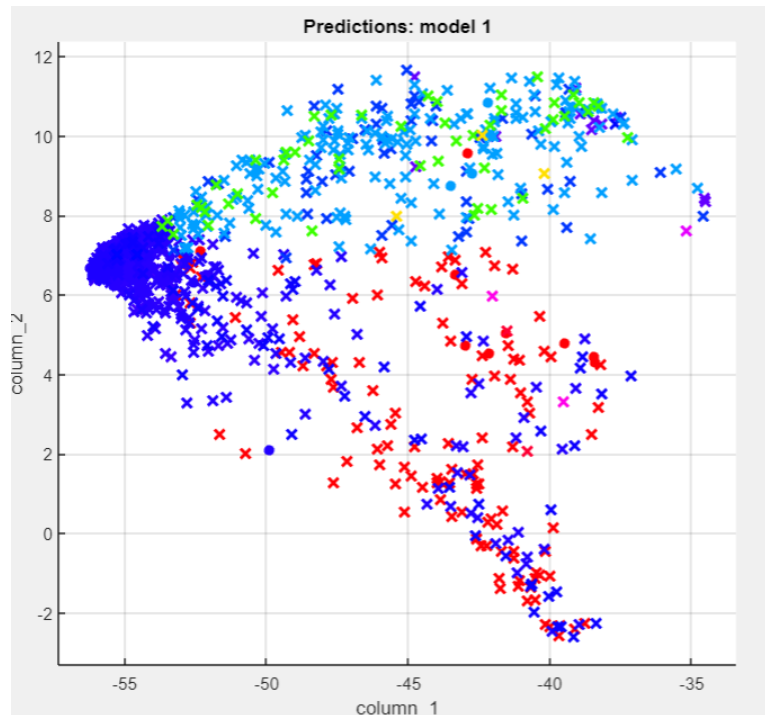
## INPUT DATA

```
[audioIn,fs] = audioread("Counting-16-44p1-mono-15secs.wav");
aFE = audioFeatureExtractor( ...
    "SampleRate",fs, ...
    "Window",hamming(round(0.03*fs),"periodic"), ...
    "OverlapLength",round(0.02*fs), ...
    "mfcc",true, ...
    "mfccDelta",true, ...
    "mfccDeltaDelta",true, ...
    "pitch",true, ...
    "spectralCentroid",true);
features = extract(aFE,audioIn);
```

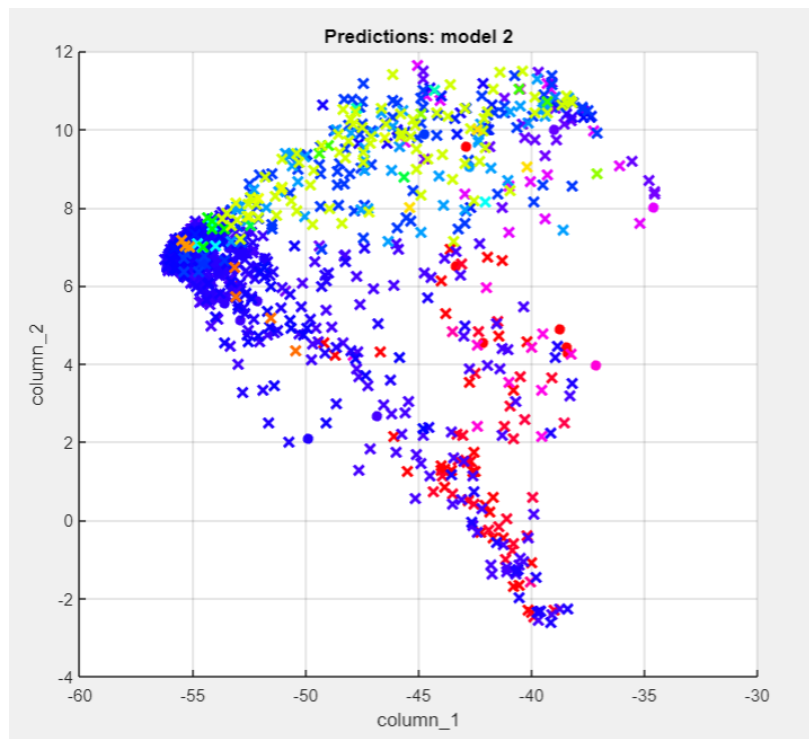
## MODELS

★ 1	Tree	Accuracy (Validation): 6.4%
Last change: Medium Tree		40/40 features
★ 2	Tree	Accuracy (Validation): 6.0%
Last change: Fine Tree		40/40 features
★ 3	Tree	Accuracy (Validation): 6.7%
Last change: Coarse Tree		40/40 features
★ 6	KNN	Accuracy (Validation): 6.7%
Last change: Fine KNN		40/40 features
★ 7	Neural Network	Accuracy (Validation): 5.8%
Last change: Narrow Neural Network		40/40 features

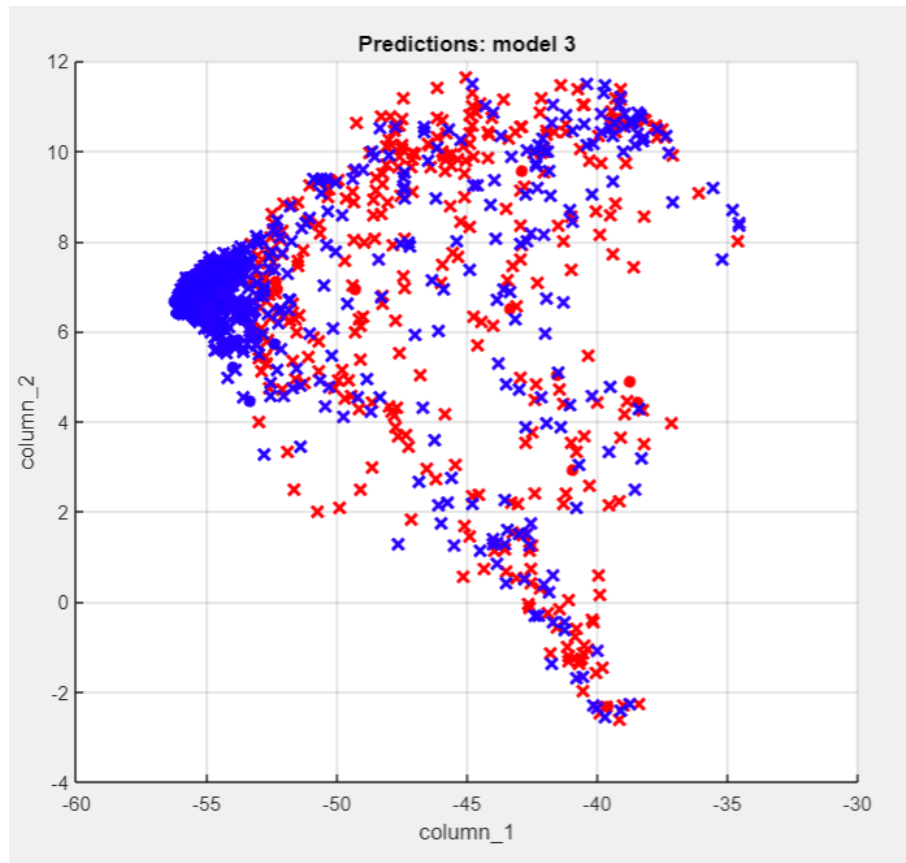
## MODEL 1: MEDIUM TREE: SCATTER PLOT



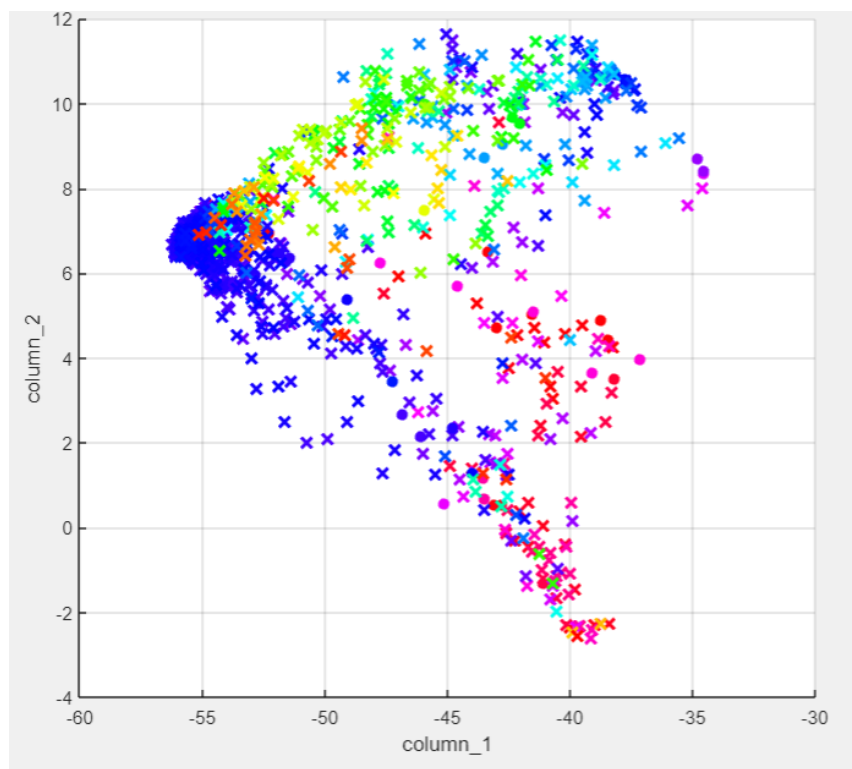
## MODEL 2: FINE TREE: SCATTER PLOT



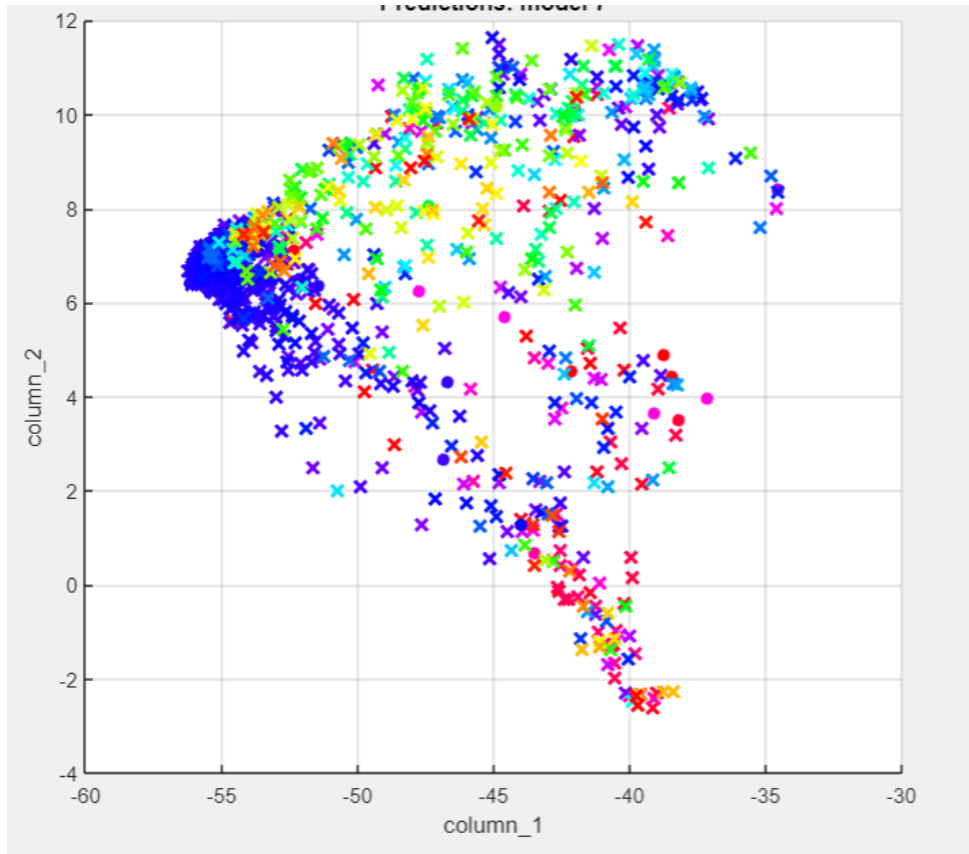
## MODEL 3: COARSE TREE: SCATTER PLOT



## MODEL 4: FINE KNN: SCATTER PLOT



## MODEL 5: NEURAL NETWORK: SCATTER PLOT



**ANS:** The best performance is shown by COARSE TREE classifier and FINE KNN classifier with an accuracy rate of 6.7%