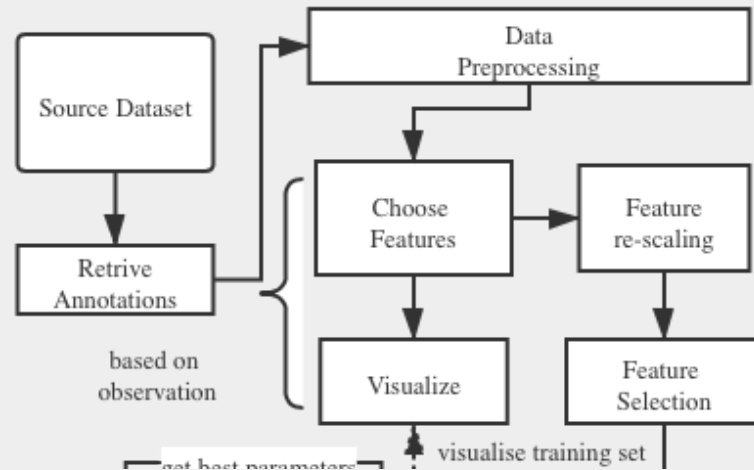# Group5-CMLS-HW1

Music Genre Classification

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Project Workflow

Based on a subset of 400 audio pieces from GTZAN dataset

- We build Model1: **KNN** Classifier, and Model2: **SVC** Classifier
- Able to predict unseen audios among **Blues, Metal, Hip-hop and Reggae**

Preprocessing

Observe the Dataset

- retrieve annotations
- check original dataset
- choose features we want

- have a look at the data
- check the quality

Genre	Rec./Exact Repetition	Unbalance	Version	Mislabelling
Blues	–	only 9 artists	–	–
Hip-hop	6	–	2	4
Metal	–	–	3	13
Reggae	3	30 % from one artist	2	1

Table 1: A Summary of the known errors in the dataset.

The Features

- 34 columns of feature
- 400 audio tracks
- 80 % for training
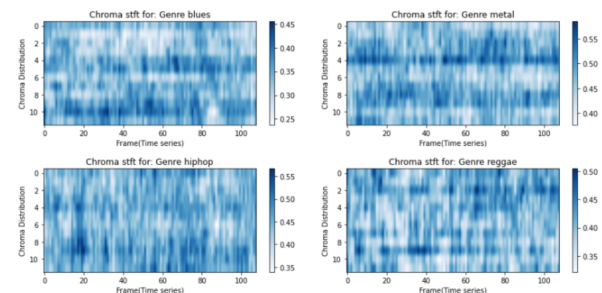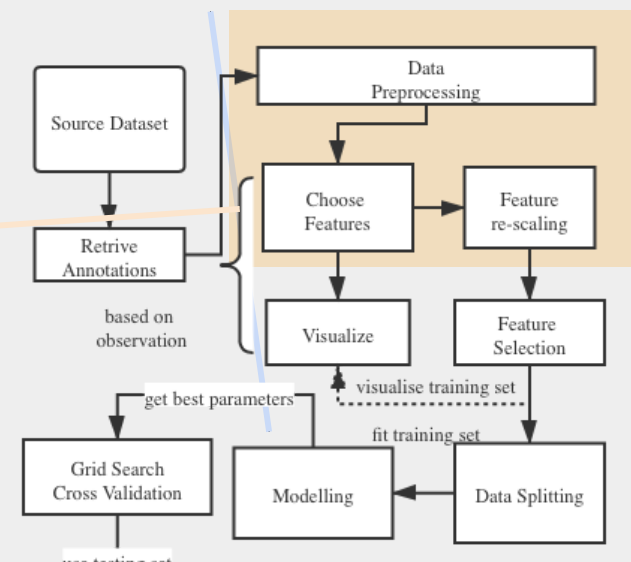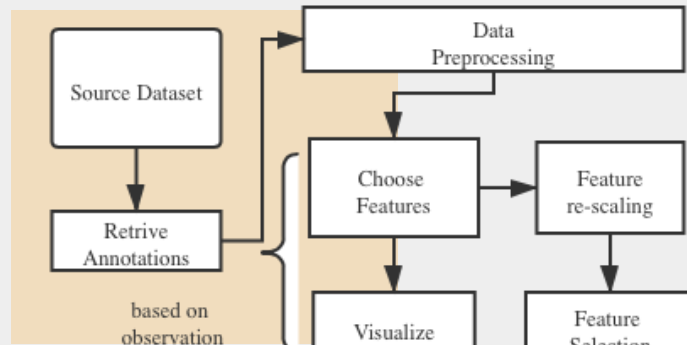- 20 % for testing
- rescaling, selection, saving

Figure 3: Short-time chromagrams for different genres.

Two Classifiers: KNN & SVC

- The process to use the classifiers: pick the right parameters --> build the classifiers -->fit with training data set

- We use K-fold (k = 10) Cross Validation and Grid Search method to optimise the parameters for those two classifiers

| Classifier	Parameters	bestScore
KNN	p:1, k:5	0.8375
SVC	'C':10, 'kernel':'rbf', 'gamma':0.001	0.797(+/-0.126)

Table 2: Grid Search to find best parameters

Results & Conclusions

- Here are two confusion matrix to represent the final testing result, separately for KNN and SVC

- Each row in the matrix is the real genre, while each column is the predicted genre category classified by the model we build

Table 3: Final Results

Classifier	Accuracy	F1 Score
KNN	0.8125	0.812
SVC	0.785	0.79
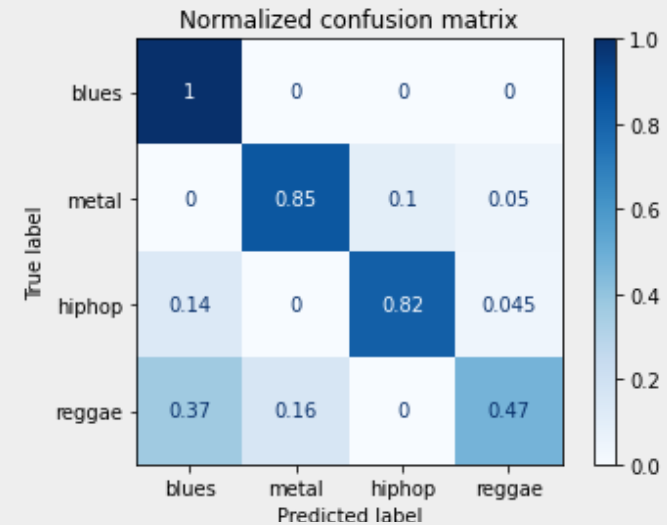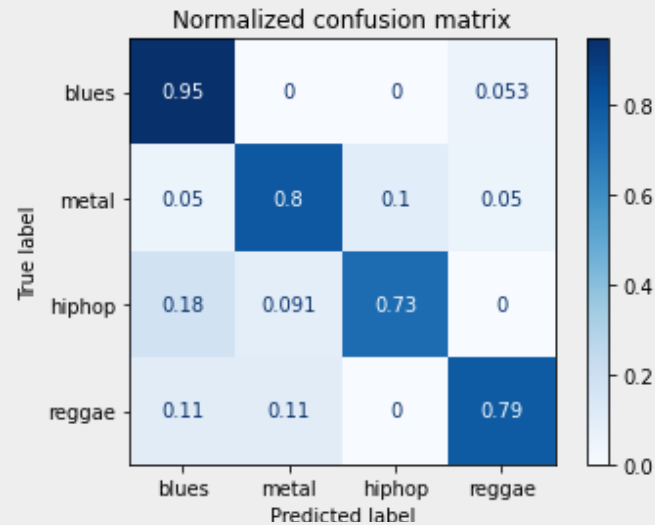
Plot 4. KNN & SVC results of Confusion Matrix

Reference

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- [7] **G. Tzanetakis and P. Cook. "Musicalgenre classification of audio signals".** In:IEEE Transactions on Speech