Music Genre Classification Using Multiple Classifiers Machine Learning Project

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Music Genre Classification Using Multiple Classifiers

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Two experimenting approaches using GridSearchCV:

Soft hyperparameter tuning:

Number of trees (default = 100)

Splitting criterion (default = Gini)

Heavy hyperparameter tuning:

► Number of trees (default = 100)

Splitting criterion (default = Gini)

► Maximum depth (default = None)

Minimum samples per leaf (default = 1)

Minimum samples per split (default = 2)

Maximum features (default = sqrt)

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Soft hyperparameter tuning:

■ Training time: 20s Accuracy: 0.760

■ Parameters: Number of trees = 1000, Splitting criterion = Gini

Heavy hyperparameter tuning:

■ Training time: 18min Accuracy: 0.760

Parameters: Exactly the same forest as in the soft hyperparameter tuning

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Modeling — Artificial Neural Network

• This is an awesome slide with very important information.

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Comparison

Model	Accuracy	F1 Score	ROC AUC
MLP	0.770	0.772	0.956
Random Forest	0.760	0.761	0.958
KNN	0.740	0.743	0.913
Decision Tree	0.530	0.532	0.759

Table: Model performance comparison.

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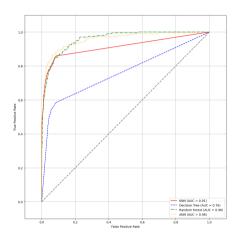


Figure: ROC Curves of the different classifiers

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Datapoint	True Label	Random Forest Prediction	KNN Prediction	Decision Tree Prediction	ANN Prediction
0	рор	hiphop	hiphop	hiphop	blues
1	рор	hiphop	hiphop	disco	hiphop
2	рор	hiphop	hiphop	hiphop	hiphop
3	metal	hiphop	hiphop	hiphop	blues
4	metal	hiphop	blues	hiphop	hiphop
5	blues	blues	blues	disco	blues
6	blues	blues	blues	country	hiphop
7	blues	hiphop	reggae	hiphop	reggae
8	classical	jazz	jazz	disco	hiphop
9	classical	jazz	jazz	country	blues
10	classical	jazz	jazz	jazz	hiphop
11	rock	hiphop	hiphop	hiphop	reggae
12	rock	hiphop	blues	hiphop	hiphop
13	rock	hiphop	reggae	hiphop	reggae

Table: Comparison of predictions from Random Forest, KNN, Decision Tree, and ANN against true labels.

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