

Music genre classification

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1. Motivation

The main motivation for choosing this subject was mutual interest in music. We wanted to find out how knowledge that was learned during this course could be used in prediction of a genre of a musical recording.

2. Research questions

The dataset we used is GTZAN dataset - containing 1000 songs across 10 genres. The songs are formatted in .wav extension. It also contains the features extracted in two .csv files.

3. Related work

Since the dataset we used in this project is public (the GTZAN dataset), there are many existing projects on the same subject on <https://www.kaggle.com> using all sorts of different approaches to the same problem. Some of them use the audio files in their predictions - we used only the extracted features contained in the .csv files of the dataset.

4. Methodology

Since the dataset is complete (no empty fields) we didn't extract any of the rows, we used the whole dataset. The columns filename and length were dropped since they in no way affect the predictions (all the files are of the same length - 30 seconds).

We used Support Vector Machines for classification. A couple of kernels were tested - polynomial, linear and rbf. F1 score was used for accuracy measurement.

5. Discussion

GridSearchCV from sklearn was used for hyperparameter optimisation. The results were in favor of polynomial and rbf kernels - which had a 0.8749 and 0.9119 f1-score respectively. The linear kernel performed the worst with a 0.76576 f1-score. We have also tried using the XGBoost classifier - which proved to be similar in performance to SVM polynomial and rbf kernels - scoring 0.89889 f1-score.

6. References

1. <https://kaggle.com>
2. <https://scikit-learn.org/stable>