

Initial Plan

Automatic analysis of musical performance

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Project Description

This project is an investigation into the feasibility of extracting a musical genre from an audio recording by utilising data mining, machine learning, and digital signal processing. Furthermore, this investigation aims to discover what performance features such as variations in dynamics, tempo and timbre are related to a machine being able to identify the genre of a piece of music.

This project will be coded in Python and utilise an audio processing package in order to carry out the extraction of features from audio files. The current plan is to utilise one of [the following packages](#) but this is subject to change. A classifier will be built by utilising an existing dataset of audio files which will then be tested on other audio files to test the accuracy.

Project Aims and Objectives

- Extract performance features from a piece of music and use an appropriate learning model to analyse them. These features include, but are not limited to:
 - Tempo
 - Articulation
 - Timbre
 - Dynamics
- Determine if a computer can interpret the genre of a piece of music
 - What are the relevant features for a computer to determine genre?
 - Is a single audio file enough information for a computer to make an accurate interpretation?
 - If the genre cannot be defined, why not?
- Build a user-friendly program to assist with the process if there is enough time after the Easter break

Work Plan

Week 1

- Finish initial plan
- Carry out background research on project

Week 2

- Begin “background” section of final report
- Begin coding back end of the program

Week 3

- Finish “background” section of final report
- Begin “introduction” section of final report

Week 4

- Finish “introduction” section of final report
- Evaluate which performance features are possible to extract

Week 5

- Begin the “approach” section of final report
- Have finished the extraction of almost all desired performance features

Week 6

- Evaluate progress and feasibility of current approach
- Begin the “implementation” section of final report

Week 7

- Finish the “approach” section of final report

Week 8

- Be able to evaluate if a computer can interpret genre using the current approach
- Determine feasibility of changing implementation if current approach could be slightly altered in order to reach desired outcome

Week 9

- Continue coding
- Begin the “implementation” section of final report

Easter break

- Have a complete program that could be submitted
- Tidy up current version of final report

Week 10

- Evaluate potential additions to the program
- Begin working on feasible additions
- Finish “implementation” section of final report

Week 11

- Finish any additions to the program
- Begin the final sections of the final report

Week 12

- Finish the final report