

Current Trends of Artificial Intelligence

Phase 1

Progress

We started this phase at the lowest level in the tree: the notes. We wanted to see if the frequency of notes in a song could help us with predicting the missing information. We created a matrix with on one axis the steps and on the other axis the octaves. Then we would read in all notes of the song and calculate how much notes of which kind where played. Afterwards we normalized the values so that it would be better representable against other songs. We use support vector classification to predict the test data after training with the training data. To train the SVC we give the note matrices and their corresponding values for all different values we need to predict (Performer, Instrument, Style, Year and Tempo). We made scatter plots (you can find these in the map plots) to visually see if there were any correlations and it was visible that some of the instruments could be classified differently due to the frequency of the notes. This is also visible in our results. Also interesting was that a lot of notes where not played in the songs, thus the matrices can be reduced so that they only contain the notes that are played.

We had some setback because our results always came back as the values of the worst possible scenario and didn't change when we changed our code. At the end we found out that our output file was read wrong in the perl script and after some modifications our code worked perfectly.

Future plans

We want to start using our tree-structure to look for frequent patterns. This will be done by searching for patterns in measures and notes. We also want to see if using contrast algorithms will give back new and/or better results.

Results

Random

Error performance (lower is better)

Performer prediction 36;33;35;36;35 => 175

Instrument prediction 31;32;33;30;32 => 158

Style prediction 30;30;31;30;32 => 153

Year prediction 927;820;748;763;507 => 3765

Tempo prediction 2260;3283.4;2795.3;2856.8;2586.6 => 13782.1

Note Frequency

Error performance (lower is better)

Performer prediction 29;29;27;29;31 => 145

Instrument prediction 20;21;21;21;21 => 104

Style prediction 24;25;24;23;23 => 119

Year prediction 532;547;498;507;539 => 2623

Tempo prediction 2662.2;2238;3114.1;2416.3;2227.6 => 12658.2

To run the code

Run the following command to install all necessary libraries:

```
pip install -r requirements.txt
```

To run the program, use command:

```
perl crossvalidate.pl .
```