Current Trends of

Artificial Intelligence

Phase 2

Progress

In this phase we focused more on the use of our tree-structure. We decided to do research towards the *Note Duration* and *Note Patterns*. For the Note Duration we constructed again a frequency matrix with all the possible note durations as a feature (i.e 16th, eighth, quarter, half…) and used this as learn our algorithm the classification. The Note Patterns is another approach, we tried in this phase. We tried to look for note patterns and there corresponded with certain artists, genres, … Before using these patterns as a feature, we filtered the patterns by occurrence and length (Top 100 and minimum length = 3) . Also we looked only for patterns within the measures.

Results

Note Frequency (Old Best Result)

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

Note Duration

Error performance (lower is better)

Performer prediction 35;34;34;33;35 => 171
Instrument prediction 20;21;21;21;21 => 104
Style prediction 24;25;24;23;23 => 119
Year prediction 532;518;498;507;539 => 2594
Tempo prediction 3223.6;2199.5;3216.9;2646.8;2451.9 => 13738.7

We noticed immediately is the same results for the Style and Instrument Prediction. After taking a look closer to the data we saw that both prediction algorithms predict for all Styles *Postbop* and instruments *ts,* which is the reason of this result.

We see a small improvement for the year predictions, but there is no general improvement.

Note Pattern

Error performance (lower is better)

Performer prediction 28;30;29;30;31 => 148
Instrument prediction 17;18;17;19;18 => 89
Style prediction 23;24;22;22;19 => 110
Year prediction 510;523;466;515;564 => 2578
Tempo prediction 2963.2;2357.9;2953.7;2796.8;2565.7 => 13637.3

This results are also interesting . We see an improvement for the Instrument,Year, Style Predictions. Certainly an improvement.

Best Results for the Moment

Error performance (lower is better)

Performer prediction 29;29;27;29;31 => 145 *(Note Frequency)*
Instrument prediction 17;18;17;19;18 => 89 *(Note Pattern)*
Style prediction 23;24;22;22;19 => 110 *(Note Pattern)*
Year prediction 510;523;466;515;564 => 2578 *(Note Pattern)*
Tempo prediction 2662.2;2238;3114.1;2416.3;2227.6 => 12658.2 *(Note Frequency)*

Future Plans

Combine all the best results in one program and try contrast pattern mining. We will also try to improve the tempo and year prediction with the use of lineair regression.

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 .