

Automatic Analysis of Music Performance Style

One fundamental problem in computational music is analysis and modeling of performance style. Last year's successful CUROP project revealed, through perceptual experiments, that players' control over rhythm is the strongest factor in the perceived quality of performance (already a publishable result). This year's project will hence investigate the computer analysis of the rhythmic component of performances in more detail, with the following aims:

- Implement and improve upon state-of-the-art beat detection methods.
- Carry out statistical analysis of rhythmic variation on a corpus of performances:
 - Train a classifier into professional/amateur performance.
 - Investigate to what extent rhythmic variations are controlled as opposed to random.
 - Devise rhythmic style signatures of various performers for style recognition and retrieval.
 - Investigate operations on rhythmic styles, e.g. apply Rachmaninoff's style to one's amateur recording.

Solving the above problems is paramount to our understanding of what makes a good performance and what, quantitatively, are the differences between professional musician's styles. Applications include: musicology, teaching, automatic performance of music, high-level editing of music.

This project requires integration of data mining, machine learning, and digital signal processing techniques, which are closely aligned with the expertise of the two supervisors: Dr Kirill Sidorov and Dr Andrew Jones. who are also experienced musicians.

Via this project, the student will learn a variety of digital signal processing and machine learning techniques and will develop enhanced MATLAB programming skills, that are increasingly in demand for graduates.

The student will work in our lab, with state-of-the-art facilities (powerful audio workstation, digital piano, audio gear). We will work collaboratively to ensure successful completion, including daily 30 minute meetings and longer weekly review meetings. The student will participate in the recently established Computational Music research sub-group. This project will contribute to longer-term development of this sub-group and foster new research avenues.

Project Start/End Dates: Any 8 week period from 13th June 2016 to September 19th 2016.

Contact/Supervisors:

- [Kirill Sidorov](#)
- [Andrew Jones](#)

To apply for a project this summer, send you CV to any of the supervisors listed above. You may also contact them for further information.

It is expected interviews will take place as soon as possible.
