Towards Analysing Big Music Data: Progress on the DML Research Project

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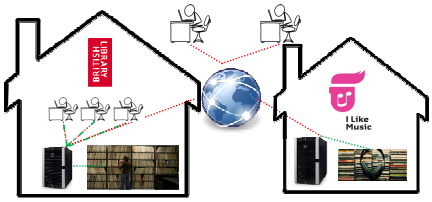
http://dml.city.ac.uk/

Joining Musicology and Data Science

- Systematic musicology research has developed as **"data oriented empirical research"**, which benefits from computational methods. However, this research has so far been limited to relatively small datasets, because of technological and legal limitations.
- In parallel, researchers in Music Information Retrieval (**MIR**) have started to **explore large datasets**, particularly for commercial **recommendation** and playlisting systems (e.g. The Echo Nest, Spotify).
- The **'Digital Music Lab – Analysing Big Music Data' (DML)** project supports music research by bridging the gap between musicology and MIR and enabling access to large music collections and powerful analysis and visualization tools.

An Infrastructure for Large-Scale Music Analysis

- Software **infrastructure** for analysing **large and heterogeneous** music collections.
- Built on **strongly parallelisable software architecture**
- **Short response times** enable exploratory research
- **Integration with existing tools** for music research
- **Accumulate derived data** and enable the deployment of new tools
- **Share** intermediate and final results as **open linked data**



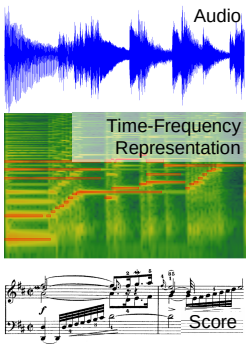
hadoop

SONIC VISUALISER
QUEEN MARY UNIVERSITY OF LONDON

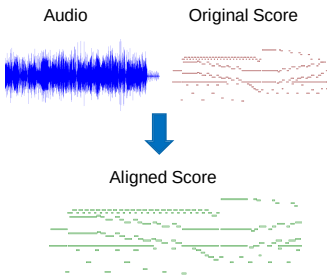
VAMP PLUGINS

Unlocking MIR Methods for Big Data

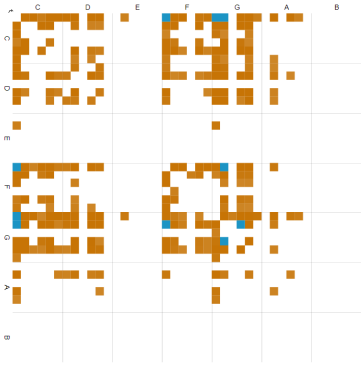
- Use of MIR methods for large-scale quantitative research
- Scalable tools for analysing music **audio**, **scores** and **metadata**
- Combination of **state-of-the-art music analysis** on audio and symbolic data
- Enable **intelligent collection-level analysis**



Automatic music transcription



Audio-to-score Alignment



Chord sequence visualisations

Use and Produce Big Music Datasets

- Access to big datasets: **British Library (>3M tracks)** and **I like Music (1M tracks)**
- Often: Access to audio data restricted by copyright
- **Derived data** can be made freely available and produced on demand for research purposes
- Automatic **transcription and alignment** with scores
- **Annotation** and linking of audio files with metadata and external resources
- Use of **open standards** such as the Music Ontology

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