THE OPEN MULTITRACK TESTBED: FEATURES, CONTENT AND USE CASES

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ABSTRACT

The Open Multitrack Testbed is an online repository of multitrack audio accessible to the public, with rich metadata annotation, a semantic database and search functionality. Two years after it first went live, the dataset is the largest and most diverse available, and still growing. An overview of the available content, some prominent features, and example uses in the field of intelligent music production are discussed.

1. INTRODUCTION

A large part of music production research is concerned with the analysis and manipulation of multitrack audio. As a consequence, there is a need for a large number of multitrack recordings for investigating recording and mixing practices, evaluating algorithms, and demonstrating new ideas. However, multitrack content is scarce, in part due to licensing issues. To address this, we have created the Open Multitrack Testbed [1], a collection of annotated multitracks with an associated website (`multitrack.eecs.qmul.ac.uk`).

In this context, a multitrack audio item, or *song*, is defined as a set of more than two streams (or *tracks*) of audio which are meant to be played alongside each other. In addition to these *tracks*, some *songs* also contain *mixes* (processed sums of the raw *tracks*) and *stems* (processed sums of a subset of these *tracks*, e.g. only the drum parts).

2. FEATURES

To quickly find suitable content, the web application includes browse and search functionality (Figures 1 and 2), to allow filtering and searching using the various metadata properties. The metadata associated with different songs, stems, mixes and tracks (Figure 3) is visualised within the application, and each item can be downloaded separately.

The database offers a SPARQL endpoint to query and insert data through HTTP requests. The infrastructure further supports user accounts and different levels of access, for instance when licenses are less liberal, and a convenient metadata input interface.

3. CONTENT

Launched in 2014, the Testbed's initial collection was taken from an internal dataset of multitrack audio content at the Centre for Digital Music, and it is still being continually expanded with locally and remotely hosted content. At the time of writing, it contains close to 600 *songs*, of which some have up to 300 individual constituent *tracks* from several *takes*, and others up to 400 mixes of the same source content.

Title	Artist	Composer	Song Type	Number of Tracks	Number of Mixes
Once More with Feeling	Traffic Experiment		studio music	63	22
Maggie May	Man About a Dog		studio music	15	36
Word Gets Around	St Vitus		studio music	12	23
Four Romantic Pieces for Violin and Piano, Op. 75: 4. Larghetto G Minor	anonymous	Antonin Leopold Dvořák	live music	4	1
Downtempo	Bravestar		studio music	26	15
Borderline	Secretariat		studio music	12	52
It Was My Fault for Waiting	Atlantis Bound		studio music	44	77
Another Day Calling	Turn Back to Spring		studio music	42	12

Figure 1: Browse interface screenshot

A wide range of metadata is supported, and included to the extent that it is available for the different items. Using established knowledge representation methods such as the Music Ontology [2] and the Studio Ontology [3], *song* attributes include title, artist, license, composer, and recording location; *track* attributes include instrument, microphone, sampling rate, number of channels, and take number; and *mix* attributes include mixing engineer, audio render format, and digital audio workstation (DAW) name and version. These properties can be used to search, filter and browse the content to find the desired audio.

4. USE CASES

With a dataset of this size and diversity, and such a wide range of metadata available, the testbed can be and has been used for various research topics including audio analysis [4], training and testing machine learning models [5] and analysis of music production practices [6].

A number of other multitrack audio resources exist, but they contain a smaller number of items, are less diverse, have ambiguous or restricted licensing, and/or provide little or no metadata. Furthermore, the Testbed uniquely has a number of songs with several mixes including DAW files containing all parameter settings [7]. Where licensing allows it, the resources are mirrored within the Testbed. For unclear or less liberal licenses, the metadata is still added to the database, but links point to third party websites.

Researchers, journals, conferences and funding bodies increasingly prefer data to be open, as it allows reproduction and extension of results. The Testbed facilitates widespread usage of a single, but large and diverse dataset, allowing for

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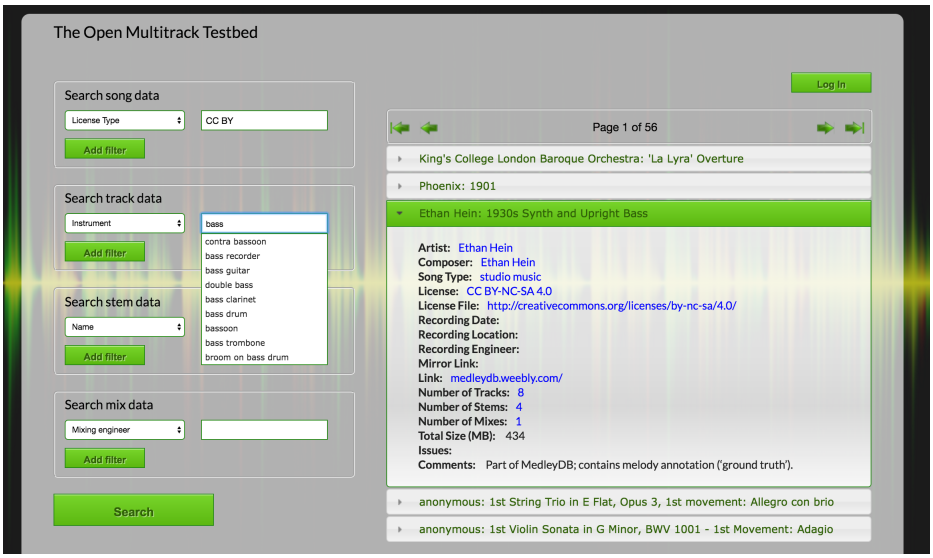

Figure 2: Search interface screenshot

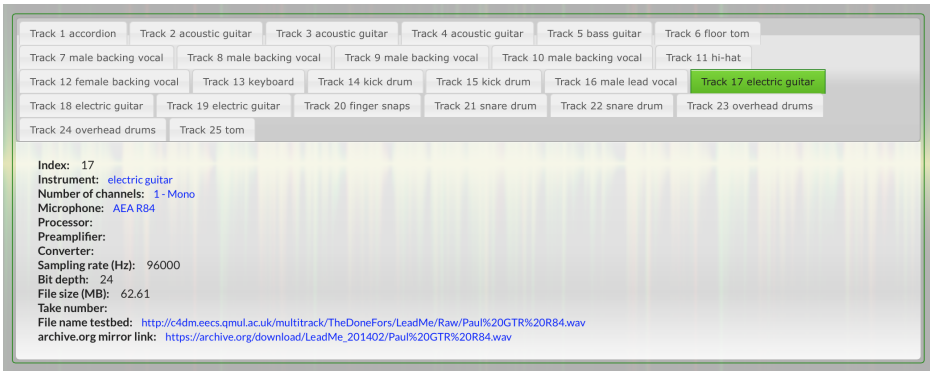

Figure 3: Track view screenshot

instance to compare different algorithms with the same data.

The authors highly welcome any use of and contributions to the Testbed.

5. REFERENCES

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