

An Analysis and Evaluation of Audio Features for Multitrack Music Mixtures

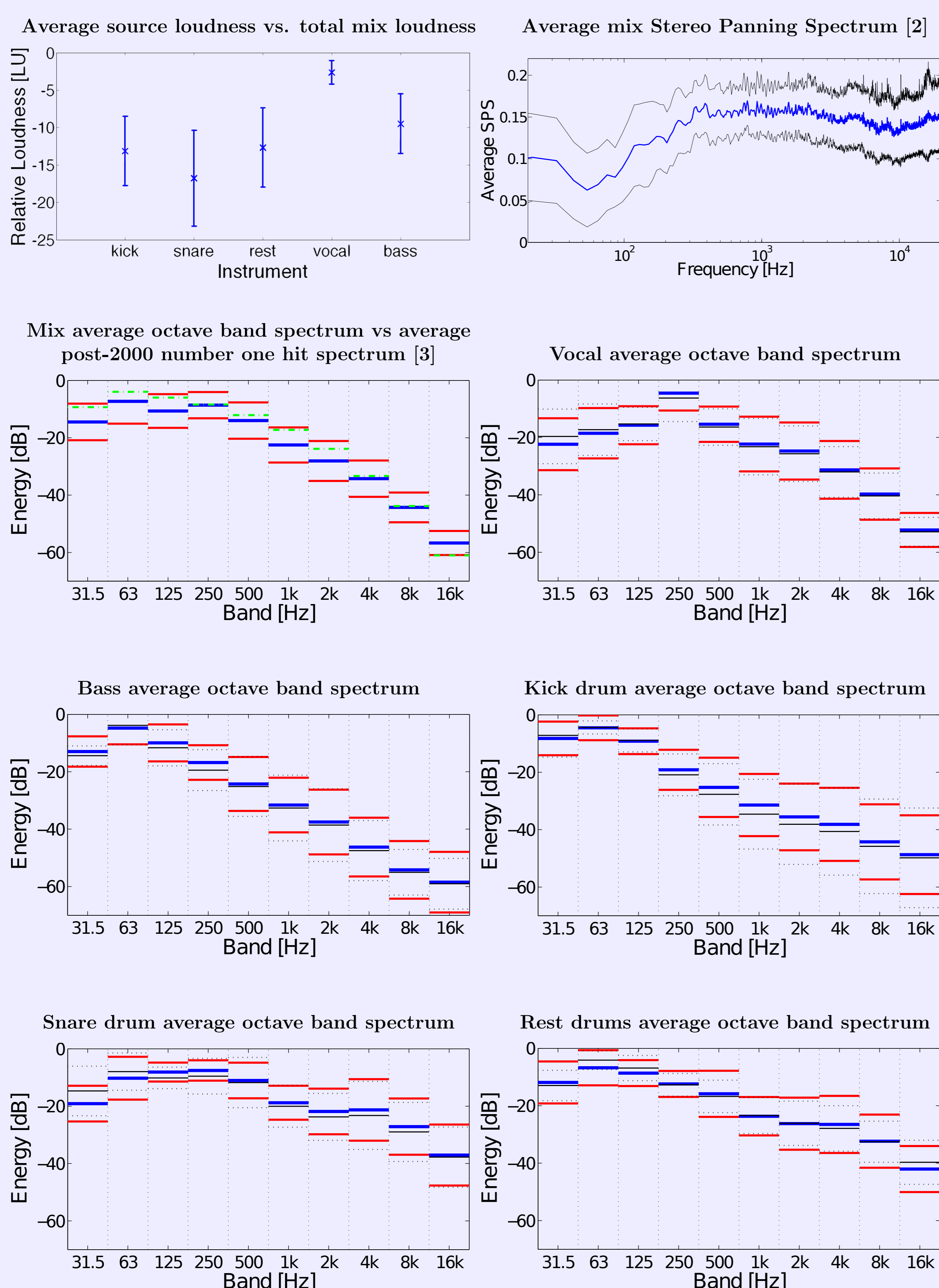
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1 Experiment

- 2 groups of 8 sound recording students each
- Analysis on common contemporary music elements, present in all 8 songs: lead vocal, bass, kick drum, snare drum, and other drums
- Analysis of variance and multiple comparison of population means on set of dynamic, spatial and spectral features
- Second verse and second chorus of each song considered

How does the mixing process alter the features of different sources and the overall mix, and how do these values vary over different instruments, different songs and different engineers?

2 Analysis and results (1)



3 Analysis and results (2)

- Standard deviation in function of song > standard deviation in function of engineer (for vast majority of features)
- Consistent decrease of low frequency and increase of crest factor for all instruments
- Consistent increase of spectral centroid for snare drum

4 Future work

- Analysis on larger body of data (see below)
- Extrapolation to all sources
- Perceptual evaluation and relation to these features: qualitative and quantitative analysis

5 Call for contributions

The Open Multitrack Testbed [1]

multitrack.eecs.qmul.ac.uk

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- Tracks and mixes for 4 songs in this work available on testbed
- Further research based on large number of songs and mixes thereof
- Dataset relies on contributions from the community: educators, students, hobbyists and professionals
- Welcoming feedback, research ideas and community-based evaluation of algorithms

6 Acknowledgements

EPSRC
Engineering and Physical Sciences
Research Council

Funded in part by the Engineering and Physical Sciences Research Council (EPSRC) grant (EP/J010375/1): "Semantic Media"

The authors would like to thank George Fazekas and Mariano Mora-Mcginity for assistance with launching the multitrack testbed [1].

[1] B. De Man, M. Mora-Mcginity, G. Fazekas, and J. D. Reiss, "The Open Multitrack Testbed," in *137th Convention of the Audio Engineering Society*, October 2014.

[2] G. Tzanetakis, R. Jones, and K. McNally, "Stereo panning features for classifying recording production style," in *Proceedings of the 8th International Society for Music Information Retrieval Conference*, 2007.

[3] P. D. Pestana, Z. Ma, J. D. Reiss, A. Barbosa, and D. A. A. Black, "Spectral characteristics of popular commercial recordings 1950-2010," in *135th Convention of the Audio Engineering Society*, 2013.