MIREX 2015 AUDIO BEAT AND DOWNBEAT TRACKING SUBMISSIONS: FK1, FK2, FK3, FK4, FK5, FK6

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ABSTRACT

We use a Hidden Markov Model (HMM) based system to infer the metrical structure from an audio signal. The system simultaneously extracts beats and downbeats, hence we submitted it for both tasks.

1. MODEL DESCRIPTION

The model structure is identical to the one published in [10]. Please see the paper for further details.

2. SUBMISSIONS

We submitted several versions of the model. All submissions use λ=100 [10], allow pattern transitions within a song and run at a framerate of 50 fps. The specific parameters of each submission are listed in Table 1. The used training sets are listed in Table 2.

3. ACKNOWLEDGMENTS

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4. REFERENCES

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Submission Code	MIREX task	# patterns	min_tempo	max_tempo	meters	training set
FK1	beat tracking	8	50	250	3/4, 4/4	D1
FK2	downbeat est.	8	50	250	2/4, 3/4, 4/4	D2
FK3	downbeat est.	8	50	250	2/4, 3/4, 4/4	D3
FK4	downbeat est.	3	66	250	3/4, 7/8, 8/8	Carnatic58
FK5	beat tracking	2	50	250	3/4, 4/4	D4
FK6	downbeat est.	8	50	250	3/4, 4/4	D5

Table 1. Overview of submitted systems and their differences

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Identifier	# files	meters	contents
D1	1614	3/4, 4/4	Ballroom [6,9], Beatles [3], Boeck [1,2], Hainsworth [7], RWC [5], Rock [12], Robbie Williams [4]
D2	958	2/4, 3/4, 4/4	Beatles [3], Boeck [1,2], Hainsworth [7], RWC [5], Rock [12], Robbie Williams [4]
D3	1465	2/4, 3/4, 4/4	Ballroom [6,9], Boeck [1,2], Hainsworth [7], RWC [5], Rock [12], Robbie Williams [4]
D4	994	3/4, 4/4	Ballroom [6,9], Boeck [1,2], Hainsworth [7]
D5	779	3/4, 4/4	Ballroom [6,9], Boeck [1,2], Hainsworth [7]
Carnatic58	58	3/4, 7/8, 8/8	Carnatic [11] without Carnatic_118 [8]

Table 2. Training datasets

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