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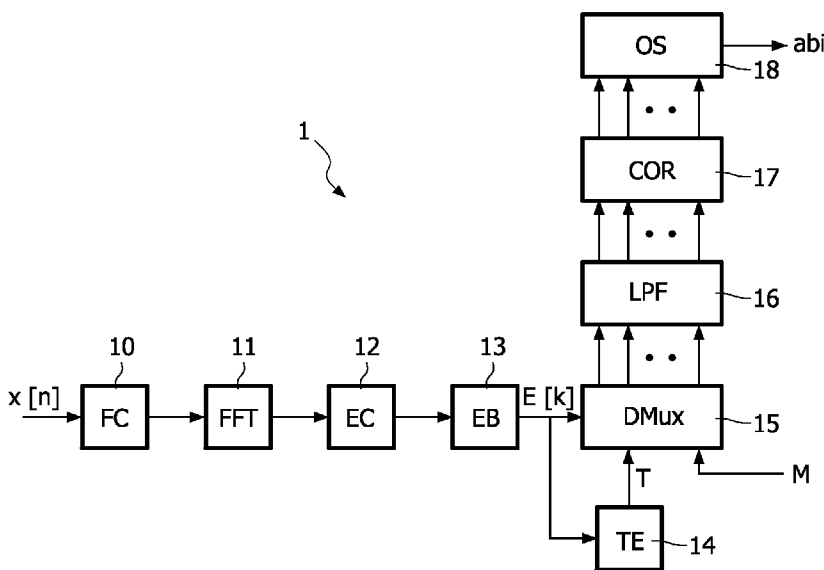
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(54) Title: AUDIO STRUCTURE ANALYSIS



(57) Abstract: A device (1) for determining accented beats in a music signal ($x[n]$) comprises: energy determination means (12) for determining the energy ($E[n]$; $E[k]$) of the music signal ($x[n]$), - segmentation means (15) for segmenting the energy on the basis of a tempo estimate (T), similarity determination means (17) for determining the similarity between the energy ($E[n]$; $E[k]$) of segments, and selecting means (18) for selecting the segment having the smallest similarity as the segment containing an accented beat. The tempo estimate (T) may be determined by external means. The energy may be determined in the time domain or in a transform domain. The similarity may be determined using cross-correlation, entropy or a distance measure. The device (1) may advantageously be used in AutoDJ apparatus.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GOTO M ET AL: "Real-time beat tracking for drumless audio signals: Chord change detection for musical decisions" SPEECH COMMUNICATION, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 27, no. 3-4, April 1999 (1999-04), pages 311-335, XP004163257 ISSN: 0167-6393 Sections 3-4 abstract; figures 1-5	1-12
A	US 6 542 869 B1 (FOOTE JONATHAN [US]) 1 April 2003 (2003-04-01) abstract; figures 1,5,7-9 paragraphs [0014], [0015] paragraphs [0092] - [0102]	1-12
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 316 712 B1 (LAROCHE JEAN [US]) 13 November 2001 (2001-11-13) abstract; figures 1-8 column 1, line 39 - column 2, line 3 column 3, line 7 - column 7, line 45 -----	1-12
A	SCHEIRER ERIC D: "Tempo and beat analysis of acoustic musical signals" JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA, AIP / ACOUSTICAL SOCIETY OF AMERICA, MELVILLE, NY, US, vol. 103, no. 1, January 1998 (1998-01), pages 588-601, XP012000051 ISSN: 0001-4966 Section II abstract; figures 1-3 -----	1-12
A	US 2005/211072 A1 (LU LIE [CN] ET AL) 29 September 2005 (2005-09-29) abstract; figures 2-11 paragraph [0006] paragraph [0034] paragraphs [0038] - [0052] -----	1-12

INTERNATIONAL SEARCH REPORT

Information on patent family members

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