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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.1 7(H))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.1 7(in))

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

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11 July 2013

(54) Title: EXTRACTION AND ANALYSIS OF AUDIO FEATURE DATA

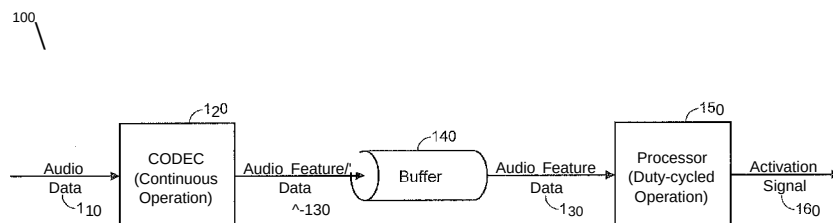


FIG. 1

(57) Abstract: A particular method includes transitioning out of a low-power state at a processor. The method also includes retrieving audio feature data from a buffer after transitioning out of the low-power state. The audio feature data indicates features of audio data received during the low-power state of the processor.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/057078A. CLASSIFICATION OF SUBJECT MATTER
INV. H04W52/02
ADD.

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)
H04W G10L

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 practicable, search terms used)

EPO-Internal , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2007/254680 AI (NASSIMI SHARY [US]) 1 November 2007 (2007-11-01) paragraph [0035] - paragraph [0038] ; figures 3,4 -----	1-3
X	GB 2 342 828 A (NOKIA MOBILE PHONES LTD [FI]) 19 April 2000 (2000-04-19) page 4, line 6 - page 5, line 9 page 7, line 32 - page 12, line 17 ----- -/- .	1-3,10, 14



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/057078

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos. :

1-18, 29-34, 37, 38

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos. :

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/057078

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	LAURA E BOUCHERON ET AL: "Hybrid Scalar/Vector Quantization of Mel-Frequency Cepstral Coefficients for Low Bit-Rate Coding of Speech", DATA COMPRESSION CONFERENCE (DCC) , 2011, IEEE, 29 March 2011 (2011-03-29), pages 103-112., XP031939956, DOI: 10.1109/DCC.2011.17 ISBN: 978-1-61284-279-0 paragraph [0004] -----	1-18
A	EP 1 978 765 A1 (BRITISH TELECOMM [GB]) 8 October 2008 (2008-10-08) paragraphs [0024] - [0033]; figures 1a, 1b, 2, 3 -----	29-34, 37, 38
A	US 2008/168189 A1 (ALDAZ LUIS [US] ET AL) 10 July 2008 (2008-07-10) paragraphs [0080] - [0092], [0130] - [0142]; figures 6, 7a-7d, 11-13 -----	29-34, 37, 38

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/057078

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007254680	A l	01-11-2007	NONE

GB 2342828	A	19-04-2000	AU 6340299 A 01-05-2000
			DE 69913976 D l 05-02-2004
			DE 69913976 T2 09-12-2004
			EP 1121686 A l 08-08-2001
			GB 2342828 A 19-04-2000
			W0 0022610 A l 20-04-2000

EP 1978765	A l	08-10-2008	NONE

US 2008168189	A l	10-07-2008	NONE

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims : 1-18

A method comprising: transitioning out of a low-power state at a processor; and after transitioning out of the low-power state, retrieving audio feature data from a buffer, the audio feature data indicating features of audio data received during the low-power state of the processor.

2. claims : 19-23

A method comprising: receiving a frame of audio data at a coder/decoder (CODEC); extracting audio feature data from the frame of audio data; and storing the extracted audio feature data in a buffer to be accessible by a duty-cycled processor during an active state of the duty-cycled processor.

3. claims : 24-28, 35, 36

An apparatus, comprising: a processor's plurality of filters configured to filter one or more frames of audio data to produce energies of filtered audio data independent of whether the processor is in a low-power state or in an active state; a converter configured to generate audio feature data based on the energies of the filtered audio data; and a transformer configured to apply a transform function to the audio feature data to generate transformed data, wherein, the processor is configured to perform one or more operations on the transformed data after transitioning out of the low-power state to the active state.

4. claims : 29-34, 37, 38

An apparatus comprising: a processor configured to dynamically switch between operating in a first mode and operating in a second mode based on an application context of the processor; retrieving audio feature data from a buffer after transitioning out of a low-power state, the audio feature data indicating features of audio data received by a coder/decoder (CODEC) while the processor is in the low-power state; and analyzing the audio feature data, wherein a ratio of CODEC activity to processor activity in the first mode is greater than a ratio of CODEC activity to processor activity in the second mode.

5. claims : 39-44

A method comprising receiving sound data at a first component of an electronic device; performing, at the first

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

component, at least one signal detection operation on the sound data; and selectively activating a second component of the electronic device based on a result of the at least one signal detection operation, wherein the second component when active consumes more power at the electronic device than the first component when active.
