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**Datasheet for the decision
of 2 June 2017**

Case Number: T 1635/11 - 3.4.01

Application Number: 09152359.7

Publication Number: 2088587

IPC: G10L19/14

Language of the proceedings: EN

Title of invention:

Open-loop pitch processing for speech coding

Applicant:

Samsung Electronics Co., Ltd.

Headword:

Relevant legal provisions:

RPBA Art. 13(1), 15(3)

EPC Art. 84, 123(2), 76(1)

Keyword:

Late-filed request - request clearly allowable (no) - admitted (no)

Decisions cited:

Catchword:



Beschwerdekammern
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Chambres de recours

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Case Number: T 1635/11 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 2 June 2017

Appellant: Samsung Electronics Co., Ltd.
(Applicant) 129, Samsung-ro
Yeongtong-gu
Suwon-si, Gyeonggi-do, 443-742 (KR)

Representative: Appleyard Lees IP LLP
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 24 January 2011
refusing European patent application No.
09152359.7 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman G. Assi
Members: T. Zinke
J. Geschwind

Summary of Facts and Submissions

- I. The examining division refused European patent application No. 09 152 359.

In its decision the examining division held that the independent claims of a main request then pending did not meet the requirements of Art. 84, 123(2) and 76(1) EPC. The examining division further held that the independent claims of an auxiliary request then pending also did not meet the requirements of Art. 123(2) and 76(1) EPC.

- II. The appellant (applicant) filed an appeal against the decision.

With the statement setting out the grounds of appeal, the appellant requested that the decision be set aside and that a patent be granted on the basis of an enclosed set of claims according to a main request.

- III. At the appellant's request, a summons to attend oral proceedings was issued.

- IV. In a communication pursuant to Art. 15(1) RPBA, objections under Art. 123(2), 76(1), 83 and 84 EPC were raised against the main request.

- V. In reply, the appellant withdrew the main request then on file and submitted amended claims according to a new sole main request. The appellant also requested the introduction of two documents (US-A-5,983,173 and US-A-5,974,377) into the appeal proceedings. Moreover, the appellant provided arguments with regard to the admissibility of the new amended claims and to the basis of the amendments.

Further, the appellant informed the Board that the representative would not attend the oral proceedings and requested a final decision based on the pending main request and the submitted arguments.

- VI. The oral proceedings took place as scheduled in the absence of the appellant.
- VII. Claim 1 of the pending main request reads as follows:

"1. A method for processing, by an open-loop search, four open lag candidates k_i of a current frame to select a final pitch lag T_{op} for CELP encoding of an input speech signal (211), the method comprising: applying a high-pass filter (215) to the input speech signal (211) to generate a high-pass filtered speech signal; applying a perceptual weighting filter (219) to the high-pass filtered speech signal to generate a weighted input speech signal; determining whether at least one frame of a plurality of previous frames of the input speech signal (211) is voiced or unvoiced; determining a neighbourhood defined by ± 8 of a previous pitch lag of the at least one frame of the plurality of previous frames; calculating four maxima of pitch lag correlation values, C_k , one for each range of k_i , where $i= 1$ to 4, using the weighted input speech signal $s_w(n+n_m)$ and

$$C_k = \sum_{n=0}^{79} s_w(n_m + n) s_w(n_m + n - k)$$

where $n=0$ to 79 and n_m defines the location of this signal on the first half frame or the last half frame and k_1 is between 17 to 33, k_2 is between 34 to 67, k_3

is between 68 to 135, and k_4 is between 136 to 145, and wherein each one of the plurality of pitch lag correlation values corresponds to each one of the plurality of pitch lag candidates; normalising each maxima by dividing Ck_i , $i = 1$ to 4 by:

$$\sqrt{\sum_n s_w^2(n_m + n - k)},$$

selecting a delay k_I by maximising the four normalized correlations,
generating a weighting factor (D) for each one of the plurality of pitch lag candidates for the current frame wherein D is 1.0, 0.85 or 0.65 depending on whether the previous frame is unvoiced, the previous frame is voiced and k_i is in the neighbourhood, defined by ± 8 , of the previous pitch lag or the previous two frames are voiced and k_i is in the neighbourhood, defined by ± 8 , of the previous two pitch lags; and selecting the final pitch lag value T_{op} by correcting k_I to k_i , if $i < I$, k_i is within $[k_I/m-4, k_I/m+4]$, $m=2,3,4,5$ and $k_i > k_I 0.95^{I-i} D$."

Claim 2 is a correspondingly formulated independent claim for a speech processor.

Reasons for the Decision

1. The appeal is admissible.
2. Admissibility of the pending main request (Art. 13(1) RPBA)
 - 2.1 The amended claims of the pending main request were filed in response to the communication of the Board under Art. 15(1) RPBA.

2.2 Under Art. 13(1) RPBA, *"Any amendment to a party's case after it has filed its grounds of appeal ... may be admitted and considered at the Board's discretion"*.

In accordance with established jurisprudence of the boards of appeal (cf. Case Law of the Boards of Appeal of the EPO, 8th edition, July 2016, section IV.E.4.4, *"Criteria for consideration of amended claims"*, pages 1151-1160), *"As a rule, the boards' decisions should be based on the issues in dispute at first instance, which does not rule out the admission of new submissions, but does subject it to the fulfillment of certain criteria, given that no entirely "fresh case" should be created on appeal Thus, in addition to the factors referred to in Art. 13(1) RPBA, the following criteria may ... likewise be decisive: there must be sound reasons for filing a request at a late stage in the proceedings, as may be the case where amendments are occasioned by developments during the proceedings or where the request addresses still outstanding objections. The amendments must be prima facie clearly allowable, ..."*, i.e. it must be immediately apparent to the board that the amendments made successfully address the issues raised, without giving rise to new ones.

2.3 In the present case, the appellant amended the claims with detailed features taken from the originally filed description describing the particular algorithm for determining a pitch lag value. Since the Board had raised an objection in its communication under Art. 15(1) RPBA that the pitch lag determination as claimed in the claims then pending was too general as compared to the disclosure of the originally filed application and the earlier application, the amendments made could

be considered as a sound reason for filing amended claims at a late stage in the proceedings.

2.4 However, the amendments made give rise to new objections under Art. 84 EPC. For instance, attention is drawn to the following points, the list not being exhaustive:

- The last feature actually describes four intervals " $[k_I/m-4, k_I/m+4]$ ", since " $m= 2,3,4,5$ ". It is however unclear, whether k_i should be within each of them or not.
- The summation in the first equation for C_k is from " $n=0$ to 79 ". Moreover, in said equation, " n_m defines the location of this signal on the first half frame or the last half frame". Since in the revised claim there is no restriction to the frame size, it is unclear, how n_m should be chosen, and why the summation is from $n=0$ to 79 .
- The term "*four open lag candidates*" would not to make sense; probably, it should read "*four pitch lag candidates*".
- The wording of the claim does not clearly specify, whether the final pitch lag value T_{op} is equal to the finally determined (or corrected) k_I or k_i or might be a different value selected on the basis of the finally determined values k_I or k_i .

These features being directly derived from pages 25 and 26 of the originally filed earlier application, it is not apparent, how they could be clarified.

2.5 Furthermore, the amendments made do not overcome the objections raised under Art. 123(2) and 76(1) EPC in the communication according to Art. 15(1) RPBA.

The original description of the earlier application describes on pages 9 to 73 and Figures 1 to 7 in a very detailed way a particular speech encoder and a corresponding decoder, each comprising a plurality of interconnected blocks for, inter alia, sampling the input speech signal in 20 ms frames with 160 samples each, filtering the sampled signal, determining linear prediction coefficients (LPC), determining line spectral frequencies (LSF), estimating a pitch lag, determining adaptive codebook indices, determining adaptive codebook gains, determining fixed codebook indices, determining fixed codebook gains, quantizing the LSF coefficients, the respective indices and respective gains, arranging the quantized bits etc. for five particular encoding rates. It is also disclosed in detail how the blocks should be adapted in order to take care of the different restrictions imposed by the different encoding rates.

Throughout the examination proceedings and also during the appeal proceedings, the appellant, however, filed independent claims according to the various requests submitted, said claims concerning a method and a speech processor for processing a plurality of pitch lag candidates and having a more generic wording than that originally disclosed. The appellant indeed argued that a person skilled in the art would understand that not only the complete speech encoder was disclosed but also each block on its own.

As objections had been made by the examining division as well as the Board in the communication under Art.

15(1) RPBA against the generic wording relied upon, the appellant, with its pending main request, tried to overcome the raised objections by claiming the exact algorithm as disclosed on original page 25, last paragraph and page 26, lines 1 to 15.

However, the detailed description of said algorithm reveals the presence of features that also refer to other blocks, for instance the frame size of 20 ms with 160 samples which is used in the complete speech encoder embodiment.

Hence, said block described on pages 25, last paragraph and page 26, lines 1 to 15 cannot be understood as an independent component of the complete speech encoder as described on pages 9 to 76. Therefore, by not claiming the other blocks of the speech encoder the requirements of Art. 123(2) and 76(1) EPC are not met.

2.6 Since the amendments made to the revised claim set give rise to new objections under Art. 84 EPC and do not successfully meet the objections raised under Art. 123(2) and 76(1) EPC, the pending main request is not prima facie clearly allowable.

2.7 For these reasons, the Board did not admit the pending main request into the appeal proceedings in accordance with Art. 13(1) RPBA.

3. Documents US-A-5,983,173 and US-A-5,974,377

The new documents filed together with the pending main request were submitted as evidence for the common general knowledge of a person skilled in the art in order to overcome a Board's objection under Art. 83 EPC

as mentioned in the communication under Art. 15(1) RPBA.

Since the pending main request was not admitted into the proceedings for the reasons mentioned above, issues related to Art. 83 EPC are not relevant for the present decision and can be disregarded.

4. Appellant absent from oral proceedings

According to established case law (cf. Case Law of the Boards of Appeal of the EPO, 8th edition, July 2016, section IV.E.4.2.6 d), "*Applicant (proprietor) absent from oral proceedings*", pages 1137-1138), an appellant filing amended claims in response to a Board's communication under Art. 15(1) RPBA has to expect that the admissibility of the newly filed claims will be considered during the oral proceedings.

For this reason, in the present case, the appellant refraining from participating at the oral proceedings de facto renounced to submit its comments orally, if any. In accordance with the provisions of Art. 15(3) RPBA, the appellant was then treated as relying only on its written submissions.

Since the pending main request was not admitted into the proceedings and all previous requests had been withdrawn, there were no further requests on file, so that the appeal had to be dismissed.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

The Registrar:

The Chairman:



R. Schumacher

G. Assi

Decision electronically authenticated