Appeal decision

Appeal No. 2018-17415

Appellant SONY CORPORATION

Patent Attorney Sakai International Patent Office

The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2017-199247, entitled "LOGICAL INTRA-MODE NAMING IN HEVC VIDEO CODING" (the application published on February 15, 2018, Japanese Unexamined Patent Application Publication No. 2018-26870) has resulted in the following appeal decision.

Conclusion

The appeal of the case was groundless.

Reason

No. 1 History of the procedures

The application is a divisional application filed on October 13, 2017 from Japanese Patent Application No. 2016-203275 filed on October 17, 2016, which is a divisional application from Japanese Patent Application No. 2015-216616 filed on November 4, 2015, which is a divisional application from Japanese Patent Application No. 2014-18483 filed on February 3, 2014, which is a divisional application from Japanese Patent Application No. 2013-19866 filed on January 17, 2013 (priority claim under the Paris Convention, January 20, 2012, United States, November 12, 2012, United States), and the history of the procedures is as follows.

| | |
|---|---|
| October 30, 2017 | : Written amendment |
| Dated August 1, 2018 | : Notice of reasons for refusal |
| August 21, 2018 | : Submission of written opinion and Written amendment |
| Dated September 18, 2018 | : Notice of reasons for refusal (final) |
| October 11, 2018 | : Submission of written opinion and Written amendment |
| Dated October 31, 2018 | : Decision to Dismiss the Amendment and Examiner's decision of refusal |
| December 27, 2018 | : Appeal against the examiner's decision of refusal and |

Written amendment
January 31, 2019 : Reconsideration report

No. 2 Decision to dismiss amendment on the written amendment dated December 27, 2018
[Conclusion of Decision to Dismiss Amendment]
The amendment dated December 27, 2018 shall be dismissed.

[Reason]
1 Details of the Amendment

The written amendment dated December 27, 2018 (hereinafter, referred to as "The Amendment") is to amend Claims 1 to 12 of the scope of claims which have been amended by the amendment dated August 21, 2018, to Claims 1 to 12 of the scope of claims according to the Amendment, and the Amendment includes amended matters amending Claim 7 before the Amendment to Claim 7 after the Amendment (underlines indicate amended parts).

(Claim 7 before the Amendment)

In an image processing device, a method for performing intra-prediction, comprising:

a step of, when both a first intra-prediction mode to a left adjacent block adjacent to the left side of a block performing the intra-prediction and a second intra-prediction mode to an upper adjacent block adjacent on the block are direction prediction modes in a first direction, setting the direction prediction mode in the first direction, a direction prediction mode in a second direction adjacent in the first direction, and a direction prediction mode in a third direction adjacent in the first direction and different from the second direction, as intra-prediction modes that are candidates for the block;

a step of selecting an intra-prediction mode used when performing intra-prediction to the block from the set direction prediction mode in the first direction, the direction prediction mode in the second direction, and the direction prediction mode in the third direction;

a step of performing the intra-prediction to the block to generate a prediction image to the block by using the selected intra-prediction mode; and

a step of decoding the block to generate a decoded image by using the generated prediction image.

(Claim 7 after the Amendment)

In an image processing device, a method for performing intra-prediction, comprising:

a step of, when both a first intra-prediction mode to a left adjacent block adjacent to the left side of a block performing the intra-prediction and a second intra-prediction mode to an upper adjacent block adjacent on the block are direction prediction modes in a first angular direction, setting a prediction in the first angular direction, a prediction in a second angular direction adjacent in the first angular direction, and a prediction in a third angular direction adjacent in the first angular direction and different from the second angular direction, as intra-prediction modes that are candidates for the block;

a step of selecting an intra-prediction mode used when performing intra-prediction to the block from the set prediction in the first angular direction, the prediction in the second angular direction, and the prediction in the third angular direction;

a step of performing the intra-prediction to the block to generate a prediction image to the block by using the selected intra-prediction mode; and

a step of decoding the block to generate a decoded image by using the generated prediction image.

2. Conformance of the Amendment

(1) Purpose of the Amendment

The amendment relating to Claim 7 is to amend the description "a direction predication mode in the first (second, third) direction" before the Amendment to the description "a prediction in a first (second, third) angular direction" after the Amendment.

The amendment is for the purpose of limiting "a direction" relating a prediction to "an angular direction" and making it a more specific concept by changing "a direction prediction mode in a direction" before the amendment to "a prediction in an angular direction", and clarifying the description "setting a direction prediction mode" "as an intra-prediction mode" before the amendment as "setting a direction in an angular direction" as "an intra-prediction mode". In consideration of the above matters, it can be said that the amendment is applicable to restrict the scope of claims.

Then, none of the amendments changes the field of industrial application and the problem to be solved of the invention described in Claim 7 before the Amendment and the invention described in Claim 7 after the Amendment, and it can be said that the two are identical, so that the amendment relating to Claim 7 falls under the provisions of

Article 17-2 (5)(ii) of the Patent Act.

(2) Regarding the scope and unity of the amendment

The specification, the scope of claims, or drawings originally attached in the application describe the following matters (all of them will be collectively called the specification and the like hereinafter). (The underlines were added by the body for the purpose of emphasis.)

"[0010]

The method of the present invention can be used to simplify the fast intramode determination algorithm. Since the mode provides a clear link (relationship) between the number (name) and the angular direction, it is easy to apply various fast mode determination (FMD) algorithms such as utilizing hierarchical techniques. In addition, the method can facilitate or simplify other algorithms, such as acquiring neighborhood and vertical modes to simplify an algorithm, such as the three MPM algorithms. Therefore, utilizing the association between the logical intramode name and the angular direction allows for both decision logic and simplification of the look-up table, or removal of a particular look-up table".

"[0019]

(4) Since the mode number in the present invention indicates the angle, the design of fast mode determination for a real-time encoder becomes much easier. A rough decision can be reached quickly; for example, the low resolution of the direction can be tested first, and based on the result, only the mode close to the optimum mode can be tested in the second stage".

"[0038]

7A and 7B show exemplary embodiments that determine 3 MPMs that are used in both encoders and decoders to assist in coding and decoding of intra-prediction modes. In determination 150, if the left neighborhood PU is intra-encoded (mode), the value iLeftIntraDir is set to the intra-prediction mode of the left-neighbor PU in block 152, otherwise in block 154, the iLeftIntraDir is set to DC. In determination 156, if the upper neighborhood PU is intracoded, in block 158, the value iAboveIntraDir is set to the intraprediction mode of the upper neighborhood PU, otherwise in block 160 the iAboveIntraDir is set to DC. Using iLeftIntraDir and iAboveIntraDir (162), if they are not equal in block 164, then in block 166 any one is checked for a plane.

(omitted)

Returning to block 164, if the iLeftIntraDir is equal to the iAboveIntraDir, in block 176

whether the iLeftIntraDir is angled or not is checked. In block 178, MPM0 is set to a plane, MPM1 is set to DC, and MPM2 is set to vertical for a non-angled iLeftIntraDir. For an angled iLeftIntraDir, in block 180, MPM0 is set to iLeftIntraDir, MPM1 is set to iLeftIntraDir-δ, and MPM2 is set to iLeftIntraDir + δ, where the value of δ is 2 for 4x4 PU in HM5.0 and 1 for the rest of the PU size. Likewise, a person skilled in the art will appreciate that different values can be used without departing from the teachings of the present invention".

According to the descriptions of the specification and the like, since the above amended matters are especially based on the descriptions of [0010] and [0038], the amendment relating to Claim 7 is made within a range of the matters described in the specification and the like as of the filing of the present application, and falls under the provisions of Article 17-2(3) of the Patent Act.

Further, since the amendment relating to Claim 7, as described above, is applicable to restrict the scope of claims, it can be said that the invention described in Claim 7 before the Amendment and the invention described in Claim 7 after the Amendment satisfy the requirements of the unity of invention, and the amendment relating to Claim 7 falls under the provisions of Article 17-2(4) of the Patent Act.

(3) Judgment on independent requirements for patentability

As described above, since the amendment relating to Claim 7 is applicable to restrict the scope of claims, it will be examined below whether or not the invention described in Claim 7 after the Amendment falls under Article 126(7) of the Patent Act which is applied mutatis mutandis in the provisions of Article 17-2(6) of the Patent Act (whether or not it be patented independently at the time of the patent application).

(3-1) The Amended Invention

The invention described in Claim 7 after the Amendment (hereinafter, referred to as "the Amended Invention") is as follows. (A symbol of each constitution of the Amended Invention was given by the body for the purpose of dividing the descriptions of claims, and hereinafter, the descriptions of claims are referred to the matters specifying the invention A to the matters specifying the invention E using the symbols.)

(The Amended Invention)

A In an image processing device, a method for performing intra-prediction, comprising:

B1 when both a first intra-prediction mode to a left adjacent block adjacent to the left

side of a block performing the intra-prediction and a second intra-prediction mode to an upper adjacent block adjacent on the block are direction prediction modes in a first angular direction,

B2 a step of setting a prediction in the first angular direction, a prediction in a second angular direction adjacent in the first angular direction, and a prediction in a third angular direction adjacent in the first angular direction and different from the second angular direction, as intra-prediction modes that are candidates for the block;

C a step of selecting an intra-prediction mode used when performing intra-prediction to the block from the set prediction in the first angular direction, the prediction in the second angular direction, and the prediction in the third angular direction;

D a step of performing the intra-prediction to the block to generate a prediction image to the block by using the selected intra-prediction mode; and

E a step of decoding the block to generate a decoded image by using the generated prediction image.

(3-2) Described matters in Cited Documents

A Cited Document 1

Cited Document 1 cited in the reasons for refusal stated in the examiner's decision, that is Wei-Jung Chien et al., Parsing friendly intra mode coding, Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 6th Meeting: Torino, IT, 14-22 July, 2011, Document: JCTVC-F459, July, 2011, pp. 1-5, describes the following matters (the underlines were added by the body for the purpose of emphasis).

(A) "Abstract

This contribution presents a coding method for intra prediction mode. In the current HEVC Test Model, different codeword binerizations are defined based on the intra prediction modes of neighboring partitions for the luma intra prediction mode coding."

(B) "1 Introduction

In the current HEVC Test Model (HM 3.0), the parsing of luma intra prediction mode (intra_pred_mode) depends on intra_pred_mode of the neighboring blocks A and B, as shown in Figure 1. In the current Working Draft[2], candidate mode list (candModeList) and number of candidate modes (NumMPMC) are derived from the intra_pred_mode of the neighboring blocks A and B (candIntraPredModeA and candIntraPredModeB) as follows:

- If both candIntraPredModeN are not available, then the value 2 is assigned to candModeList[ 0 ] and NumMPMC and is set equal to 1.
- Otherwise, if only one candIntraPredModeN is available or if both candIntraModeN are the same, then this candIntraPredModeN is assigned to candIntraMode[ 0 ] and NumMPMC and is set equal to 1.
- Otherwise, both candIntraPredModeN are assigned to the candidate modes list with the smaller of the two candidates at candModeList[ 0 ] and the larger at candModeList[ 1 ] and NumMPMC and is set equal to 2. The parsing throughput is affected due to necessity of prior knowledge of intra prediction modes of neighboring blocks A and B (candIntraPredModeA and candIntraPredModeB)."

(C) "2 Proposed Algorithm
In this proposal, the number of candidate modes (NumMPMC) is a constant; i.e., NumMPMC does not change, regardless of whether candIntraPredModeA and candIntraPredModeB are different or not. Also, the number of available chroma intra prediction modes is also constant. With the proposed algorithm, the parsing process can be performed without accessing the neighboring intra prediction modes.

3.1 Luma intra prediction mode

In luma intra prediction, the proposed algorithm uses three most probable candidate modes (MPMC); i.e., NumMPMC=3. The derivation of MPMC is as follows:
– If both candIntraPredModeN are not available, then the value 2 is assigned to candModeList[ 0 ], the value 0 is assigned to candModeList[ 1 ], and the value 1 is assigned to candModeList[ 2 ],
– Otherwise, if both candIntraPredModeN are the same, then this candIntraPredModeN is assigned to candModeList[ 0 ], and candModeList[ 1 ] and candModeList[ 2 ] are derived by applying the following procedure with Tables 3.1, 3.2, and 3.3.
– If intraPredModeNum is equal to M, PredModeMinus1_M[candModeList[ 0 ] is assigned to candModeList[ 1 ], and PredModePlus1_M[candModeList[ 0 ] is assigned to candModeList[ 2 ], where M represents intraPredModeNum."

(D) "

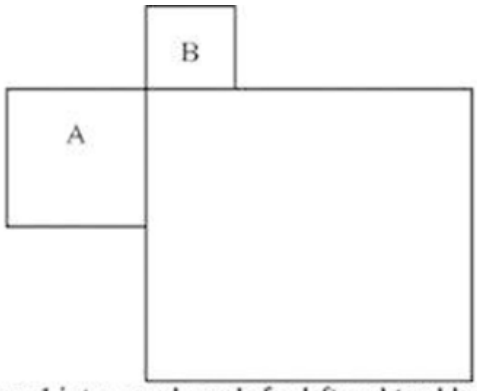



**Figure 1 intra_pred_mode for left and top blocks**

"

(E) "

Table 3.3 Candidate mode mapping when intraPredModeNum is equal to 35

| intraPredMode | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PredModeMinus1_35 | 21 | 30 | 0 | 26 | 19 | 23 | 25 | 28 | 32 | 6 | 18 | 21 | 22 | 24 | 27 | 29 | 31 | 33 |
| PredModePlus1_35 | 22 | 29 | 1 | 18 | 20 | 24 | 9 | 27 | 31 | 33 | 19 | 20 | 23 | 25 | 26 | 28 | 30 | 32 |

| intraPredMode | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PredModeMinus1_35 | 3 | 10 | 4 | 11 | 0 | 12 | 5 | 13 | 14 | 7 | 15 | 1 | 16 | 8 | 17 | 9 | 0 |
| PredModePlus1_35 | 10 | 4 | 11 | 0 | 12 | 5 | 13 | 6 | 3 | 14 | 7 | 15 | 1 | 16 | 8 | 17 | 1 |

"

(F) "3.2 Chroma intra prediction mode

In the proposed method, there are six available chroma intra prediction modes (IntraPredModeC) that can be signaled. Two modes, luma signal prediction and reuse of the luma intra prediction mode, remain unchanged. For the other four modes, two choices are added, which are the adjacent intra prediction modes (Table 3.2 and Table 3.3) and the perpendicularly adjacent intra prediction modes (Table 3.4 and Table 3.5)."

B Document referred to in Cited Document 1 (reference)

Thomas Wiegand et al., WD3: Working Draft 3 of High-Efficiency Video Coding, Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 5th Meeting: Geneva, CH, 16-23 March, 2011, Document: JCTVC-E603, 2011 June, (hereinafter, referred to as the reference), which is referred to as "the present working draft [2]" in B above of Cited Document 1, describes the following matters.

"8.3 Decoding process for coding units coded in intra prediction mode

Inputs to this process are:

- a luma location ( xB, yB ) specifying the top-left luma sample of the current coding unit relative to the top-left luma sample of the current picture,

...

Output of this process is:

- a modified reconstructed picture before deblocking filtering.

...

8.3.1 Derivation process for luma intra prediction mode

...

Table 8-1 specifies the value for the intra prediction mode and the associated names.

**Table 8-1 – Specification of intra prediction mode and associated names**

| Intra prediction mode | Associated names |
|---|---|
| 0 | Intra_Vertical |
| 1 | Intra_Horizontal |
| 2 | Intra_DC |
| Otherwise (3..33) | Intra_Angular |
| 34 | Intra_Planar |
| 35 | Intra_FromLuma (used only for chroma) |

Table 8-2 specifies the number of luma intra prediction modes intraPredModeNum depending on log2TrafoSize.

**Table 8-2 – Specification of intraPredModeNum**

| log2TrafoSize | intraPredModeNum |
|---|---|
| 2 | 18 |
| 3 | 35 |
| 4 | 35 |
| 5 | 35 |
| 6 | 4 |

...

IntraPredMode[xB][yB] labelled 0,1,2,..,33 represents directions of predictions as

illustrated in Figure 8-1.

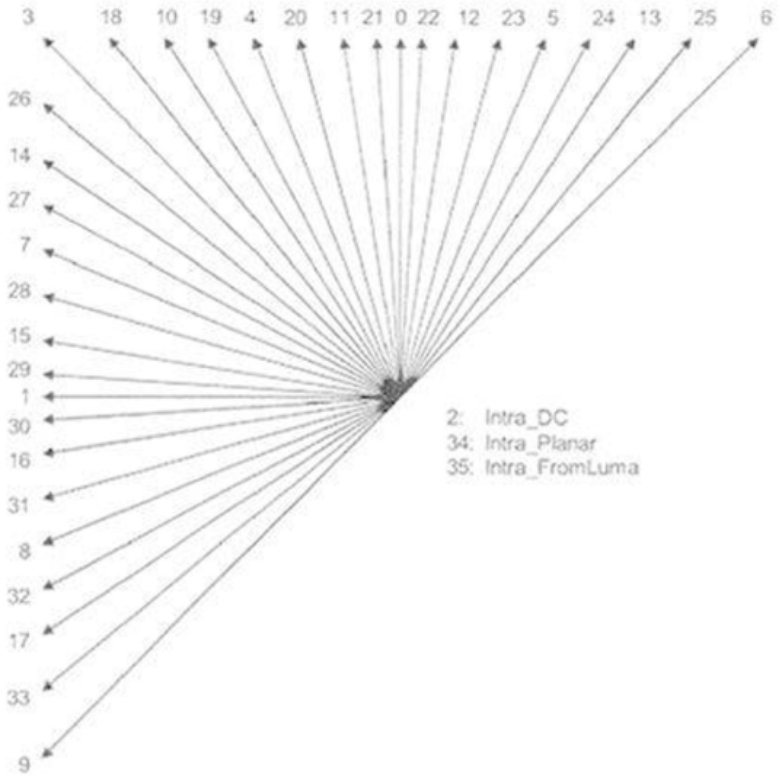



Figure 8-1 – Intra prediction mode directions (informative)

...

4. For N being replaced by either A or B, the variables candIntraPredModeN are derived as follows.

...

6. IntraPredMode[xB][yB] is derived by applying the following procedure.

- If prev_intra_pred_flag[xB][yB] is true, the IntraPredMode[xB][yB]is set equal to candModeList[mpm_idx[xB][yB]]

...

8.3.2 Derivation process for chroma intra prediction mode

...

8.3.3 Decoding Process for intra blocks

Inputs to this process are:

- a sample location (xB, yB) specifying the top-left sample of the current block relative to the top-left sample of the current picture,

...

- a variable intraPredMode specifying the intra prediction mode.

...

Output of this process is:

- a modified reconstructed picture before deblocking filtering.

Depending on split_transform_flag[xB][yB][trafoDepth], the following applies:

...

- Otherwise (split_transform_flag[xB][yB][trafoDepth] is equal to 0), the following ordered steps apply:

...

2. The intra sample prediction process as specified in subclause 8.3.3.1 is invoked with the location (xB, yB), the intra prediction mode intraPredMode, the prediction size nS and the variable cIdx as the inputs and the output is a (nS)x(nS) array predSamples.

...

4. The residual signal accumulation process as specified in subclause XXX is invoked with the variable arraySize set equal to nS, the (nS)x(nS) array predSamples, and the (nS)x(nS) array resSamples as the inputs and the output is a (nS)x(nS) array recSamples.

5. The picture reconstruction process for a component before deblocking filtering as specified in subclause XXX is invoked with the location (xB, yB), the variable arraySize set equal to nS, the variable cIdx set equal to 0, and the (nS)x(nS) array recSamples as the inputs and the output is a modified reconstructed picture before deblocking filtering.

8.3.3.1 intra sample prediction

Inputs to this process are:

- a sample location (xB,yB) specifying the top-left sample of the current block relative to the top-left sample of the current picture,

- a variable intraPredMode specifying the luma intra prediction mode,

...

Output of this process is:

- the predicted samples predSamples[x,y],with x,y=0..nS-1."

(3-3) Invention described in Cited Document 1

(A) Regarding the matters guided from Figure 1 of Cited Document 1

From Figure 1 of Cited Document 1, a block with the symbol A can be seen on the left side of a large block, and a block with the symbol B can be seen on the large block. As the explanation of Figure 1, there is a description of intra_pred_mod about

the left and upper blocks.

Then, the block with the symbol A adjacent to the left side of the large block is a neighboring block A, and can be referred to as a left neighboring block A, and the block with the symbol B adjacent on the large block is a neighboring block B, and can be referred to as an upper neighboring block B.

Furthermore, it is recognized that the block contacted with the neighboring blocks A and B is a block where the parsing of luma intra prediction mode is performed.

(B) Regarding the matters about luma intra prediction mode derived from the reference
(B-1) It can be said that the reference describes that intraPredeModeNum represents the number of luma intra prediction modes, with respect to the derivation process of luma intra prediction modes in 8. 3. 1, and that a variable intraPredMode specifying the intro prediction mode of 8. 3. 3 is a variable specifying the luma intra prediction mode in 8. 3. 3. 1, with respect to a decoding process for intra blocks in 8. 3. 3, respectively.

(B-2) On the other hand, it can be said that the reference describes that the intra prediction modes from 0 to 35 are indicated from Table 8-1 and Figure 8-1, and Intra_FromLuma of 35 is used only for chroma, from Table 8-1, with respect to the derivation process of luma intra prediction modes in 8. 3. 1.

(B-3) In 4 of 8. 3. 1 of the reference, it is described that in the variables candIntraPredModeN, N being replaced with either of A or B is the variable candIntraPredMode A and the variable candIntraMode B. Then, it is recognized that both candIntraPredMode N are candIntraPredMode A and candIntraMode B.

(B-4) In 8. 3. 1 of the reference, it is described that IntraPredMode [xB][yB] labelled 0, 1, 2, ..., 33 represents directions of predictions as illustrated in Figure 8-1, and it can be also said that IntraPredMode represents directions of predictions of intra prediction modes.

Further, in 6 of 8. 3. 1 of the reference, it is described that the IntraPredMode [xB][yB] is set equal to candModeList[mpm_idx [xB][yB]], and it can be said that it is described that IntraPredMode representing directions of predictions of intra prediction modes are obtained from candModeList.

(C) Regarding intra prediction process and decoding process

Cited Document 1 is a document relating to a coding method in an intra

prediction mode using a candidate mode list candModeList of the intra prediction mode in an HEVC (High Efficiency Video Coding) test model, and includes the contents of the reference.

Here, 8. 3 of the reference relates to the decoding process of coding units in the intra prediction mode, and describes that a modified reconstructed picture is outputted using a luma location (xB, yB) specifying the top-left luma sample of the current coding unit relative to the top-left luma sample of the current picture, as an input.

8. 3. 3 relates to the decoding process of intra blocks, and describes that a modified reconstructed picture is outputted using the location (xB, yB) and a variable intraPredMode specifying the intra prediction mode, as inputs.

2 of 8. 3. 3 describes that in the intra sample prediction process as specified in subclause 8. 3. 3. 1, the location (xB, yB) and the intra prediction mode intraPredMode are invoked as the inputs, and array predSamples that are predicted samples are outputted.

4 of 8. 3. 3 describes that the residual signal accumulation process is invoked with the array predSamples as an input and the output is an array recSamples.

5 of 8. 3. 3 describes that the picture reconstruction process is invoked with the array recSamples as the input and the output is a modified reconstructed picture.

Then, it can be said that the reference describes that in a decoding process of intra prediction modes, using a variable intraPredMode specifying the intro prediction mode as an input, a predicted sample is outputted in an intra sample prediction process; with the predicted sample as an input, a residual signal accumulation process is performed; and a modified reconstructed picture is outputted via a picture reconstruction process.

Therefore, it can be said that Cited Document 1 based on the reference is a document describing that in a decoding process of intra prediction modes, using an intra prediction mode, a predicted sample is outputted in an intra sample prediction process; and with the predicted sample as an input, a modified reconstructed picture is outputted via a residual signal accumulation process and a picture reconstruction process.

(D) Summary

Based on the above matters, it is recognized that Cited Document 1 describes the following invention (hereinafter, referred to as "the Cited Invention"). Hereinafter,

constitutions of the Cited Invention are referred to as constitutions (a) to (e), using symbols (a) to (e).

(Cited Invention)

(a) A coding method performing a decoding process relating to an intra prediction mode, in which in HEVC Test Model, a parsing of luma intra prediction mode (intra_pred_mode) depends on intra_pred_mode of neighboring blocks A and B; in the current Working Draft [2], candidate mode list (candModeList) and the number of candidate modes (NumMPMC) are derived from the intra_pred_mode of the neighboring blocks A and B (candIntraPredModeA and candIntraPredModeB); and intra prediction modes of the neighboring blocks A and B are candIntraPredModeA and candIntraPredModeB,

wherein in this proposal, the number of candidate modes (NumMPMC) uses the three most probable candidate modes (MPMC) in the luma intra prediction, and the derivation of MPMC is as follows,

(b0) if both candIntraPredModeN are not available, then the value 2 is assigned to candModeList[0], the value 0 is assigned to candModeList[1], and the value 1 is assigned to candModeList[2],

(b1) otherwise, if both candIntraPredModeN are the same,

(b2) this candIntraPredModeN is assigned to candModeList[0], and candModeList[1] and candModeList[2] are derived by applying the following procedure with Tables 3. 1, 3. 2, and 3. 3,

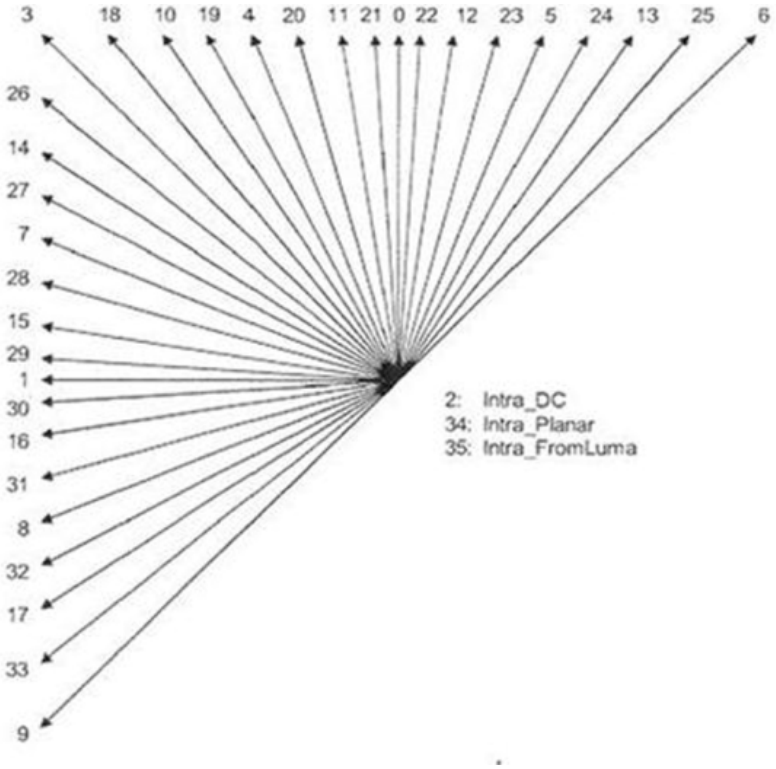
(b21) if the number of intraPredModeNum is equal to M, PredModeMinus1_M, PredModeMinus1_M[candModeList[0]] is assigned to candModeList[1], and PredModePlus1_M [candModeList[0]] is assigned to candModeList[2],

(b3) Table 3. 3 is the mapping of candidate modes when intraPredNum is equal to 35,

| intraPredMode | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PredModeMinus1_35 | 21 | 30 | 0 | 26 | 19 | 23 | 25 | 28 | 32 | 6 | 18 | 21 | 22 | 24 | 27 | 29 | 31 | 33 |
| PredModePlus1_35 | 22 | 29 | 1 | 18 | 20 | 24 | 9 | 27 | 31 | 33 | 19 | 20 | 23 | 25 | 26 | 28 | 30 | 32 |

| intraPredMode | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PredModeMinus1_35 | 3 | 10 | 4 | 11 | 0 | 12 | 5 | 13 | 14 | 7 | 15 | 1 | 16 | 8 | 17 | 9 | 0 |
| PredModePlus1_35 | 10 | 4 | 11 | 0 | 12 | 5 | 13 | 6 | 3 | 14 | 7 | 15 | 1 | 16 | 8 | 17 | 1 |

(b4) the neighboring block A is a left neighboring block A, the neighboring block B is an upper neighboring block, and a block contacted with the neighboring blocks A and B is a block where the parsing of luma intra prediction mode is performed,
(b5) intraPredModeNum specifies the number of luma intra prediction modes and a variable intraPredMode specifies the luma intra prediction mode,
(b6) regarding the derivation process of luma intra prediction modes, there are intra prediction modes from 0 to 35, and directions of intra prediction modes are




, however, Intra_FromLuma of 35 is used only for chroma, and
(b7) both candIntraPredModeN are candIntraPredModeA and candIntraModeB;
(c) wherein IntraPredMode representing prediction directions of intra prediction modes is obtained from candModeList;
(d) wherein using the obtained intra prediction mode, a predicted sample is outputted in an intra sample prediction process; and
(e) wherein with the predicted sample as an input, a modified reconstructed picture is outputted via a residual signal accumulation process and a picture reconstruction process.

(3-4) Comparison and judgment of the Invention and the Cited Invention

Then, the Invention and the Cited Invention will be compared.

A Regarding the matters specifying the invention A

"A coding method performing a decoding process relating to an intra prediction mode" "in HEVC Test Model" of the constitution (a) corresponds to "a method for performing intra-prediction in an image forming device" of the matters specifying the invention A of the Amended Invention.

B Regarding the matters specifying the invention B1

(A) According to the descriptions of luma intra prediction mode (intra_pred_mode) and the neighboring blocks A and B (candIntraPredModeA and candIntraPredModeB) in the constitution (a), the description that the neighboring block A is a left neighboring block A, the neighboring block B is an upper neighboring block in the constitution (b4), and the description that both candIntraPredModeN are candIntraPredModeA and candIntraModeB in the constitution (b7), it can be said that "both candIntraPredModeN" of the constitutions (b0) and (b1) refers to the luma intra prediction mode candIntraPredModeA of the left neighboring block A and the luma intra prediction mode candIntraPredModeB of the upper neighboring block B.

Therefore, the matter that "otherwise, if both candIntraPredModeN are the same" of the constitution (b1) based on "if both candIntraPredModeN are not available" of the constitution (b0) specifies that the luma intra prediction mode candIntraPredModeA of the left neighboring block A and the luma intra prediction mode candIntraPredModeB of the upper neighboring block B can be used and that candIntraPredModeA and candIntraPredModeB are equal to each other.

(B) Next, examining the constitution (b3), from Table 3. 3, it can be said that as a combination of (IntraPredMode, PredModeMinus1_35, PredModePlus1_35), there are (1, 30, 29), (2, 0, 1), (3, 26, 18), (4, 19, 20), (5, 23, 24), (6, 25, 9), (7, 28, 27), (8, 32, 31), (9, 6, 33), (10, 18, 19), (11, 21, 20), (12, 22, 23), (13, 24, 25), (14, 27, 26), (15, 29, 28), (16, 31, 30), (17, 33, 32), (18, 3, 10), (19, 10, 4), (20, 4, 11), (21, 11, 0), (22, 0, 12), (23, 12, 5), (24, 5, 13), (25, 13, 6), (26, 14, 3), (27, 7, 14), (28, 15, 7), (29, 1, 15), (30, 16, 1), (31, 8, 16), (32, 17, 8), (33, 9, 17), and (34, 0, 1) (hereinafter, referred to as Combination C).

(C) Furthermore, examining the constitution (b6), when values of a variable intraPredMode specifying the luma intra prediction mode that is defined in (b5) are 0, 1, 3 to 33, it can be said that those are lined up with the directions of the intra prediction modes numbered. Further, since the constitution (b6) relates to the derivation process

of luma intra prediction modes, it is obvious that the directions of the intra prediction modes are the directions of the luma intra prediction modes.

(D) From (A), both candIntraPredModeN of the constitution (b1); that is, the luma intra prediction mode candIntraPredModeA and the luma intra prediction mode candIntraPredModeB of the constitution (a), respectively correspond to "a first intra-prediction mode to a left adjacent block adjacent to the left side of a block performing the intra-prediction" and "a second intra-prediction mode to an upper adjacent block adjacent on the block" in the matters specifying the invention B1 of the Amended Invention.

Furthermore, of the case when both candIntraPredModeN are the same of the constitution (b1), when a value of a variable intraPredMode specifying the luma intra prediction mode is 0, 1, 3 to 33 in (C) above; that is, the case when both of the luma intra prediction modes candIntraPredModeA and candIntraPredModeB have the same value and take any value of 0, 1, 3 to 33, corresponds to the case "when both a first intra-prediction mode and a second intra-prediction mode are direction prediction modes in a first angular direction" in the matters specifying the invention B1 of the Amended Invention.

C Regarding the matters specifying the invention B2

(A) Examining the constitution (b6), it can be said that values of a variable intraPredMode specifying the luma intra prediction mode defined in the constitution (b5) are lined up with the directions of the intra prediction modes numbered in the order of 9, 33, 17, 32, 8, 31, 16, 30, 1, 29, 15, 28, 7, 27, 14, 26, 3, 18, 10, 19, 4, 20, 11, 21, 0, 22, 12, 23, 5, 24, 13, 25, 6, and that there is nothing indicating the directions of other intra prediction modes between the directions of the luma intra prediction modes of No. 6 and No. 9.

Therefore, if the values of the variable intraPredMode and the numbers of the directions of the luma intra prediction modes are associated with each other, it can be said that the directions of the luma intra prediction modes in the order of 9, 33, 17, 32, 8, 31, 16, 30, 1, 29, 15, 28, 7, 27, 14, 26, 3, 18, 10, 19, 4, 20, 11, 21, 0, 22, 12, 23, 5, 24, 13, 25, 6 are adjacent to each other and the directions of the luma intra prediction modes of 6 and 9 are adjacent to each other (hereinafter, the line of the numbers is referred to the Line L).

(B) In Combination C of the constitution (b3), if the variable intraPredMode

representing the luma intra prediction modes and the number of Line L are associated with each other, in all combination elements of C, the value of PredModeMinus1_35 and the value of PredModePlus1_35 are the values on both sides of the value of intraPredMode in Line L.

Therefore, from the constitutions (b3), (b5), and (b6), it can be said that in the Cited Invention, if the variable intraPredMode takes values of 0, 1, 3 to 33; that is, takes values meaning predetermined directions of the luma intra prediction modes, PredModeMinus1_35 and the value of PredModePlus1_35 have values meaning that those become directions of the luma intra prediction modes adjacent to both sides of the direction of the luma intra prediction mode.

(C) Further, according to the constitutions (b2) and (b21) based on the constitution (b1), an equal value taken by candIntraModeN (hereinafter, the value is referred to as m) is assigned to candModeList[0], PredModeMinus1_35[m] is assigned to candModeList[1], and PredModePlus1_35[m] is assigned to candModeList[2].

Therefore, it can be said that Combination C above is the same as the combination of (m, PredModeMinus1_35[m], PredModePlus1_35[m]), with respect to the value m of the luma intra prediction mode.

(D) In summary of (A) to (C), it can be said that in the constitution (b2) (b21) based on the constitution (b1), the derivation of candModeList[0], candModeList[1], and candModeList[2] is that, if taking a value becoming a predetermined direction of the intra prediction mode, values corresponding to directions of the intra prediction modes adjacent to both sides of the direction of the intra prediction mode.

Then, if the predetermined direction of the intra prediction mode (here, referred to as D0) is set, a value of a direction of the intra prediction mode adjacent to D0 (here, referred to as D1) and a value of a direction of the intra prediction mode also adjacent to D0 but different from D1 (here, referred to as D2) are set.

This corresponds to the matters specifying the invention B2.

D Regarding the matters specifying the invention C

Regarding the matter "IntraPredMode representing prediction directions of intra prediction modes are obtained from candModeList" of the constitution (c), it can be said that "candModeList" is used for obtaining prediction direction of intra prediction modes.

Further, it is obvious that the prediction of the intra prediction modes is performed in "a block where the parsing of intra prediction mode is performed" of the

constitution (b4).

On the other hand, "the set prediction in the first angular direction, the prediction in the second angular direction, and the prediction in the third angular direction" of the matters specifying the invention C are also used for performing intra predictions with respect to the block.

Therefore, the constitution (c) corresponds to the matters specifying the invention C.

E Regarding the matters specifying the invention D and E

It is obvious that "the obtained intra prediction mode" in the constitution (d) is an intra prediction mode with respect to "a block where the parsing of luma intra prediction mode is performed" of the constitution (b4), and it is also obvious that the block corresponds to "the block" of the matters specifying the invention D, E of the Amended Invention.

Further, "a predicted sample" and "a modified reconstructed picture is outputted" in the constitutions (d) and (e) correspond to "a prediction image to the block" and "generate a decoded image" of the matters specifying the invention D and E, respectively.

Therefore, the constitutions (d) and (e) correspond to the matters specifying the inventions D and E.

(3-5) Summary

On the basis of the comparison of A to E above, in comparison of the Invention and the Cited Invention, since the two are identical and there is no substantial difference found, the Invention falls under Article 29(1)(iii) of the Patent Act, and cannot be patented independently.

(4) Appellant's allegation

Since the Appellant, in "3. 2 Comparison of the Invention and the Cited Invention" of "3. Reason why the Invention should be patented" in the written request for appeal dated December 27, 2018, alleges as follows, these will be examined below.

(4-1) Regarding the matter that directional angle is decided without requiring lookup tables

(The Appellant's allegation)

"Specifically, concerning Cited Document 1, on the basis of the description "if both

candIntraPredModeN are the same" or below, the examiner recognizes that it is disclosed that if both the first intra prediction mode and the second intra prediction mode are prediction mode in the first direction, the prediction mode in the first direction, the prediction mode in the second direction, and the prediction mode in the third direction are set as an intra prediction mode that becomes a candidate for a block where intra prediction is performed. However, the corresponding description of Cited Document 1 merely determines whether or not the first intra prediction mode and the second intra prediction mode are the same, and derives and decides the mode by always using any one of Table 3. 1 to 3. 3, regardless of whether or not these modes are direction prediction modes.

Further, as recognized by the examiner, the technology disclosed in Cited Document 1 is specifying the mode using lookup tables shown as Table 3.1 to 3. 3.

Against this, the Invention, for example, as disclosed in Paragraphs 0016, and 0018, can decide its directional angle by simple calculation, without requiring lookup tables, and enables the removal of a plurality of lookup tables using the method of the Invention. Considering this point, the technologies disclosed in Cited Document 1 and 3 are technologies based on different ideas from the Invention, and it must be said that it is difficult to exert functions and effects peculiar to the Invention."

We will examine the above allegation.

Since the Amendment merely "sets a prediction in the first angular direction, a prediction in a second angular direction adjacent in the first angular direction, and a prediction in a third angular direction adjacent in the first angular direction and different from the second angular direction, as intra-prediction modes that are candidates for the block" in the matters specifying the invention B2, in Claim 7 of the scope of claims after the Amendment, it does not describe a calculating method that is necessary for deciding the second angular direction adjacent to the first angular direction, which specifies a mode without using lookup tables.

(4-2) Regarding the matter that the technology according to Cited Document 1 sets four candidates

(The Appellant's allegation)

"In addition, the technology according to Cited Document 1 fixes fourth mode with 2 or 34, and sets four candidates. Considering this point, it is obvious that it is different from the Invention setting predictions respectively corresponding to a first angular direction to a third angular direction (that is, three predictions)".

We will examine the above allegation.

In (3-2) A (F) above, although it is shown the matter that in chroma intra prediction modes, there are six available intra prediction modes, and there are four modes in addition to two mode that have not been modified, the matter relates to the intra prediction of chroma signals, and has nothing to do with the Cited Invention relating to luma intra prediction.

Further, the matters that the fourth mode is fixed with 2 or 34 is not described in the Cited Documents.

As described in (4-1) to (4-2), the Appellant's allegation is not based on the descriptions of claims, and merely alleges differences from the Invention by citing the description relating the intra prediction of chroma signals that has nothing do to with the Cited Invention, so that the Appellant's allegation cannot be accepted.

3 Closing

As described above, since the Amendment violates the provisions of Article 126(7) of the Patent Act which is applied mutatis mutandis in the provisions of Article 17-2(6) of the Patent Act, the Amendment shall be dismissed under the provisions of Article 53(1) of the Patent Act applied mutatis mutandis by replacing certain terms pursuant to Article 159(1) of the Patent Act.

No. 3 Regarding the invention

1 The Invention

Since the written amendment dated December 27, 2018 was dismissed as described above, the invention according to claims of the present application is as specified by the matters described in Claims 1 to 12 of the scope of claims amended by the written amendment dated August 21, 2018, and among that, the invention according to Claim 7 (hereinafter, referred to as "the Invention") is as specified by the matters described in 1 of No. 2 above (Claim 7 before the Amendment).

2 Reasons for refusal stated in the examiner's decision

The notice of reasons for refusal dated September 18, 2018 is outlined as follows.

1. (Novelty) Since the invention according to Claims 1 and 7 of the present application is an invention described in the publication distributed in Japan or abroad before the

application was filed or an invention available to the public through electric telecommunication lines, it falls under the provisions of Article 29(1)(iii) of the Patent Act, and the Appellant should not be granted a patent.

3 Cited Invention

The described matter of Cited Document 1 cited in the reasons for refusal stated in the examiner's decision is as shown in No. 2 2 (3-2) A above, and the invention described in Cited Document 1 (the Cited Document) is recognized in No. 2 2 (3-3) (D) above.

4 Comparison and Judgment

The Invention makes the concept of "prediction in the first (second, third) direction" superordinate, by deleting the matters specifying the invention that is "prediction in the angular direction" that was limited by (Claim 7 after the Amendment) in 1 of No. 2 above and using the description of "a direction predication mode in the direction."

Therefore, since the Amended Invention corresponding to the invention making the concept of the Invention subordinate, as described in No. 2 2 (3) above, is the same as the invention described in Cited Document 1, and falls under Article 29(1)(iii) of the Patent Act, the Invention is the same invention as the invention described in Cited Document 1 and falls under Article 29(1)(iii) of the Patent Act, for the same reason.

No. 4 Closing

As described above, the Invention is the same invention described in the invention described in Cited Document 1, and thus it falls under the provisions of Article 29(1)(iii) of the Patent Act and the appellant should not be granted a patent.

Accordingly, the present application should be rejected without examining other claims.

Therefore, the appeal decision shall be made as described in the conclusion.

April 30, 2020

Chief administrative judge: SHIMIZU, Masakazu
Administrative judge: KAWASAKI, Hiroshi
Administrative judge: TORII, Minoru