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Nokia Corporation and Alston & Bird LLP			AYNALEM, NATHNAEL B	
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Please find below and/or attached an Office communication concerning this application or proceeding.

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usptomail@alston.com

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114.

Applicant's submission filed on June 07, 2021 has been entered.

Allowable Subject Matter

The indicated allowability of claims 1-30 is withdrawn in view of the newly discovered reference(s) to Rusert et al. (Pub. No. US 2011/0194609 A1). Rejections based on the newly cited reference(s) follow.

Claim Objections

Claims 1, 15, 23 and 29 are objected to due to the following informalities:

In claims 1, 15, 23 and 29 the term “candiate” appear to have a typo error. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):

(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-28 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention.

Claims 1, 2-4 and 6 recite the term “a potential spatial motion vector prediction candidate”. It is unclear how the term should be understood in the claims because claim 1 recites “selecting a first spatial motion vector prediction candidate from a set of spatial motion vector prediction candidates for a block of pixels as a potential spatial motion vector prediction candidate...”. Dependent claim 2 recites “selecting spatial motion vector prediction candidates from the set of spatial motion vector prediction candidates as the potential spatial motion vector prediction candidate...” In claim 1 as outlined above, a first spatial motion vector prediction candidate is selected as a potential spatial motion vector prediction candidate. However, in the dependent claim 2 as outlined above, spatial motion vector candidates are selected as the potential spatial motion vector prediction candidate, which makes the claims appear to be vague, and thereby render the claims indefinite.

Claims 9-11, 13, 15-18, 20, 23-25 and 27 are rejected due to similar reasons set forth above with respect to claims 1, 2-4 and 6.

Claim 6 recites the limitation “ the received block of pixels is vertically divided into a first prediction unit and a second prediction unit; or the received block of pixels is horizontally divided into a first prediction unit and a second prediction unit, and if the prediction unit is the second prediction unit, and the potential spatial motion vector prediction candidate has essentially similar motion information than a spatial motion vector prediction candidate above the prediction unit; for a potential spatial motion vector prediction candidate above the prediction unit, excluding the potential spatial motion vector prediction candidate from the motion vector prediction list if any of the following conditions are fulfilled: the received block of pixels is horizontally divided into a first prediction unit and a second prediction unit...” there is insufficient antecedent basis for “the received block of pixels” in the claim. Claims 13, 20 and 27 are rejected due to similar reasons set forth above with respect to claim 6.

Claim 6 recites “all the other potential spatial motion vector prediction candidates have been included in the motion vector prediction list”. There is insufficient antecedent basis for the “all the other potential spatial motion vector prediction candidates” in the claim. Claims 13, 20 and 27 are rejected due to similar reasons set forth above with respect to claim 6.

The rest of the dependent claims are rejected based on their dependency from the rejected claims.

Claim Rejections - 35 USC § 102

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim(s) 1-3, 5, 7-10, 12, 14-17, 19, 21-24, 26 and 28-30 is/are rejected under pre-AIA 35 U.S.C. 102(a) as being anticipated by Rusert et al. (Pub. No. US 2011/0194609 A1).

Regarding claim 1, Rusert discloses a method comprising: selecting a first spatial motion vector prediction candidate from a set of spatial motion vector prediction candidates for a block of pixels as a potential spatial motion vector prediction candidate to be included in a motion vector prediction list for a prediction unit of the block of pixels (¶¶0036, 00067-0068: Motion vectors to be added to a PMV_CANDS list may comprise spatial or temporal neighbors of the current block, or combinations of spatial and/or temporal neighbors...As an alternative to consideration of a pre-defined neighborhood to scan for motion vector candidates, it may be signaled from encoder to decoder (and thus dynamically decided at the encoder), for each motion vector or for a set of motion vectors (e.g. a macroblock), whether the associated motion vectors are to be added to the PMV_CANDS list), where the motion vector prediction list comprises motion information of the spatial motion vector prediction candidates

and is utilized to identify motion vector prediction candidates of which one spatial motion vector prediction candidate from the motion vector prediction list is signaled as the motion information for the prediction unit (§§0074-Alternatively, removal of candidates from a PMV_CANDS list may be signaled explicitly from the encoder to the decoder (and thus decided dynamically by the encoder), e.g. by sending a code for removal of a motion vector candidate from a list along with an identifier of the motion vector, e.g. an index); comparing motion information of the first spatial motion vector prediction candidate with motion information of spatial motion vector prediction candidates in a subset of spatial motion vector prediction candidates that are based on a location of the block associated with the first spatial motion vector prediction candidate (§§0071, 0075-0076: One measure for reducing the number of candidates is to avoid duplicate occurrences of the same motion vector in a given PMV_CANDS list. This can be done, when updating the list, by comparing the candidates already in the list with the new vector that could be added, and if a duplicate is found, either removing the duplicate vector or skipping the new vector...The following methods can be used when updating a PMV_CANDS list in order to sort the candidates in a way that is beneficial for overall coding efficiency. .. The motion vectors corresponding to blocks that are close to the current block (using some distance metric) will get a position closer to the start of the list compared to motion vectors belonging to blocks that are further away from the current block); determining to include or exclude the first spatial motion vector prediction candidate in the motion vector prediction list based on the comparing (§§0071, 0075-0076: One measure for reducing the number of candidates is to avoid duplicate occurrences of the same motion vector in a given PMV_CANDS list. This can be done, when updating the list, by comparing the candidates already in the list with the new vector that could be added, and if

a duplicate is found, either removing the duplicate vector or skipping the new vector...);
and causing information identifying the one spatial motion vector prediction candidate from the motion vector prediction list to be transmitted to a decoder or to be stored (~~¶¶0074-~~**Alternatively, removal of candidates from a PMV_CANDS list may be signaled explicitly from the encoder to the decoder (and thus decided dynamically by the encoder), e.g. by sending a code for removal of a motion vector candidate from a list along with an identifier of the motion vector, e.g. an index).**

Regarding claim 2, Rusert discloses the method according to claim 1 further comprising selecting spatial motion vector prediction candidates from the set of spatial motion vector prediction candidates as the potential spatial motion vector prediction candidate in a predetermined order (~~¶¶0075-0077:~~ **The following methods can be used when updating a PMV_CANDS list in order to sort the candidates in a way that is beneficial for overall coding efficiency...The motion vectors corresponding to blocks that are close to the current block (using some distance metric) will get a position closer to the start of the list compared to motion vectors belonging to blocks that are further away from the current block... The motion vector associated with the last coded block is placed at the beginning of the list (shortest code word).**).

Regarding claim 3, Rusert discloses the method according to claim 1, further comprising comparing motion information of the potential spatial motion vector prediction candidate with motion information of at most one other spatial motion vector prediction candidate of the set of spatial motion vector prediction candidates (~~¶¶0068, 0071:~~ **Motion vectors to be added to a**

PMV_CANDS list may comprise spatial or temporal neighbors of the current block, or combinations of spatial and/or temporal neighbors...One measure for reducing the number of candidates is to avoid duplicate occurrences of the same motion vector in a given PMV_CANDS list. This can be done, when updating the list, by comparing the candidates already in the list with the new vector that could be added, and if a duplicate is found, either removing the duplicate vector or skipping the new vector).

Regarding claim 5, Rusert discloses the method according to claim 1, further comprising determining a maximum number of spatial motion vector prediction candidates to be included in the motion vector prediction list; and limiting the number of spatial motion vector prediction candidates in the motion vector prediction list smaller or equal to the maximum number (§§0073: **Also, the number of candidates in PMV_CANDS may be limited to a pre-defined or dynamically obtained number. It is possible that once the number has been reached an additional candidate is to be added, then the candidate at the end of the PMV_CANDS list may be removed).**

Regarding claim 7, Rusert discloses the method according to claim 1 further comprising including a temporal motion prediction candidate into the motion vector prediction list (§§0036, 00067-0068: **Motion vectors to be added to a PMV_CANDS list may comprise spatial or temporal neighbors of the current block, or combinations of spatial and/or temporal neighbors...As an alternative to consideration of a pre-defined neighborhood to scan for motion vector candidates, it may be signaled from encoder to decoder (and thus dynamically decided at the encoder), for each motion vector or for a set**

of motion vectors (e.g. a macroblock), whether the associated motion vectors are to be added to the PMV_CANDS list).

Regarding claim 8, Rusert discloses the method according to claim 1 further comprising selecting one motion vector prediction candidate from the motion vector prediction list to represent a motion vector prediction for the block of pixels (¶¶0036, 00067-0068: Motion vectors to be added to a PMV_CANDS list may comprise spatial or temporal neighbors of the current block, or combinations of spatial and/or temporal neighbors...As an alternative to consideration of a pre-defined neighborhood to scan for motion vector candidates, it may be signaled from encoder to decoder (and thus dynamically decided at the encoder), for each motion vector or for a set of motion vectors (e.g. a macroblock), whether the associated motion vectors are to be added to the PMV_CANDS list).

Regarding claim 9, Rusert discloses a method comprising: selecting a first spatial motion vector prediction candidate from a set of spatial motion vector prediction candidates for an encoded block of pixels as a potential spatial motion vector prediction candidate to be included in a motion vector prediction list for a prediction unit of the encoded block of pixels(¶¶0036, 00067-0068: Motion vectors to be added to a PMV_CANDS list may comprise spatial or temporal neighbors of the current block, or combinations of spatial and/or temporal neighbors...As an alternative to consideration of a pre-defined neighborhood to scan for motion vector candidates, it may be signaled from encoder to decoder (and thus dynamically decided at the encoder), for each motion vector or for a set of motion vectors (e.g. a macroblock), whether the associated motion vectors are to

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be added to the PMV_CANDS list), where the motion vector prediction list comprises motion information of the spatial motion vector prediction candidates (§0074-Alternatively, removal of candidates from a PMV_CANDS list may be signaled explicitly from the encoder to the decoder (and thus decided dynamically by the encoder), e.g. by sending a code for removal of a motion vector candidate from a list along with an identifier of the motion vector, e.g. an index); comparing motion information of the first spatial motion vector prediction candidate with motion information of another spatial motion vector prediction candidate of a subset of spatial motion vector prediction candidates that are based on a location of the block associated with the first spatial motion vector prediction candidate (§0071, 0075-0076: One measure for reducing the number of candidates is to avoid duplicate occurrences of the same motion vector in a given PMV_CANDS list. This can be done, when updating the list, by comparing the candidates already in the list with the new vector that could be added, and if a duplicate is found, either removing the duplicate vector or skipping the new vector...The following methods can be used when updating a PMV_CANDS list in order to sort the candidates in a way that is beneficial for overall coding efficiency. .. The motion vectors corresponding to blocks that are close to the current block (using some distance metric) will get a position closer to the start of the list compared to motion vectors belonging to blocks that are further away from the current block); determining to include or exclude the first spatial motion vector prediction candidate in the motion vector prediction list based on the comparing (§0071, 0075-0076: One measure for reducing the number of candidates is to avoid duplicate occurrences of the same motion vector in a given PMV_CANDS list. This can be done, when updating the list, by comparing the candidates already in the list with the new vector that could be added, and if a duplicate is found, either removing the

duplicate vector or skipping the new vector...); and selecting a spatial motion vector prediction candidate from the motion vector prediction list for use in decoding the encoded block of pixels (§§0036, 00067-0068: Motion vectors to be added to a PMV_CANDS list may comprise spatial or temporal neighbors of the current block, or combinations of spatial and/or temporal neighbors...As an alternative to consideration of a pre-defined neighborhood to scan for motion vector candidates, it may be signaled from encoder to decoder (and thus dynamically decided at the encoder), for each motion vector or for a set of motion vectors (e.g. a macroblock), whether the associated motion vectors are to be added to the PMV_CANDS list), wherein the spatial motion vector prediction candidate is selected from the motion vector prediction list using information that was received identifying a respective spatial motion vector prediction candidate from the motion vector prediction list constructed by an encoder (§0074-Alternatively, removal of candidates from a PMV_CANDS list may be signaled explicitly from the encoder to the decoder (and thus decided dynamically by the encoder), e.g. by sending a code for removal of a motion vector candidate from a list along with an identifier of the motion vector, e.g. an index).****

Regarding claims 10, 12, 17, 19, 24 and 26, the claims are directed to method/apparatus claims and recites limitations similar to claims 3 and 5. Thus, claims 10, 12, 17, 19, 24 and 26 are rejected due to similar reasons set forth above with respect to claims 3 and 5.

Regarding claims 14 and 28, claims 14 and 28 are directed to method/apparatus claims and analogously recites the limitations as recited in claims 1 and 9. Thus, claims 14 and 28 are rejected due to similar reasons set forth above with respect to claims 1 and 9.

Regarding claims 15 and 29, claims 15 and 29 are directed to an apparatus claims/non-transitory computer readable medium claims and recites limitations similar to claim 1. Thus, claims 15 and 29 are rejected due to similar reasons set forth above with respect to claim 1.

Regarding claim 16, claim 16 is directed to an apparatus claim and recites limitation similar to claim 2. Thus, claim 16 is rejected due to similar reasons set forth above with respect to claim 2.

Regarding claims 21, 22, 23 and 30, claims 21, 22, 23 and 30 are directed to an apparatus/non-transitory computer readable medium claims and recites limitations similar to claims 7, 8 and 9. Thus, claims 21, 22, 23 and 30 are rejected due to similar reasons set forth above with respect to claims 7, 8 and 9.

Allowable Subject Matter

Claims 4, 6, 11, 13, 18, 20, 25 and 27 are would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHNAEL AYNALÉM whose telephone number is (571)270-1482. The examiner can normally be reached on M-F 9AM-5:30 PM ET.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SATH PERUNGAVOOR can be reached on 571-272-7455. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <https://ppair-my.uspto.gov/pair/PrivatePair>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NATHNAEL AYNALAM/
Primary Examiner, Art Unit 2488