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(54) **Title:** SELECTION OF PHASE OFFSETS FOR INTERPOLATION FILTERS FOR MOTION COMPENSATION



FIG. 5

(57) **Abstract:** In one embodiment, a method for encoding or decoding video content is provided. The method determines a plurality of sets of interpolation filters for use in interpolating sub-pel pixel values for a temporal prediction process of video content. Different sets of interpolation filters include different phase offset characteristics. A unit of video content is received. The method then selects one of the set of interpolation filters to interpolate a set of sub-pel pixel values for use in the temporal prediction process for the unit of video content based on characteristics associated with the encoding or decoding of the video content. The one of the set of interpolation filters is selected based on the phase offset characteristic of the one of the set of interpolation filters and the characteristics associated with the encoding or decoding.



INTERNATIONAL SEARCH REPORT

International application No

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<p>A. CLASSIFICATION OF SUBJECT MATTER INV. H04N7/26 H04N7/36 ADD.</p>		
<p>According to International Patent Classification (IPC) or to both national classification and IPC</p>		
<p>B. FIELDS SEARCHED</p>		
<p>Minimum documentation searched (classification system followed by classification symbols) H04N</p>		
<p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p>		
<p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data, COMPENDEX, INSPEC</p>		
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2011/046587 A1 (THOMSON LICENSING [FR]; GUO LIWEI [US]; ZHENG YUNFEI [US]; YIN PENG [U] 21 April 2011 (2011-04-21) figures 3, 5 table 2 page 10, line 25 - page 14, line 21 page 22, line 12 - line 15 -----	1,2,4-8, 11-17, 19,20
X	US 2004/062307 A1 (HALLAPURO ANTTI [FI] ET AL) 1 April 2004 (2004-04-01) figures 6, 7 paragraph [0026] paragraph [0042] paragraph [0047] - paragraph [0052] ----- -/--	1,7-10, 14-16,20
<p><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.</p>		
<p>* Special categories of cited documents :</p>		
<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p>		<p>"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</p>
<p>"E" earlier application or patent but published on or after the international filing date</p>		<p>"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</p>
<p>"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)</p>		<p>"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</p>
<p>"O" document referring to an oral disclosure, use, exhibition or other means</p>		<p>"&" document member of the same patent family</p>
<p>"P" document published prior to the international filing date but later than the priority date claimed</p>		
<p>Date of the actual completion of the international search</p> <p align="center">10 August 2012</p>		<p>Date of mailing of the international search report</p> <p align="center">11/12/2012</p>
<p>Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016</p>		<p>Authorized officer</p> <p align="center">STOUFS</p>

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/044039

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.:
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.:

1-20

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/US2012/044039

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SATO: "Adaptive MC Interpolation Filter for Complexity Reduction", 3. JVT MEETING; 60. MPEG MEETING; 06-05-2002 - 10-05-2002; FAIRFAX,US; (JOINT VIDEO TEAM OF ISO/IEC JTC1/SC29/WG11 AND ITU-T SG.16),, no. JVT-C052r1-L, 10 May 2002 (2002-05-10) , XP030005161, ISSN: 0000-0442 section 3. "Proposed algorithm" -----	1,7-11, 14-16
X	US 2005/105617 A1 (CHONO KEIICHI [JP]) 19 May 2005 (2005-05-19) figures 3, 4, 12, 13 paragraph [0055] - paragraph [0068] -----	1,2,4-8, 11,14-16
A	WIEGAND T ET AL: "Overview of the H.264/AVC video coding standard", IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS FOR VIDEO TECHNOLOGY, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 13, no. 7, 1 July 2003 (2003-07-01), pages 560-576, XP011221093, ISSN: 1051-8215, DOI: 10.1109/TCSVT.2003.815165 section IV.H.1) "Inter-Frame Prediction in P Slices" figure 13 -----	1-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/044039

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011046587 A1	21-04-2011	CN 102687511 A	19-09-2012
		EP 2489189 A1	22-08-2012
		KR 20120093288 A	22-08-2012
		US 2012201293 A1	09-08-2012
		WO 2011046587 A1	21-04-2011

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		US 2005105617 A1	19-05-2005
		WO 03092300 A1	06-11-2003

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-20

Trading-off coding efficiency and computational complexity for each coding unit when coding or decoding video content with sub-pel motion-compensated prediction

2. claims: 21-32

improving coding efficiency given a set of filter restrictions when coding or decoding video with sub-pel motion-compensated prediction

3. claim: 33

Reducing the complexity when coding or decoding video content with sub-pel motion-compensated prediction
