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[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR DISPLAYING A ROTATED IMAGE IN A DISPLAY DEVICE

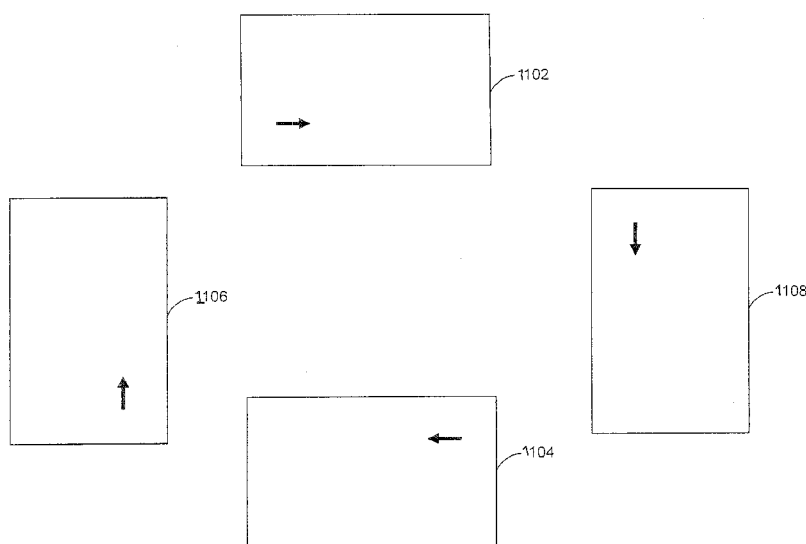


FIG. 12

(57) Abstract: A method controls display of an image by dividing a source image into a plurality of M x N blocks of pixels, selecting a first one of the blocks, and transferring the pixels in the first block from a source memory to a display memory, the pixels in the first block transferred based on orientation change information. The selecting and transferring steps are then repeated to transfer pixels in remaining ones of the blocks to the display memory. Each block corresponds to only a portion of the source image, where any given portion represents less than a full line of pixels in the source image.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB 08/03524

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G09G 5/37 (2009.01)

USPC - 345/562

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)

IPC (8) - G09G 5/37 (2009.01)

USPC - 345/562

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 345/656-659, 682, 561, 562, 566 (See Keywords Below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Pub WEST (USPT, PGPB, JPAB, EPAB), Google Scholar

Search Terms: Displaying image, dividing image, block of pixel, transfer, send, transmit, store pixel, rotating image, change orientation, angle, image processing, lines of image, display memory, cache, buffer

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,173,089 B1 (VAN LERBERGHE), 09 January 2001 (09.01.2001), entire document, especially abstract, col. 2, ln. 6-40, col. 3, ln. 18-51, col. 4, ln. 9-55	1-16
Y	US 2002/0186229 A1 (BROWN ELLIOTT), 12 December 2002 (12.12.2002), entire document, especially abstract; para [0018]-[0020], [0051], [0058]	1-16
Y	US 2003/0016226 A1 (LU et al.), 23 January 2003 (23.01.2003), entire document, especially para [0020]	2, 10

☐ Further documents are listed in the continuation of Box C.

* 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

15 July 2009 (15.07.2009)

Date of mailing of the international search report

28 JUL 2009

Name and mailing address of the ISA/US

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB 08/03524

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 Supplemental Page

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 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.:
1-16

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
Information on patent family members

International application No.

PCT/IB 08/03524

Continued from Box III. Observations where unity of invention is lacking.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: Claims 1-16: controlling display of an image; dividing a source image into a plurality of $M \times N$ blocks of pixels; (b) selecting a first one of the blocks; (c) transferring the pixels in the first block from a source memory to a display memory, the pixels in the first block transferred based on orientation change information.

Group II: Claims 17-28: displaying an image on a display device; receiving information designating an angle of rotation for a source image; and performing a first operation or a second operation based upon the angle of rotation designated in said information, the first operation performed for a first range of angles and the second operation performed for a second range of angles, wherein the first operation includes rearranging order of pixels in the source image in a buffer according to the designated angle of rotation and transferring the pixels in said rearranged order from the buffer to a display memory, and wherein the second operation includes transferring pixels in the source image to the display memory without using the buffer, the pixels in the source image transferred to the display memory based on an order determined by the designated angle of rotation

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

None of the special technical features of each group is common to the other, nor do they correspond to a special technical feature in the other group. The special technical feature of Group I is block based pixel transfers from a source memory to a display memory, which is not present in Group II. The special technical feature of Group II is rearranging the order of pixels and transferring the pixels from source memory to display memory using a buffer and transferring the rearranged pixels without using the buffer, which is not present in Group I.

The common technical feature between Group II and Group III is a controlling the display of an image based on orientation / angle of rotation information and transferring the pixels from source memory to display memory, however this feature is known in the art and does not make a contribution over the prior art as evidenced by US 4,799,173 A (Rose et al.) 17 January 1989 (please see Abstract; Fig.1; col. 10, ln. 15-60), thus it is not special. Accordingly, unity of invention is lacking under PCT Rule 13.1.