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15 January 2009

(54) Title: MULTI-TOUCH INPUT DISCRIMINATION

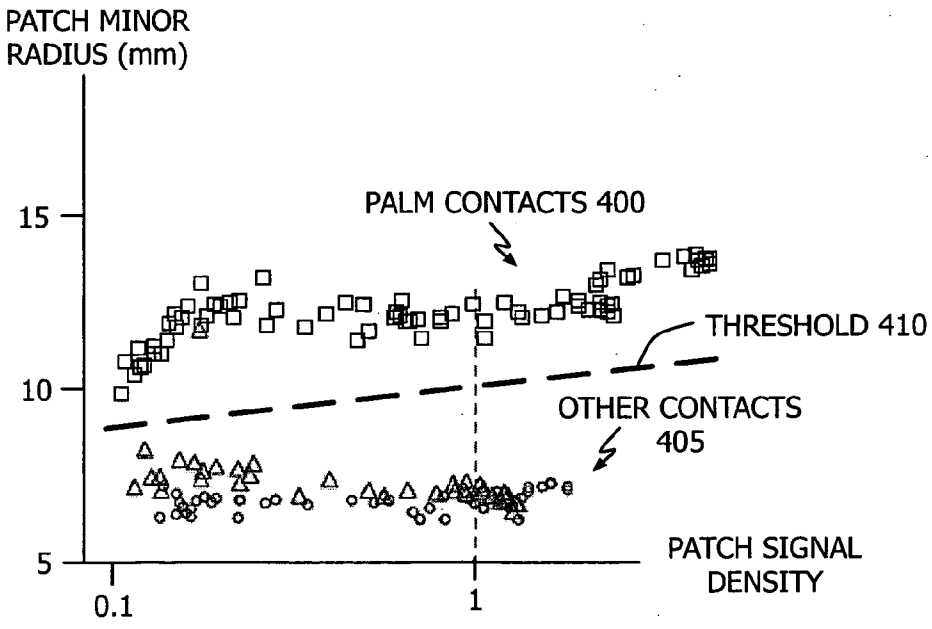

FIG. 4

(57) Abstract: Techniques for identifying and discriminating between different input patterns to a multi-touch touch-screen device are described. By way of example, large objects hovering a short distance from the touch-surface {e.g., a cheek, thigh or chest) may be identified and distinguished from physical contacts to the surface. In addition, rough contacts due to, for example, ears and earlobes, may be similarly identified and distinguished from contacts due to fingers, thumbs, palms and finger clasps.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/026145

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F3/048 G06K9/00

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)
G06K G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006/232567 A1 (WESTERMAN WAYNE [US] ET AL) 19 October 2006 (2006-10-19) abstract; figures 1,13-33 paragraphs [0104] - [0106], [0120] paragraph [0123] paragraphs [0126] - [0130] paragraphs [0148] - [0162] paragraphs [0173] - [0188] paragraphs [0204], [0205]	1-55
A	US 2006/044280 A1 (HUDDLESTON WYATT A [US] ET AL) 2 March 2006 (2006-03-02) abstract; figures 2,3 paragraphs [0010] - [0014]	1-55

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

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"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

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Date of the actual completion of the international search	Date of mailing of the international search report
28 November 2008	04/12/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Alecu, Teodor Iulian

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 5 479 528 A (SPEETER THOMAS H [US]) 26 December 1995 (1995-12-26) abstract; figures 5-12 column 4, line 45 - column 8, line 49	1-55
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HARRISON B L ET AL: "SQUEEZE ME, HOLD ME, TILT MEÜ AN EXPLORATION OF MANIPULATIVE USER INTERFACES" CHI '98. HUMAN FACTORS IN COMPUTING SYSTEMS. CONFERENCE PROCEEDINGS. LOS ANGELES, CA, APRIL 18 - 23, 1998; [CHI CONFERENCE PROCEEDINGS. HUMAN FACTORS IN COMPUTING SYSTEMS], NEW YORK, NY : ACM, US, 18 April 1998 (1998-04-18), pages 17-24, XP000780770 ISBN: 978-0-89791-975-3 the whole document	56-61
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A	US 2005/052427 A1 (WU MICHAEL CHI HUNG [CA] ET AL) 10 March 2005 (2005-03-10) abstract; figures 1-4 paragraphs [0018] - [0032]	56-61
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X	US 2006/161871 A1 (HOTELLING STEVE P [US] ET AL) 20 July 2006 (2006-07-20) abstract; figures 4-10 paragraphs [0097] - [0102]	62,66-72

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	REKIMOTO J ED - TERVEEN L ET AL: "SMARTSKIN: AN INFRASTRUCTURE FOR FREEHAND MANIPULATION ON INTERACTIVE SURFACES" CHI 2002 CONFERENCE PROCEEDINGS. CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS. MINNEAPOLIS, MN, APRIL 20 - 25, 2002; [CHI CONFERENCE PROCEEDINGS. HUMAN FACTORS IN COMPUTING SYSTEMS], NEW YORK, NY : ACM, US, 20 April 2002 (2002-04-20), pages 113-120, XP001099406 ISBN: 978-1-58113-453-7 the whole document ----	62,66-72

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/026145

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 allsearchable 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 reportcovers 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.:

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-55

   Methods of discriminating/identifying input sources to a touch-surface device according to the minor axis radius value of the segmented patch.

   ---

2. claims: 56-61

   Methods of identifying a finger clasp operation, according to the number of the segmented patches.

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3. claims: 62-72

   Methods of discriminating between a contacting/hovering object on the touch-surface according to the signal density value.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2007/026145

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2007/026145

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